Appendix 9 GWCI Policies
Phase 2 Proposal – Mary River Project

Baffinland Iron Mines Corporation
Mary River Project
NIRB File No. 08MN053

TABLE OF CONTENTS

GWCI GENERAL ENGINEERING INSTRUCTIONS

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Genesee & Wyoming Canada Inc.

In effect May 1st 2017

TABLE OF CONTENT

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DEFINITIONS

In these instructions the following definitions apply:

a) "Operator" means the person who is assigned to operate and care for the track unit.

b) "Person in charge" of a track unit means the person responsible for the work being done by the track unit and the protection thereof.

c) "Direct Supervision" means in a position to react to and stop an unsafe act. Those providing direct supervision must be qualified at the level required by the duties being performed.

d) "Operating foreman" is a foreman who is qualified in the CROR Rules pertaining to train movements.

e) "Machines with coupler" refers to those track units that are equipped with approved coupling devices and railway air brake systems designed to operate the air brakes on any attached equipment.

f) "Machines with coupler Operator" refers to employees that are qualified to operate a machines with coupler.

g) "Groundman" refers to the employees who does all the ground procedures and guide the Machines with coupler Operator using radio or hand signals.

h) "Blocking" refers to grounding of a component of a track unit that will prevent the track unit from moving in either direction.

i) "Cart" is a non-powered on–track vehicle.

j) "Storing" refers to securing and protecting of a track unit when the assigned operator is not on duty or if there is no assigned operator for the track unit.

k) "Labor" refers to a non-rules qualified employee.

l) 3 steps protection on a track unit is the following:
   1. Place track unit in neutral or park;
   2. Apply parking and/or air brake;
   3. Operator confirms 3 steps applied.

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SECTION 1 – SAFETY AND SECURITY

1.0 SAFETY GENERAL

a) Those in charge of employees working on or about the track must see that their employees are alert to keep out of danger, and that all receive warning of an approaching movement in time to reach a place of safety.

b) When equipped, a moving track unit must display a white light to the front and a red light to the rear.

c) Track units must be stopped when a movement is approaching on an adjacent track, and when practicable, persons using them must remove themselves to a safe position.

d) A track unit must be operated with care in passing a train receiving or discharging passengers and must not pass such a train on the side on which passengers are entraining or detraining.

e) Employees must never go between equipment or between a track unit and equipment unless all have come to a stop and confirmation is received that 3 Step Protection has been applied. An employee is considered to be foul of such equipment if they are between, on, or otherwise in a position where they could be struck by the equipment if it was to move unintentionally.

f) Track units must not operate within 500 feet of a moving movement on the same track and must not approach within 300 feet of a standing movement on the same track without a clear understanding with the crew of the movement that it is safe to do so.

1.1 HIGH VOLTAGE ELECTRICAL CABLES

a) Always assume that any downed overhead wires are carrying electricity, and that it has energized the ground, the track, and any nearby wayside equipment (snow clearance devices, switches, bungalows, etc.). Immediately notify the RTC or the immediate supervisor that an overhead wire has fallen on the track or right of way, whether the wire is obstructing the track or not, and provide as much detailed information about the situation as possible. If the downed wires are contacting the rail, do not dismount, unless it's life threatening.

If the employee must dismount the following procedure must be followed:

1. Dismount from the vehicle at a location where it is safe to do so.
2. Jump clear of the vehicle and land with your two feet together.
3. Do **not** to touch the vehicle or equipment and the ground at the same time.
4. While keeping both feet in contact with the ground at the same time, shuffle away from the track and away from the wire.
5. Do not stop shuffling until you are at least 50 feet clear of the track and wire.

CAUTION: DO NOT approach or touch exposed cable or damaged electrical equipment until qualified personnel have confirmed that the system has been de-energized and grounded.

b) Installation of buried electrical cables along railway right-of-way is a common practice. These underground systems are safer than similar high voltage systems on pole lines. Power cables are normally buried at a depth of 2 to 5 feet below the surface and 4 to 6 feet from the end of the ties. Along bridges, trestles and in tunnels, the cables are installed in ducts may have orange markers installed in the vicinity (not necessarily the exact location).

1.2 GENERAL SECURITY

Employees must remain aware of their environment and the current situation. They must immediately report to the RTC or the local Police any security concern, security incident, criminal activity (known or suspected), suspicious activities, suspicious persons on or near Company property, and any other near miss or possible security threats. They should also be alert for signs of theft or vandalism of critical safety devices.

Note: Information on Security Plans

1.3 SECURITY ALERT LEVELS

Level 1 New normal day-to-day operations
Level 2 Heightened security awareness
Level 3 A credible threat of an attack on the U.S. and Canada or railroad industry (continuously reevaluated)
Level 4 A confirmed threat of attack against the railroad industry or actual attack in the U.S. or Canada (implemented up to 72 hours and reevaluated)

The following actions will be taken upon the declaration of an alert level. These actions include mechanical, engineering and transportation actions for each of the four levels.

Alert Level 1 Actions

a) Remain aware of environment and current situation
b) Report suspicious activity to police or proper authority
c) Do not disclose information to anyone who does not have a need to know
d) Periodically test that security systems are operating as intended
e) Be alert for transients on trains or in trailing locomotive

Alert Level 2 Actions

a) All Level 1 Actions plus:
b) Review procedures for each alert level as implemented
c) Include security and awareness briefings as part of daily job briefings
d) Increase vigilance and scrutiny of railcars and equipment during mechanical inspections, looking for unusual items mounted on, under or, where possible, in cars, with special attention to military, dangerous goods/hazardous materials and other sensitive freight
e) Increase inspections of fuel storage and handling facilities
f) Conduct spot identification checks
g) Increase scope of inspections of freight cars for potential threats and/or explosives
h) Conduct spot content inspections of motor vehicles on railroad property
i) Conduct spot content inspections of cars and containers for cause

Alert Level 3 Actions

Alert Level 3 can be declared industry wide for a short period of time or can apply in the immediate geographic or operating area (e.g., Mid-West or Dangerous Goods/Hazmat) where or when intelligence has identified that terrorist action against a more specific location or operation is imminent.

a) All Alert Level 2 actions plus
b) Implement physical security controls at designated facility entrances (such as headquarters, data centers, customer service centers, crew management centers, operations centers and telecommunication centers)
c) Implement 24-hour surveillance at designated fuel storage and handling facilities
d) Stop parking within the appropriate distance of any fuel storage, fuel pumping equipment or locomotive fueling pad
e) Increase inspections of bridges
f) Restrict unauthorized vehicle access to bridges
g) Where installed, activate interior access controls at headquarters, data centers, customer service centers, crew management centers, operations centers and telecommunication centers
h) Increase vigilance in checking employee identification
i) Train crews immediately notify the Rail Traffic Controller (RTC) of unusual stops (red signals, defect detectors, etc.)
j) RTC to notify law enforcement of any unusual stops
k) Require regular location or status reports of trains operating in non-signal territory
l) Encourage “third parties” to review and verify new/unknown customers
m) Check communications with water facility/plants in the event of a derailment or attack near a water inlet

Alert Level 4 Actions

Level 4 can be declared industry wide for a short period of time (72 hours) or can apply in the immediate geographic or operating area (e.g., Mid-West or Dangerous Goods/Hazmat) where a terrorist attack has occurred or when intelligence has confirmed that terrorist action against a more specific location or operation is imminent.

a) All Level 3 Actions plus
b) Move external trash containers, dumpsters and other containers (newspaper) away from all facilities and structures, except in secured areas
c) Increase vigilance and scrutiny of railcars and equipment during mechanical inspections, looking for unusual items
d) Verify the identity of crewmembers picking up outbound locomotives at service facilities or on line
e) Escort crews to trains (where possible) or use verified contract drivers
f) Crews on trains stopped enroute due to unusual occurrences (stop signal, defect detector, etc.) immediately notify RTC and RTC immediately deploys assistance
g) RTC verify to crews absolute meet/pass points with passenger trains
h) When instructed by the RTC, eliminate the requirement for ground roll by inspections
i) Limit unattended locomotives and locomotives left on trains on line of road
j) Do not operate in a tunnel with passengers.

1.4 PERSONS ON GWCI PROPERTY

Note: Employees should not approach or confront unknown persons on or near GWCI property or railway tracks if they appear threatening, upset, depressed, or intoxicated.

Reasonable efforts should be made to keep them under observation from a safe distance until the local police can respond. Do not place yourself at risk. If you feel threatened back off and call the police.

a) Remain alert for:
    - Individuals illegally riding in locomotives and on equipment;
    - Strangers or visitors on GWCI property.

b) If it is safe, approach strangers or visitors on the property and determine if they have a business need to be there. Check credentials and photo ID for individuals, including those identifying themselves as working for any government agency such as Transport Canada, or the Transportation Safety Board.

c) Immediately, report any suspicious or unauthorized people to the RTC, your Supervisor or the local Police who can arrange to have them escorted off the property. Be prepared to provide details such as descriptions of the individual and/ or vehicles.

1.5 SUSPICIOUS OBJECTS

a) Employees should be alert for any suspicious or dangerous objects on movements or GWCI property, including items which may be attached to or adjacent to tracks, switches, signals, or on the right-of-way. These objects can come in many different forms and may appear ordinary. Examples of what to look for are:
   - Unusual items on or attached to cars, especially placarded tank cars.
   - Apparent signs of tampering, sabotage, contraband or other unusual or prohibited items.
   - Loaded cars with broken door seals and/or partially open doors.
   - Hidden or abandoned bags, boxes or parcels.
   - Objects emitting an unusual sound, odor, mist, gas or vapor.

b) If a suspicious object is found:
   1. Do not attempt to move or touch it.
   2. Stay clear of the area and keep others clear of the area.
   3. If the object is a possible explosive:
      - **Do not** use your radio or cellular phone unless you are at least 300 feet away from the object, and
      - Instruct all personnel to evacuate the area.
   4. Take note of any suspicious vehicles or people in the area.
   5. Immediately notify the RTC, your supervisor, or the Local Police.

1.6 EMPLOYEE IDENTIFICATION

Employee identification cards are issued to employees by GWCI.
These employee identification cards include the employee's name, employee number and may include a photo. The employee identification cards do not replace location-specific access cards which must continue to be used as well.

1.7 DISCLOSURE OF SENSITIVE INFORMATION

a) Be aware of personal conversations with others off the property concerning your job and workplace. Unusual interest in technical details should be reported to your supervisor.

b) The heightened need for increased public security and for terrorist threat countermeasure planning by emergency responders has resulted in an increase in requests for information about our railway operations. Much of the attention is focused on the transportation of dangerous goods.

Anyone receiving a request for dangerous goods information or other suspicious questions regarding rail operations or critical infrastructures should ascertain as much detail as possible about the individual making the request, the organization he or she represents, and the intended use of any material that we might supply. Forward all such requests to the Public Affairs Department for co-ordination of the appropriate response.

Note: All GWCI employees are prohibited from providing any outside third party with information regarding dangerous goods shipments, routing, volumes or storage.

1.8 BORDER CROSSING

All employees crossing the border must comply with all requirements and requests from both the U.S. Customs and Border Patrol and Customs and Immigration Canada officials.

While there are some basic immigration requirements for working across the border, such as passport and criminal background checks, each border crossing has additional requirements specific to their location.

Unless otherwise instructed, you must check in with border officials each time you cross, regardless of why or the duration.

It is illegal to cross the border with firearms, explosives, drugs, other banned substances or goods that may be subject to any form of import duty.

SECTION 2 – REPORTING REQUIREMENTS

2.1 INITIAL REPORTING REQUIREMENTS

a) All employees must immediately report any accident or incident of a type listed in Table 1: Reportable Accidents or Table 2: Reportable Incidents, below. If the employee in charge of a track unit or equipment is unable to make the report, any other employee who becomes aware of such occurrence must make the report.

Reporting procedures:

- Report to the RTC, General Manager, yard/terminal supervision, or immediate supervisor.
- Use voice communication or personal contact.
- Include a brief description of the occurrence.
- Include all the information listed in paragraph (e).
- Do not delay reporting if all information is not available.
- Request any required medical or other emergency assistance.

Table 1: Reportable Accidents

A. Collision or derailment of on-track equipment, including track units
B. Fatality or injury from contact between on-track equipment and any person or vehicle
C. Employee fatality or injury while on duty from any cause
D. Grade crossing collision, including either public or private crossings
E. Acts of sabotage or terrorism, including bomb threats, hijacking, blockade, hostage-taking
F. Evacuation resulting from any on-track accident or incident
G. Fire or explosion involving on-track equipment
H. Explosive, radioactive or infectious that is lost, stolen, damaged, vandalized, or setoff
I. Release of dangerous goods from any car, tank, container, cylinder or vehicle
J. Unintended release of any non-regulated substance

Table 2: Reportable Incidents

A. Operation of a track unit without proper authority
B. Exceeding limits or unprotected overlap of authority
C. Less restrictive signal indication than required for the intended movement
D. Failure to provide proper protection for on-track personnel
E. Uncontrolled moving of on-track equipment
F. Over speed coupling of equipment containing dangerous goods (DG).
G. Failure to protect hand operated main track switch
H. Unprotected main track switch left in abnormal position
I. Operation of equipment by unauthorized or unqualified person
J. Railway safety devices that have been tampered with
K. On-track equipment being operated in excess of 10 mph over authorized speed
L. Employee who becomes incapacitated for any reason
M. Livestock or wildlife killed or injured by on-track equipment
N. Suspicious or dangerous activities on or near tracks or adjacent property
O. Slides, washouts, or other on-track obstructions which may affect safe operations
P. Damage or vandalism to equipment, signals, or structures which may create a safety hazard
Q. Any person riding in locomotives or other non-passenger equipment, excluding applicable employees
R. Non-controlled Right of Way Fires
S. Near miss incidents

b) The employee making the initial report must complete the appropriate accident report(s) as soon as possible after the occurrence and submit it to his/her immediate supervisor.

c) Employees must immediately take whatever action may be required, and which can be performed safely, to protect the safety of persons, property, or the environment, including:
- Track protection,
- Injury assistance,
- Fire control,
- Evacuation,
- Control of leaks or spills.

d) If safe to do so, employees are to remain at the scene of accidents until released by the RTC, their supervisor or another person in charge at that location.

e) Initial accident/incident information should include, where applicable:
- Date & time of occurrence;
- Car, or track unit numbers involved;
- Compass direction of travel & estimated speed;
- Location by mileage and subdivision;
- Type of track (main, yard, siding, industry, etc.);
- Name or designation of non-main track;
- Name of railway or company operating the equipment;
- Name of railway or company who owns or maintains the track;
- Emergency application type if applicable (crew, TIBS, UDE);
- Number of persons injured or killed;
- Identity of injured or killed (employee, third party, etc.)
- Description of any dangerous goods involved or released;

- Initial, number, and position of equipment involved;
- Description of any damage to equipment;
- Description of damage to any track, structure, or property;
- Brief description of the occurrence;
- Names, address, phone numbers of any witnesses;
- Names, employee number, and position of applicable employees;
- Name of person making the report.

Do not delay reporting because some information is missing.

2.2 PROTECTING THE ACCIDENT SCENE

a) Employees have an obligation to protect any evidence relevant to a reportable accident, pending the Transportation Safety Board's (TSB) decision to investigate.

Employees who may be on the scene or are otherwise involved with an accident should note all relevant facts, so that they will be in a position to give information when the matter is investigated.

In the event of an injury to any person, including employees, passengers, trespassers, and others, the names and addresses of potential witnesses in the immediate vicinity should be procured at once.

Employees should examine and report on the condition of the track, structures and equipment where the accident occurred. Time of the accident should be noted.

b) If the TSB decides to investigate:
(i) Employees on the scene will be notified as soon as possible by the RTC or their supervisor;
(ii) The TSB investigator must first communicate his/her arrival at the site to the person in charge;
(iii) All evidence at the site must be protected until released by the TSB investigator;
(iv) Employees must ensure that there is as little interference with the site as possible, except that:
- Emergency measures must be taken to protect safety of persons, property, or environment, and
- Before equipment or other pieces of evidence are moved, a record of the conditions must be taken by the person who directs, supervises, or arranges such action, including pictures, sketches, measurements, etc.

Note: If there is any doubt about what actions should be taken, communicate with the RTC, the TSB investigator, or other person in charge of the site.

c) TSB investigators can limit access to an accident site, even to railway employees. However, they must:
1. Identify themselves upon arrival;
2. Notify the GWCI person in charge when the investigation is complete and all TSB staff are clear of the site; and
3. Minimize the disruption to transportation services.

TSB investigators have extensive powers to conduct their investigations and GWCI employees must cooperate fully with them.

Employees must not provide the TSB or other persons, except company officers, with any opinion, assumption, or impression as to the cause of an accident, including speeds, distances, etc.

d) Where an employee is served with a notice in writing by a TSB investigator, the employee must comply with the notice and give such evidence as the investigator requests.

Where an employee is required by a Transport Canada Safety Inspector to attend for questioning, the employee must do so and must comply with any reasonable request. In either case, the employee must, upon receipt of the notice, advise his/her supervisor.

e) At the scene of an accident or incident, if requested to give a statement to any government authority, employees should:

- Verify the other person's identification before providing any information.
- Provide only the facts as you know them. Do not offer opinions, assumptions, or impressions.
- Contact your supervisor if you are uncertain whether to respond to requests for information or any particular line of questioning.
- Always advise your immediate supervisor or the RTC when you have provided information to outside authorities.

f) In all incidents, provide responding authorities with only the following information:

- Your name, address, date of birth and profession;
- Track unit identification and equipment numbers involved in incident;
- The number of cars attached;
- The location and time of the accident;
- The direction the equipment was travelling;
- The direction in which the vehicle or pedestrian was travelling, if observed;
- The position of vehicles or pedestrians prior to and at time of incident;
- Whether the track unit was moving or stationary at the time of the accident;
- The location at which the track unit or equipment came to a stop;
- A description of the weather conditions and visibility at the time of the accident;
- Whether any lights were lit and whether the horn was activated;
- The location of each employee at the time of the accident.

Notes:

(v) Do not provide signed statements, unless required by a company officer.

(vi) Do not give statements or information to anyone who does not have a legal right, such as the news media, attorneys, insurance representatives, etc.

(vii) Give statements only to legal authorities (TSB or Transport Canada investigators, Police, or Coroner).

2.3 INJURIES OR FATALITIES

a) When an accident involving serious personal injury has occurred, the local police and any required medical support should be immediately summoned to the scene.

b) When a fatality has occurred due to any cause, employees must report the fact immediately to the RTC or their immediate supervisor. The RTC or Supervisor must notify the local police, and a coroner, medical examiner, or other appropriate investigator, and if available, a Company approved medical examiner.

c) When injuries and fatalities involve the general public:
   (i) Care should be taken not to disturb any wreckage more than is necessary to provide first aid or permit moving of the equipment and machine.
   (ii) If it is necessary to move a body, crews must consult with the RTC who will advise police as to their intention and reason.
   (iii) A person must be left in charge to advise police, coroner, TSB investigator, or Transport Canada inspector of the original position in which the body was found.
   (iv) When an employee has been directed to remain stationary following any fatal accident, they must remain as long as necessary for the police or coroner to conduct their investigation
   (v) To avoid delays, arrangements may be made through the RTC for the police or coroner to take any required statements to be given on arrival at the next destination terminal in the presence of a railway operating officer.

d) When injuries and fatalities involve employees:
   Paragraph (c) does not apply, instead Section 127 of the *Canada Labour Code* and for the province of Quebec, *CNESST Lois, règlement, normes et politiques* applies which provides that:
   "where an employee is killed or seriously injured in a work place, no person shall, unless authorized to do so by a safety officer, remove or in any way interfere with or disturb any wreckage, article, or thing related to the incident except to the extent necessary to:
   - Save a life, prevent injury, or relieve human suffering in the vicinity;
   - Maintain an essential public service; or
   - Prevent unnecessary damage to or loss of property."

NOTE: For purposes of this item, "serious" injury includes an occurrence which creates a substantial risk of death or which causes serious permanent disfigurement or protracted loss or impairment of the function of any bodily member or organ.

2.4 VEHICLE AND TRESPASSER ACCIDENTS

a) When an accident occurs that involves a vehicle or a pedestrian (at grade crossing or otherwise), the following facts should, when applicable, be immediately drawn to the attention of the driver, occupants, outside witnesses, and/or other employees:
   - The track unit horn activated;
   - Headlight and/or ditch lights illuminated;
   - Any other lights illuminated;
   - Crossing warning devices including lights, bells, and gates are functioning.

b) In addition to the information required in item 2.1 paragraph (e), the following information should be recorded:
    - Type of crossing warning device and if activated;
    - Whether or not the crossing is equipped with gates;
    - Direction of operation prior to impact of vehicle;
    - Distance beyond crossing where the on-track equipment stopped;
    - Point of impact on on-track equipment and/or vehicle;
    - Damage to vehicle;
    - Position of vehicle after mishap;
    - Whether vehicle headlights were on;
    - Whether the vehicle's windows were clear, dirty, open, closed, steamed or frosted;
    - Whether the vehicle's radio or stereo was on or off, and approximate volume;
    - Make, type, and license number of the vehicle;
    - Name, address, sex and age of vehicle owner, driver, and occupants;
    - Position of each occupant in vehicle;
    - Was each occupant wearing properly buckled seat belts?
    - Identification of any casualties;
    - Any evidence of intoxicants;
    - Description of any skid marks on the roadway;
    - Weather and road conditions;
    - Any restrictions to visibility along sightlines for the on-track equipment and/or the vehicle;
    - Names, addresses, phone # number of witnesses;
    - Name and address of attending coroner and/or investigator.

c) In addition to the requirements in paragraphs (a) and (b), where an accident involves a pedestrian, the following information should be recorded:
    - Did the pedestrian appear to be aware of the approaching on-track equipment, and at what distance prior to contact?
    - Describe any actions or behavior that suggested the pedestrian was aware of the approaching on-track equipment.
    - Did the pedestrian attempt to avoid the accident?
    - Did the pedestrian appear distracted by other events?
    - Was the pedestrian wearing clothing or a headset that may have impaired hearing?
    - Describe any actions or behavior which may suggest that the pedestrian was aware of the on-track equipment but deliberately declined to take evasive action.

d) In addition to the requirements in paragraphs (a), (b) and (c), where an accident involving a pedestrian or trespasser occurs at a location other than a crossing, the following information should also be recorded:
    - Is the right of way fenced at this location on one or both sides?
    - Is there an obvious reason for trespassing in this area, such as a school or shopping area with no crossing nearby?

2.5 ENVIRONMENTAL INCIDENTS

a) An environmental incident includes the accidental or unintended release of any dangerous or non-dangerous substance into the natural environment, including land, water, or air.

Immediate reporting to the RTC is required for all environmental incidents.
In addition to the information required in item 2.1 paragraph (e), the following should be reported:

- Description of the location and the surrounding environment, such as near water, near wetlands, near a drainage or sewer system, in a park, nature reserve, or other possibly sensitive area.
- Type and estimate of the quantity of the substance released
- Details of any immediate action taken, or proposed to be taken, to control the release.

b) Livestock and wildlife that are killed or injured by on track equipment must also be reported. Wildlife, for reporting purposes, would include most large species (elk, moose, bears, wolves, coyotes, cougars, etc.), and also any threatened or endangered species, such as eagles. If in doubt as to the species or the reporting requirement, make the report.

In addition to the information required in item 2.1 paragraph (e), the following should be reported:

- Species of animal if known;
- Behavior of animal at the time of collision (standing, running, lying down, etc.);
- Weather conditions;
- Estimated snow depth, if applicable;
- Estimated speed of operation;
- Line of sight (straight or curved track and/or obstructions);
- Any measures taken to avoid collision (horn, bell, lights turned on or dimmed, braking, etc.).

c) Fires along a railway right of way may also have a negative impact to the environment and must be reported. In addition to the information required in item 2.1 paragraph (e), the following should be reported:

- Description of fire & whether found or set.
- Any measures taken to control or extinguish the fire.

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SECTION 3 – REGULATORY REQUIREMENTS

3.1 RAILWAY SAFETY ACT (RSA)

Note: Railway Equipment as used in the Railway Safety Act includes "Equipment" and "Track Units" as defined in the CROR.

Under Sections 27 and 28, of the Railway Safety Act, Transport Canada has appointed a number of "Railway Safety Inspectors." Each inspector has an identification certificate, which will also state the inspector's area(s) of competence. Upon presentation of this certificate, Railway Safety Inspectors may (within the inspector's area of competence) enter any "railway work or railway equipment", whether or not in operation, to inspect such railway work or railway equipment.

An Inspector may forbid or restrict the use of a line of railway or rolling stock or an operating practice if he considers that such use or practice poses an immediate threat to safe railway operations.

Employees must give the Inspector all reasonable assistance in the course of the inspection and must comply with all reasonable requests; it is an offence not to.

3.2 RAILWAY SAFETY ADMINISTRATIVE MONETARY PENALTIES REGULATIONS

(SOR/2014-233 October 10, 2014)

3.3 DESCRIPTION

The Regulations include schedules that set out which provisions of the Act and its subordinate instruments are designated. There is one schedule for each of the following: The *Railway Safety Act*, the *Mining Near Lines of Railways Regulations*, the *Railway Prevention of Electric Sparks Regulations*, and the current *Railway Safety Management System Regulations*.

3.4 TRANSPORTATION SAFETY BOARD (TSB) ACT

TSB Investigators may;

- Limit access to the site or location relevant to their investigation, but should minimize any disruption to transportation services;
- Enter and search any place relevant to the investigation with the consent of the person in charge. (The TSB investigator does not need such consent if he has a warrant. However, in exceptional circumstances where delay to obtain a warrant would threaten human life or safety or destruction of evidence, the investigator may exercise these powers without a warrant.)
- Seize and test evidence, but must take reasonable steps to allow the owner of the evidence to be present during the testing. Such evidence must be returned to the owner as soon as possible, e.g. following the test.
- By written notice: demand documents, the release of medical records or the performance of an autopsy, or compel a person to give evidence or take a medical examination.

3.5 ROLE OF RAILWAY OFFICERS

a) Railway officers must cooperate with TSB Investigators, but they still have a duty to respond to an occurrence to protect the safety of the public, employees and property and to determine the cause of the occurrence and start clean- up operations

b) When contacted or approached by a TSB Investigator, railway officers should
   - Ask what equipment or information the TSB Investigator is examining;
   - When statements are required, arrange a convenient time, to minimize disruption to service;
   - When company documents are required, ensure their confidentiality before release. Maintain copies of documents if necessary to release the originals to TSB.

3.6 OBSERVER STATUS REQUIRED

a) Railway officers with a direct interest in a TSB investigation must request observer status from the TSB. (Railway officers do not automatically enjoy observer status and therefore must request it at the beginning of an investigation.)

b) Observers may attend the scene of an accident or incident, examine documents, etc. However, unless specifically authorized by the TSB, they cannot attend an interview of a witness during an investigation

3.7 GENERAL LEGAL REQUIREMENTS

a) Employees are required, at all times, to comply with all laws of the nation in which they are required to travel, including, but not limited to, laws pertaining to customs and excise duties, immigration, the control of illegal substances and all criminal laws.

b) Employees must not bring any goods that are subject to any form of import duty across international borders.

c) The Criminal Code of Canada prohibits the impaired operation of railway equipment. If convicted, in addition to other fines and/or prison sentences, a person can be prohibited from operating railway equipment for a period of up to 5 years.

d) Firearms policy:

Firearms (loaded or empty) or knives with a blade longer than 3 inches are not permitted on G&W property, except for designated persons or employees performing authorized work when authorized to do so. In this case, a written authorization from a designated manager is required and the person should have in his possession all the pertinent government permits when required.

3.8 CONNIVANCE IN ILLEGAL TRANSPORTATION BY RAILWAY EMPLOYEES

Section 401 of The Criminal Code RSC 1985, c. C-46 reads:

a) Everyone who, by means of a false or misleading representation, knowingly obtains or attempts to obtain the carriage of anything by any person into a country, province, district or other place, whether or not within Canada, where the importation or transportation of it is, in the circumstances of the case, unlawful is guilty of an offence punishable on summary conviction.

b) Where a person is convicted of an offence under subsection (1), anything by means of or in relation to which the offence was committed, upon such conviction, in addition to any punishment that is imposed, is forfeited to Her Majesty and shall be disposed of as the Court may direct."

3.9 SECTIONS 159 AND 160 OF THE CUSTOMS ACT OF CANADA

Your attention is also directed to Sections 159 and 160 of the Customs Act of Canada, reading as follows:

a) Section 159 reads;
"Every person commits an offence who smuggles or attempts to smuggle into Canada, whether clandestinely or not, any goods subject to duties, or any goods the importation of which is prohibited, controlled or regulated by or pursuant to this or any other Act of Parliament"

b) Section 160 reads in part;
"Every person who contravenes or commits an offence under section 159, is guilty of an offence punishable on summary conviction and is liable to a fine of not more than two thousand dollars and not less than two hundred dollars or to imprisonment for a term not exceeding six months or to both fine and imprisonment; OR is guilty of an indictable offence

and is liable to a fine of not more than twenty-five thousand dollars and not less than two hundred dollars or to imprisonment for a term not exceeding five years or to both fine and imprisonment."

c) This is submitted for your information and guidance and you will note that the consent, connivance, aid or assistance of any railway employee in illegal transportation constitutes an offence for which a prison term is an effort to prevent violation of the law and every facility should be given officers of the Government in their investigations.

3.10 LAWS GOVERNING WILDLIFE

Under various Provincial laws and those governing National Parks, all wildlife are the property of the Crown. It is illegal for any person to remove or to be in the possession of wildlife or wildlife parts without proper authorization documents.

Do not remove any animal carcass from the right-of-way. However, if it is necessary for safety reasons, an animal carcass may be moved up to 15 feet off the grade.

Refer to Section 2, Item 2.5, for the reporting procedures when wildlife are injured or killed as a result of coming in contact with railway equipment.

SECTION 4 – QUALIFICATIONS

4.0 GENERAL

a) Recertification of all operating rules and Transportation of Dangerous Goods (TDG) shall be at intervals not exceeding three (3) years from the date of the last examination.

b) When any employee is required to or volunteers to relieve a position, he/she must meet the requirements of and qualifications for the position.

4.1 RULES QUALIFICATIONS

a) The person in charge of a track unit must possess a valid certificate of rules qualification.

b) Operators of machines with coupler equipped to handle equipment must be qualified at the "D" or Foreman level and be trained in air brakes procedures.

c) Employees performing duties as Groundman and related to the handling of equipment with track units must be qualified as a minimum at the "D" or Foreman level.

d) Except as required in paragraph (b); contract operator of hi-rail type or other railway equipment, being used only under the provisions of Rules for the Protection of Track Units and Track Work, need not be rules qualified. They must, when operating the leading track unit in the direction of travel, be qualified or under the direct supervision of a GWCI employee who is also, at a minimum, in possession of a valid "D" or Foreman card.

e) Any operator (driver) of a multiple-unit rail grinding train must, when running between grinding sites, have passed the required examination in the CROR which includes qualification in Rules for the Protection of Track Units and Track Work and be in possession of a valid "A" or Foreman level certificate of rules qualification.

4.2 DANGEROUS GOODS

All persons involved in the transportation of dangerous goods ("TDG") other than TDG exceptions shall have completed TDG training and when on duty, possess a valid TDG qualification card.

4.3 MEDICAL REQUIREMENTS

a) All union, management employees and contractors holding Safety Sensitive Positions ("SSPs") must have successfully completed the required pre-employment or pre-placement medical assessment, as well as hearing and vision testing.

b) All related medical records will remain confidential between you, your physician and Occupational Health Services. Supervisors will not have access to medical records. They will only receive a notification from Occupational Health Services that you are fit, fit with restrictions or conditions, or unfit for service.

c) Any employee who is required by their physician or by Occupational Health Services to wear glasses or contact lenses shall wear them while on duty.

d) Any employee, union or non-union, who is required to perform any of the following functions, will be considered to occupy a Safety Sensitive Position.
    1. Track foreman, track supervisor;
    2. S&C Maintainer, S&C Technician;
    3. Snow plow operator;
    4. Bridge tender;
    5. Any other employee required to perform the duties from 1 to 4.

SECTION 5 – RADIO PROCEDURES

5.0 GENERAL

a) Only authorized radio equipment may be used. Citizen band radios must not be used to direct the operation of track units.

b) Only authorized technicians are permitted to make technical adjustments to radio equipment.

c) No employee shall transmit any unnecessary, irrelevant or unidentified communication, nor utter any obscene, indecent or profane language via radio.

d) Employees must not transmit or cause to be transmitted any false or fraudulent distress signal, call or message, or knowingly interfere with or obstruct any radio communication.

e) The radio must be properly adjusted so that calls may be received by all occupants in the cab.

f) When there is a possibility of misunderstanding in areas of different time zones, then the time zone should be given after the time.
Example: 0045 AST: Nought nought forty-five, Atlantic Standard Time

g) Time table footnotes will indicate:
- The channel to use to contact the Rail Traffic Controller or other parties;
- The channel to stand by on for two way conversations; and
- The channel to use in case of emergency.

Procedures to follow in case of emergency will be found in time tables or special instructions.

5.1 CALLING PROCEDURES

a) Trains or transfers will be identified by:
- Their designation as per the SSI to Rule 134 (e.g. 6032 East) or
- By their train schedule identification (e.g.912-21, 510, etc).

Engines will be identified by their engine number.

b) The following are proper examples when a radio communication is initiated.

Example of a train calling a foreman:

Initiating
"HCRY Foreman Brown, this is Engr 3011 East, OVER."
Responding
"HCRY Engr 3011 East, this is Foreman Brown"

Example of a CN train calling a foreman:

Initiating
"HCRY Foreman Brown, this is Engr CN 4035 East, OVER."
Responding
"Engr CN 4035 East, this is HCRY Foreman Brown"

c) Except as prescribed by CROR Rule 123, instructions and messages received by radio must be acknowledged or repeated to the sender by the person receiving them. If necessary, the receiving person shall request the sender to repeat or clarify the transmission. An acknowledgement of receipt must not be given until the receiving person is certain that the transmitted message or information has been completely and correctly received and understood.

d) A radio conversation must always be ended by both the receiving person and the sender transmitting his/her own name or identification, followed by the word "OUT".
Example: "Foreman Paul Mercier...OUT." "Locomotive engineer 3801 West...OUT."

e) When required to change radio channels during a tour of duty, each person must be advised of the intention to change and all must change channels simultaneously.

f) As soon as possible after changing to the new channel, each radio must be tested to ensure all radios have been changed to the correct channel.

5.2 Radio Communication

a) Radio communication shall be made clearly and concisely and in accordance with the following requirements;
1. Numbers may be pronounced in full or their digits may be stated separately.
2. A decimal point shall be indicated by the word "point."
3. The twenty-four hour system shall be used for expressing time.

b) Except in the case of an emergency, employees shall not initiate a radio transmission on a channel that is known to be in use.

c) When a radio communication is initiated, the employee shall:
1. State the railway;
2. State the name or occupation of the person being called and/or, if applicable, the designation of the train, engine or track unit being called;
3. Identify himself/herself, and, if applicable, the train, engine or track unit designation; and
4. End the initial call with the spoken word "OVER."

d) Where an employee responds to an initial call, he/she shall provide the name of the railway, his/her name and/or occupation and if applicable, the train, engine or track unit designation.

e) Each party to a radio communication shall end their final transmission with the spoken word "OUT."

SECTION 6 – OPERATION OF TRACK UNITS

6.1 SPEED

A track unit must not exceed:

a) TRACK UNIT SPEED (unless authorized to operate as a train) as defined in CROR;

b) 4 MPH when moving over a power-operated or dual control switch or derail and prepared to stop quickly should the route be unexpectedly changed;

c) 10 MPH when moving over a hand operated switch;

d) 30 MPH for track inspection vehicles and 25 MPH for all other track units unless a higher maximum speed authorized for that track unit is posted on the track unit or in accompanying instructions;

e) 45 MPH under any circumstances.

f) Unless otherwise specified by special instruction, the maximum speed, when reversing, will be Track Unit Speed not exceeding 15 MPH.

6.2 DISTANCE BETWEEN TRACK UNITS

a) When travelling to and from a worksite, a minimum distance of 300 feet must be maintained between track units travelling more than 25 MPH, and a minimum distance of 150 feet must be maintained between track units travelling 25 MPH or less. In all cases the operator of the preceding track unit must signal the following track unit before stopping.

b) When working, a minimum distance of 50 feet must be maintained between track units unless clear communication is established between operators.

6.3 ROAD CROSSINGS

When Hi-Rail vehicles are being removed from or placed on the track, at or near a grade crossing, employees must warn the traveling public by:

a) Displaying 360 degree flashing light and four way emergency flasher, if equipped.

b) Wearing high-visibility reflective apparel and appropriate personal protective equipment.

c) Employees must watch for highway vehicles and provide flagging if conditions require such an action.

d) When road traffic volume warrants, road traffic must be stopped before attempting to mount or dismount the track with the hi-rail vehicle. This can be accomplished by:
    1. Stopping traffic in each direction and requesting the motorist to hold his position until the hi-rail is clear of the crossing, or
    2. Where equipped, manually activating the automatic warning system.

Track Units & Hi-Rail Vehicles at Highway-Rail Grade Crossings

Any track unit or hi-rail vehicle that may not activate track circuits must be operated with caution when approaching highway-rail grade crossings. This includes giving highway traffic preference and in addition:

a) Approaching grade crossings under complete control and being prepared to stop.

b) A track unit must not obstruct a highway-rail grade crossing until the way is seen to be clear by the operator of the track unit.

c) A track unit must be brought to a full stop before proceeding over a grade crossing when the view of the approach is obstructed or when traffic is heavy.

d) If the operator of the track unit after stopping cannot determine that the way is clear must only proceed over the crossing under the protection of a flag-person, except a track unit being operated by one person alone may, after stopping, proceed with extreme caution.

Figure 1 - Stop Sign

The STOP paddle shall have an octagonal shape on a rigid handle.
STOP paddles shall be at least 450 mm (18 in) wide with letters at least 150 mm (6 in) high. The background of the STOP face shall be red with white letters and border. When used at night the STOP paddle shall be reflectorized.

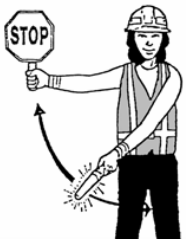
Note: All traffic control equipment, including signs and personal protective equipment must be kept clean and in working condition.

To Stop Traffic

(A) By day

- Face Traffic
- Display "STOP" paddle in right hand.
- When approaching vehicle has almost stopped use left arm to indicate stopping point.

(B) By night



- Face Traffic
- Display static reflectorized "STOP" paddle in right hand and flashlight with red signaling baton attached in left hand.
- Move right arm from 3 to 6 o'clock
- When approaching vehicle has almost stopped, use flashlight/baton to indicate stopping point.

6.4 SWITCHES

a) Track units must not stand on the points of a switch, derail or movable-point frog while in "POWER" position. In addition, track units must not stand on electric switch with eaters.

b) Track units must not be operated through a spring switch or semi-automatic switch in trailing position. The switch must be operated by hand.

6.5 DIMENSIONAL TRACK UNITS

Dimensional track units will be identified with a warning label indicating the dimensional classification.

a) Operators must be familiar with the contents of dimensional instructions located in the operating cab.

b) The operator must inform the foreman providing track protection of the dimensional classification.

c) Prior to permitting a dimensional track unit(s) to occupy a main track, or a track adjacent to a main track, the foreman protecting must advise the RTC of the:
   - Dimensional classification,
   - Track limits the track unit will occupy, and
   - Any other information that may be required.

d) Prior to entering a D L Zone, the foreman must advise the responsible employee of the dimensional classification of the track unit, and shall be governed by instructions from the responsible employee.

e) The foreman responsible for the protection must obtain permission from;
   - The person responsible for the yard, prior to storing the track unit in yards.
   - The RTC, when storing the track unit adjacent to a main track or adjacent to a siding.

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SECTION 7 – STORING TRACK UNITS

7.1 STORING TRACK UNITS

NOTES: Dimensional track units must comply with Section 6, item 6.5 (e) in addition to the following. Those machines with couplers must be secured as per Section 10 item 10.1 coupled to equipment.

Track units, when removed from the track must not be left where they may be struck by passing movements or snow removal equipment or where they may create a safety hazard.

a) When track units are stored on-track, the track unit nearest to each switch or crossing must be chained and locked to the rail, and blocked. In addition, if a cart is nearest to the switch or crossing, the cart must be chained and locked to the rail as well.

b) When track units are stored on non-main track, they should be protected under the provisions of CROR Rule 841 (a) (i) "special locks" and the RTC or the employee (if any) responsible for the yard tracks, advised in all cases.

   Otherwise the RTC must be advised to issue a GBO advising all movements of the location of the track unit to ensure full protection.

   NOTE: The RTC cannot issue GBO protection as specified above, at locations where there are movements operated that cannot be controlled by the RTC.

   When it is not possible to use special locks on all switches, and the RTC is unable to issue a GBO, a stop sign with the written word STOP must be placed between the rails or on the track unit not protected with a special lock.

c) When absolutely necessary to store track units in tracks connected at both ends and designated as Wayside-Detector set-off points, such track units must be placed immediately beyond the fouling point to the switch nearest to the Wayside Detector. The switch nearest to the Wayside Detector must be locked with a special lock, and the provisions of paragraph (b) apply to the end of the track unit not protected by the special lock.

   When necessary to store track units in stub-end tracks, track units must be placed to provide for the maximum length of track available for the setting off of cars. The provisions of paragraph (b) apply.

   Note: There should be at least 350 feet of clear track remaining on tracks designated as a Wayside detector set-off point on which defective cars may be set off. If less than 350 feet of clear track remains, the RTC must be advised.

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SECTION 8 – POLICY FOR OPERATING MOVEMENTS OVER UNIDENTIFIED TRACK OCCUPANCY (UTO)

8.1 POLICY FOR OPERATING A MOVEMENT OVER UNIDENTIFIED TRACK OCCUPANCY

Note: The provisions of this policy also apply in controlled interlockings.

a) When ES (Engineering Services) personnel arrive and are ready to occupy the track in order to commence their investigation, they MUST be given priority over any further movements within the affected limits.

b) As soon as possible, the ES personnel will advise the RTC what the nature of the problem is, and whether or not a broken rail is involved. ES personnel involved will work with the RTC to minimize the delay to "priority trains" which can be safely operated through the problem area.

c) Movements must NOT be authorized to operate at any time, in any territory, if it is KNOWN that there is an unrepaired broken rail, except under the direct supervision of a QUALIFIED ES employee.

d) Movements may be operated over a broken rail which has received temporary repairs, in accordance with the instructions of a QUALIFIED ES employee.

Note: "QUALIFIED ES personnel" in this policy refers to a person qualified in Operation over Rail Breaks & Pull Aparts.

e) When a movement operating at restricted speed ("on the lookout for broken rails") discovers a broken rail, the movement must stop immediately and await the arrival of a QUALIFIED ES employee at the site to determine if the movement may continue under the supervision of such qualified ES person, or if the rail must receive temporary or permanent repairs first. The movement may then only resume once permission has been received from the RTC.

In the application of steps (c) to (e), the movement must be restricted to protect against the foreman in accordance with Rule 567.1, 567.2, or 618.1 and have instructions from the foreman in accordance with those rules.

8.2 DIMENSIONAL EQUIPMENT ON A MAIN TRACK

a) Before any dimensional equipment may be placed on a main track, permission of the responsible RTC must be secured.

b) When requesting permission from the RTC, the employee doing so must supply the following information:
- Car initials and number,
- Classification (such as D3/W-03, or D3-D7/W-03-07),
- Specific Restrictions, if any,
- Protection Notice file number,
- Any other information that may be required.

c) Before setting out dimensional traffic (D1/W-01 or greater), authority must be obtained from the RTC or person responsible for the territory.

d) When dimensional traffic is set out, employees must confirm the location of such traffic with the RTC or yardmaster before leaving that location.

e) If communication with the RTC or yardmaster is not possible, dimensional traffic must not be set out on a track adjacent to a main track or adjacent to a siding. Communication must be made with the RTC at the first opportunity.

f) RTC advises of Restricted Meet: When required to conduct a restricted meet in order to move past movements, equipment, or other permissible wide traffic, operation must be stopped and inspection made to ensure that adequate clearance exists before proceeding.

Note: A Restricted Meet is not required at locations where tracks diverge onto separate roadbeds.

SECTION 9 – HANDLING EQUIPMENT

9.0 GENERAL

a) Only qualified employees may perform duties involving handling equipment with machines with couplers. Qualified employees performing such duties must have a copy of the applicable instructions accessible while on duty.

b) Only those machines with coupler with approved devises and railway air brake systems may be used for handling equipment.

c) All operation involving machines with coupler handling equipment must be made with the equipment properly coupled.

d) All equipment must have its air brake system fully charged and it must be known to be in proper operating order prior to moving.

e) Equipment with either defective hand brakes or air brakes must not be used. Such equipment must be secured and reported to the proper authority as soon as is practicable.

f) Employees are prohibited from riding on moving equipment for the purpose of operating hand brakes.

g) Employees are prohibited from riding on moving equipment or machines with coupler in the following locations:
- Between equipment or equipment and a machines with coupler;
- On flat cars;
- In gondolas or in the wells of container cars;
- On the deck of bulkhead or centre-beam type flat cars;
- In/on the end cage of a hopper type car;
- On the leading end platform of a tank car;
- On the roof of any equipment; and
- On the deck or sill step of any machines with coupler.

h) When riding equipment, employees must be alert and must watch out for any points of restricted clearance. Unless clearance is known to be sufficient, operation must be stopped and clearance verified before proceeding. See CROR General Rule D, E and F.

9.1 COMMUNICATION AND SIGNALING

a) When handling equipment, radio is the preferred method of communication.

b) If necessary, hand signals may be used.

Note: If any hand signals, other than those prescribed by CROR Rule 12 will be used, their use and meaning must be clearly communicated and fully understood by all employees involved prior to any move being made.

9.2 CAR INSPECTION

Prior to handling any equipment, such must receive a standing inspection on both sides for these hazardous conditions:

- Car body leaning or listing to the side,
- Car body sagging downward,
- Car body positioned improperly on the truck,
- Object dragging below the car body,
- Object extending from the side of the car body,
- Plug door open or any door out of guide,
- Broken or missing safety appliance (e.g. handhold, ladder, sill step),
- Insecure coupling,
- Brake that fails to release,
- Missing "end cap bolt" on a roller bearing,
- Overheated wheel or journal,
- Broken or cracked wheel,
- Any other apparent safety hazard likely to cause an accident or casualty before the car arrives at its destination,
- Lading leaking from a placarded dangerous goods car,
- Obvious leakage or spillage from grain cars.
- Suspicious or dangerous objects, including Improvised Explosive Devices (IED's).

If any hazardous condition is found during the inspection, then secure the car and report to the proper authority.

9.3 COUPLING TO EQUIPMENT

a) Prior to coupling to equipment, machines with couplers must be stopped at least one car length (50 feet) from the equipment to be coupled to. Once 3 steps protection has been confirmed, Groundmen must ensure that:
   1. Couplers are properly aligned;
   2. At least one of the coupling knuckles is opened;
   3. The area around the equipment is clear of debris or other obstructions and no employees are foul of the equipment;
   4. Sufficient hand brakes are applied to the standing equipment; and
   5. When coupling, a speed of four miles per hour must not be exceeded.

Note: If required to go between (to cross) equipment, in addition to 3 steps protection, a separation of 100 feet is required.

b) Any slack must be taken up slowly to ensure that a proper coupling has been made prior to moving.

9.4 AIR BRAKE TESTING REQUIREMENTS

Note: Air brake systems on machines with couplers with coupler and equipment must be tested prior to initially moving and in accordance with current instructions.

a) Machines with coupler Air Brake Test must be performed
   1. At the start of the shift;
   2. If a relieving operator was not present for the initial test;
   3. Following any repairs to the machines with coupler's air brake system or related components; and
   4. If the machines with coupler has previously been left unattended.

b) Rail Car Air Brake Test must be performed:
   1. On any equipment being handled for the first time during the shift; and
   2. Prior to handling equipment which has previously been left unattended.

c) Running Air Brake Tests are required:
   1. When initiating point-to-point track travel operations;
   2. Prior to descending either long or heavy grades; and
   3. At periodic intervals during long track travel operations so as to monitor brake system performance.

d) Snow plow Brake test
   1. Following the train brake test, and before starting a snow plow operation, an emergency application of train brakes must be obtained from the operator's cab of the snow plow.

9.5 TRACK TRAVEL OPERATIONS

a) A Job Briefing must be conducted prior to moving and must include at a minimum:
   1. Distance to be traveled;
   2. Track or tracks to be used;
   3. All aspects of the applicable track protection;
   4. The method of communication to be used;
   5. Maintaining separation as required by Section 6, item 6.2 if following other machines with couplers with coupler and/or track units.
   6. Stopping distances required at various speeds for the consist being handled considering such factors as:
      - Traction conditions (ie: slippery rail);
      - Presence of grade over the route to be traveled; and
      - Braking performance of the machines with coupler, track unit and equipment.

b) When equipment is being shoved (not headed by a machines with coupler) and the visibility of the machines with coupler operator is restricted, a qualified employee must be in a position

to continually observe the track to be used and to give signals or instructions necessary to control the equipment.

c) In such cases, both employees are jointly responsible to ensure that the speed is properly controlled and that adequate stopping distances are maintained.

d) If any condition is observed that is considered to pose an immediate and serious threat and is beyond the normal braking capability, "emergency stop" must be communicated to the machines with coupler operator.

e) Upon receiving such an instruction, the machines with coupler operator must immediately initiate an emergency air brake application.

f) If a similar emergency conditions where to arise with any machines with coupler / rail car which is equipped with an Engineering Services Personnel Transporter (caboose), the employee observing the condition must immediately activate the emergency brake valve located in the Transporter, so as to initiate an emergency air brake application.

9.6 HANDLING EQUIPMENT – AIR PRESSURE REQUIREMENTS.

The following air brake system requirements are applicable when handling equipment with machines with couplers:

a) Brake pipe pressure must be regulated to achieve a setting of 90 psi with the machines with coupler's automatic brake valve in the release position and the air brake system fully charged;

b) Operation must be brought to an emergency stop if Brake Pipe pressure is reduced to 48 psi or less;

c) Operation must be stopped as quickly as is practicable if Main Reservoir pressure is reduced to less than 15 psi above standard brake pipe pressure; and

d) Main Reservoir pressure must be regulated so as not to exceed 140 psi.

9.7 EN ROUTE INSPECTIONS

If a Wayside detector transmits an alarm or other indications warrant, in addition to the requirements of item 9.3 the following procedures must be followed for the indications received.

a) Overheated Bearings
Inspection Procedure:

- Inspection for suspected overheating must include feeling the roller bearing housing using the 150°C temperature indicating crayon.
- In all cases, inspection must be performed on all equipment.

CAUTION: When using the back of the hand, **DO NOT** physically touch the bearing housing if excessive heat is felt as your hand approaches the bearing housing or axle.

b) Overheated Wheels

A Safety Defect is indicated by heat discoloration on any type of wheel which extends more than 4 inches from the rim into the plate, on both the front face and back face.

c) Hot Wheels

(i) Detection/Description:

- Required to stop and inspect for a hot wheel condition (i.e. stopped at wayside detectors);
- Usually caused by sticking brakes or set hand brakes.

(ii) Safety Defect:

- Brakes that cannot be released.

(iii) Actions taken:

1. Check for sticking air brakes and set hand brakes.
2. If the brakes are successfully released, then perform a pull-by inspection of equipment:
   - Wheels are turning freely, and
   - All skids and shells are detected.
3. If the brakes cannot be released, then the car must be set off at the first available location.
4. Notify the RTC.

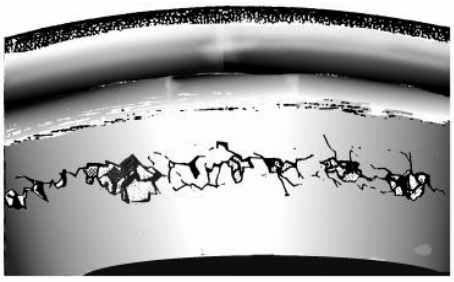
d) Skidded and Shelled Wheels

(i) Detection/Description:

- Detected by observing or being advised of pounding wheels.
- Skidded wheel - a wheel that has flat spots.

Skidded Wheel

- A wheel tread defect where portions of the tread surface are missing.



Shelled Wheel

(ii) Safety Defects:

- A skid measuring more than 2 ½ inches in length.
- Two adjoining skids each measuring more than 2 inches in length.
- A shell spot that is more than 1 ¼ inches in width and 1 ½ inches in length.

(iii) Actions to be taken:

1. If other than a Unidentified Track Occupancy UTO mandated inspection, proceed at SLOW SPEED to the first location where an inspection for skidded and shelled wheels can be made.
2. Closely inspect for skids and shell spots, measuring to determine if safety defects exist.
3. Check for sticking air brakes and set hand brakes.
4. If the brakes are released, then perform a pull-by inspection of the car to ensure:
   - Wheels are turning freely, and
   - All skids and shells are detected.
5. If any safety defects exist, then the car must be set off at the first available location.
6. Notify the RTC.

e) Sticking Brakes

Sticking brakes refers to brake shoes that are against the wheel (applied position) when they should be clear of the wheel (released position).

(i) Indications of sticking brakes:

- A defect indicated by a Wayside Detector.
- Brake cylinder piston in applied position.
- Hand brake chain tight.
- Noise of brake shoes against rotating wheels.
- Odor of hot metal or burning oil.
- Smoke, sparks or fire around wheels and brake shoes.
- Sliding wheels.

(ii) Causes of sticking brakes:

- An insufficient brake pipe reduction to ensure proper release.
- Hand brake not fully released.
- Retaining valve not in direct exhaust position.
- Defective automatic slack adjuster.
- Binding or fouled brake rigging.
- Overcharged air brake systems.
- Excessive brake pipe leakage.
- Defective control valve.

(iii) To release a suspected sticking brake:

1. Ensure the hand brake is fully released.
2. Ensure the retainer is set to direct exhaust.
3. If the brake cylinder is in the applied position, then request the machines with coupler operator to make a full service brake application and then release.
   - If the brakes release on the affected car, then do NOT cut out the car brakes. Proceed.

- If the brakes do not release on the affected car, then cut out the car brakes and bleed the air system.

4. If the brake cylinder is in the release position, and the brake rigging indicates the brake is applied, then attempt to release by applying the hand brake fully and releasing several times. If sticking continues the car must be set out at the nearest available point.

f) Cutting Out Car Air Brakes; car air brakes must NOT be cut out except when:
(i) Any portion of the rigging has failed.
(ii) There is a continual blow at the control valve exhaust or at the pressure retaining valve.
(iii) When pipes are broken beyond the branch pipe cut out cock.

Note: When a brake is cut out at the branch pipe, the combined auxiliary and emergency reservoirs must be completely drained.

9.8 HAZARDOUS CONDITION FOUND

If any hazardous condition is found during the pre- departure or a en route inspection, then:
(i) Correct the condition, or
(ii) Remove the defective car from the consist taking whatever actions necessary to ensure the safe operation of the equipment and the safety of the employees.
(iii) Notify the person responsible for the area.

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SECTION 10 – HAND BRAKE INSTRUCTIONS & PROCEDURES

10.0 GENERAL INFORMATION

Unless otherwise specified by special instructions, the following instructions apply in the application of CROR Rules 62 and 112.

10.1 LEAVING EQUIPMENT UNATTENDED

(i) Single car must ALWAYS be left with the hand brake applied.
(ii) When leaving three or less cars unattended, apply hand brakes to all cars.
(iii) When leaving more than three cars unattended, refer to the handbrake chart in item 3.0 A. (i) or to CROR rule 112 (k)**.**
(iv) Never leave a car with a defective hand brake by itself. It must be coupled to another car with an effective hand brake.
(v) Individual blocks of cars must be secured with hand brakes on each block.
(vi) Where practicable, hand brakes must be applied on the cars which are at the low end of a downward sloping track.
(vii) When leaving equipment in a track equipped with a derail, it should be left as close as practical to the derail (between 50 and 100 feet). This does not include cars which have been spotted for loading/unloading, repair or cars being handled while switching. Operating Rules which govern proximity to public crossings at grade still apply.
(viii) Effectiveness of the hand brakes must be performed as per CROR rule 112 (e) (ii).

Note: If the result of testing the effectiveness of the hand brakes applied indicates hand brakes are not sufficient, additional hand brakes must be applied and redo a test.

10.2 LEAVING EQUIPMENT UNATTENDED – IN A YARD AND NON-MAIN TRACK AT OTHER THAN SIDING, SUBDIVISION TRACK OR HIGH RISK LOCATION

Leaving Equipment Unattended

Apply a sufficient number of hand brakes according to Hand Brake chart.

Hand Brake Chart - Yard and Non-main track at other than Siding, Subdivision track or High risk location

Numbers	Minimum Handbrakes Required
1	1
2	2
3 to 29	3
30 to 39	4
40 (or more)	5
On track with grades of 0.6% equal to or greater, unless protected by an additional physical securement measure, the minimum number of handbrakes required will be determined based on "Minimum Handbrakes Chart for Securing Equipment or Movement Left Unattended" **(CROR 112).**	

10.3 HAND BRAKE APPLICATION PROCEDURES

a) When securing cars handled with air, always reduce brake pipe pressure by at least 20 psi before applying hand brakes. Apply 3 step protection and ensure that the slack has adjusted on cars.

b) Do not attempt to bleed a car off with SERVICE brake applications in effect as this can trigger an undesired air brake release of all other cars.

c) When applying a hand brake, it must be applied fully.

d) Under winter conditions ensure braking surfaces are free of ice and snow.

10.4 WRECK DAMAGE EQUIPMENT

When hand brakes have been damaged due to derailment or mishap, it may be necessary to secure equipment with wheel chocks or chains. In these cases employees will be governed by the supervisor.

10.5 RELEASING HAND BRAKES

a) Hand brakes must be FULLY RELEASED before moving car(s).

b) When releasing a hand brake, it may be determined that it is properly released by ensuring that the bell crank has dropped and that the vertical rod and chain are slack.

Note: Do not depend on brake shoes being clear of the wheels as on many cars the hand brake applies on the "B" end only.

c) Hand brakes must not be released from cars or trains left standing on a grade until the train air brake system has obtained its fully charged state.

10.6 SEPARATION OF EQUIPMENT

a) Before closing the angle cock on the portion to be moved:
   (i) Make a service application sufficient to prevent equipment from moving.
   (ii) The service exhaust must stop blowing at the automatic brake.
   (iii) Advise the Ground man when it is OK to close the angle cock on the portion to be moved.

b) The standing equipment must be left in EMERGENCY with angle cock FULLY OPEN. Employees are responsible to inquire and confirm with each other that the standing equipment has emergency brakes applied. The FULLY OPEN angle cock may be subsequently closed only when:

   (i) The angle cock is FULLY OPEN on opposite end of the equipment, or
   (ii) A machine with coupler is coupled on opposite end of the equipment, and
   (iii) The equipment has been secured with hand brakes in accordance with CROR Rule 112.

When equipment is left unattended on the main track, after the equipment has been properly secured as required by CROR 112 and GEI section 10.7, except when an immediate set out or lift is performed, the employee must notify the RTC of the number of handbrakes applied and confirm that their effectiveness has been verified as required. This instruction applies also to unattended equipment left on a subdivision track and on a siding.

10.7 SPOTTING OF EQUIPMENT - PROHIBITED SIGN

If equipment must be left between the Spotting of Equipment Prohibited Sign and the Road Crossing:

- Prior to leaving equipment between the sign and the road crossing, an employee must advise the RTC of the location and estimated distance between the equipment and the crossing. A GBO will be issued restricting movements entering the crossing account restricted sightline. If equipment is left less than 150 feet from a crossing, then manual protection of the crossing must be provided, unless it is seen to be clear of vehicular or pedestrian traffic.

At locations not equipped with signs:

- The employee must advise the RTC when equipment causing restricted sightlines is left at locations not equipped with a sign and be governed by instructions from the RTC.

Note: This instruction does not apply to equipment spotted for loading or unloading as per CROR Rule 103(e).

LEAVE BLANK

SECTION 11– SPECIAL CONTROL ZONE (SCZ)

11.1 MAJOR DISRUPTION IN CTC OR OCS TERRITORY

Within limits specified by GBO;

a) CTC is withdrawn from service and main track(s) and signaled siding(s) are designated as "NON- MAIN TRACK," or OCS (or OCS/ABS) is withdrawn from service and main track(s) are designated as "NON-MAIN TRACK."

b) Unless otherwise specified, interlocking limits remain in service.

c) Track work may only be protected by Rule 841, in the application of Rule 841 the Site Supervisor must be advised.

d) Track units must receive authorization from the Site Supervisor and comply with track unit speed not exceeding 15 miles per hour.

e) Speed restrictions not protected by Rule 841 may be provided under the provisions of Rule 843. All Rule 843 within the limits remain in effect unless cancelled.

f) All Rule 842 and/or TOP within the proposed limits should be cancelled before the GBO declaring Special Control Zone in effect is issued.

Exception: When necessary to maintain protection, Rule 842 and/or TOP may remain in effect until Special Control Zone GBO is in effect.

Prior to cancellation of the Special Control Zone, the Site Supervisor must inform all concerned, ensuring protection is in place when required, and advise the RTC accordingly.

11.2 S&C TESTING

When a GBO stating that a Special Control Zone for S&C Testing is in effect in CTC, SCZ item 12.1 for major disruptions is modified as follows:

a) Track units must operate at Track Unit Speed, not exceeding 25 MPH.

b) All track units and track work must be authorized by the Site Supervisor in writing as indicated in the sub-foreman instructions before entering, moving or working within the limits. All procedures and associated rules as outlined in Section 8 remain applicable.

LEAVE BLANK

SECTION 12 – PROTECTION OF MAINTENANCE WORK

12.1 NEAR NON-MAIN TRACKS WHERE RULE 105(C) APPLIES.

This purpose of this instruction is to clarify when:

1. The SSI to Rule 803 can be used to protect maintenance work (blowing snow, cutting brush, etc) on or near a non-main track, performed by a track unit, without rendering the track unsafe; and
2. The provisions of the SSI to Rule 803 can be used to protect maintenance equipment on or near a non-main track.

Maintenance equipment is an off-track vehicle equipped or not with hi-rail attachment (e.g. loader, backhoe, other roadway work equipment, etc.).
When protecting under the provisions of the SSI, the vehicle is considered a "track unit".

Notes:

(i) Any work which may make a non-main track unsafe for movements, track units or employees must be protected in accordance with Rule 841.
(ii) Movements are governed by the SSI to Rule 105(c) on non-main tracks unless otherwise indicated in subdivision footnotes. This SSI requires a movement to stop within one-half the range of vision of a track unit.

If you can answer yes to **all** of these questions, then the SSI to Rule 803, or its provisions, may be used for protection.

1. Am I positive that the work is not rendering the track unsafe?
2. Did I advise the local yard supervisor on duty stating the non-main tracks to be occupied or fouled?
3. Will the work allow the operator to frequently observe (at sufficient intervals) the track for potential movements?
4. If not occupying the track, but foul, will the vehicle operator be in position to immediately clear the track on the approach of a movement?
5. Will the vehicle/track unit remain visible at all times? i.e.: not engaged in any activities which may cause the visibility of the vehicle/track unit to be obscured (e.g.: flying snow caused by plowing or brooming).
6. Will I be able to comply with the requirements of the SSI at all times?

If you answered no to any of these questions, or are not certain, then you must use the protection as prescribed Rule 841.

12.2 ON MAIN TRACKS WITHIN CAUTIONARY LIMITS.

This purpose of this instruction is to clarify when:

1. Rule 94 can be used to protect maintenance work (blowing snow, cutting brush, etc.) on or near a main track in cautionary limits, performed by a track unit, without rendering the track unsafe; and
2. the provisions of Rule 94 can be used to protect maintenance equipment on or near a main track in cautionary limits.

Maintenance equipment is an off-track vehicle equipped or not with hi-rail attachment (e.g. loader, backhoe, other roadway work equipment, etc.).
When protecting under the provisions of Rule 94, the vehicle is considered a "track unit".

Notes:

(i) Any work which may make a main track in cautionary limits unsafe for movements, track units or employees must be protected in accordance with Rule 841 or 842.

(ii) Movements are governed by Rule 105(c) on a main track in cautionary limits. Rule 105(c) requires a movement to stop within one-half the range of vision of a track unit and maintenance-of-way vehicle. (New SI for 105 (c))

If you can answer yes to **all** of these questions, then Rule 94, or its provisions, may be used for protection.

1. Am I positive that the work is not rendering the track unsafe?
2. Will the vehicle/track unit remain visible at all times? i.e.: not engaged in any activities which may cause the visibility of the vehicle/track unit to be obscured (e.g.: flying snow caused by plowing or brooming).
3. If not occupying the track, but foul, will the work allow the operator to frequently observe (at sufficient intervals) the track for potential movements?
4. If not occupying the track, but foul, will the vehicle operator be in position to immediately clear the track on the approach of a movement?

If you answered no to any of these questions, or are not certain, then you must use the protection as prescribed by Rule 841 or 842.

12.3 LONE WORKER PROTECTION

NOTE: Lone Worker protection is not applicable in multi-track Class 5 territory (i.e. multi-track territory where freight train speeds exceed 60 mph and passenger trains exceed 80 mph).

a) Employees using lone worker protection must participate in a job briefing with his or her supervisor or other designated employee.
The job briefing must include the lone worker's planned itinerary and the procedures that will be applied to establish protection.

b) Employees performing the tasks in using lone worker protection will comply with the following:

The work must not affect the movement of trains;

- The lone worker must be able to visually detect the approach of a train at maximum timetable speed and be in a place of safety 15 seconds before the arrival of the train;
- Power operated tools and track units are not in use within hearing distance;
- The ability to hear and see approaching trains and track units is not impaired by background noise, lights, precipitation, fog, passing trains or physical conditions;
- The employee has identified a place of safety prior to occupying or fouling the track.

c) An employee who uses lone worker protection must first complete the Statement of On Track Safety. The statement must designate the date and time for which it is valid. The statement must also indicate the maximum authorized speed of trains within the limits and the sight distance that provides the required warning of approaching trains. The lone worker using lone worker protection to establish protection shall produce the Statement of On Track Safety when requested by a company officer.

d) Determination of Adequate Clear Sightline Distance
There are a number of ways in which clear sightline distances can be determined. Employees should select the method that best suits their situation.

1. Track features such as crossings, bridges, overpasses, turnouts, way side buildings, etc., whose mileage is known can be used as reference points to determine the sight distance from the work location.
2. Mileage boards can be used as a reference point to determine the sight distance from the work location.
3. If railway pole lines are present, these can be counted in either direction to obtain sightline distances.
4. If work location is one that is frequented often (such as a turnout, road crossing, railway crossing at grade, etc.), a tape measure, measuring wheel or a track unit with a distance counter can be used to measure sight distances for all future visits to that location.
5. The use of portable hand held optical distance measuring devices may be used to determine clear sightline distances.

Note: Employees may be required to demonstrate how the sightline distance was obtained. This information must be recorded in the job briefing book.

e) Clear Sightline Distance
Lone Worker Protection will NOT be considered as adequate protection where sightlines, train speeds, weather conditions, restricted clearing ability, etc., do not allow sufficient time for the employee being protected to move to and occupy a previously arranged place of safety not less than 15 seconds before a train moving at a maximum speed for that track, reaches that point. Should more time be required to clear the track, it must be added to the 15 seconds.

Example: An employee is working under Lone Worker protection on a track where the maximum train speed is 35 mph (56 km/hr). It is determined that it will take the employee 5 seconds to clear himself and his tools from the track and be in a place of safety after being warned of an approaching train. This 5 seconds must be added to the 15 seconds indicated above.

Therefore, from the table below, the clear sight lines required are found under the 20 second column for a train speed of 35 mph (56 km/hr), or 1030 feet (314 meters). of clear distance in either direction.

MINIMUM REQUIRED SIGHTLINE DISTANCES

Train Speed (mph)	Required Sight Lines (in ft.)			
	15 seconds	20 seconds	25 seconds	30 seconds
10	220	295	370	440
15	330	440	550	660
20	440	590	735	880
25	550	735	920	1100
30	660	880	1100	1320
35	770	1030	1290	1540
40	880	1175	1470	1760
45	990	1320	1655	1980
50	1100	1470	1840	2200
55	1210	1615	2020	2420
60	1320	1760	2205	2640
65	1430	1910	2390	2860
70	1540	2055	2570	3080
75	1650	2200	2755	3300
80	1760	2350	2940	3520

12.4 PROVISION FOR THE USE OF SAFETY WATCH PROTECTION

a) General
Work that is performed on our about the non-main track that does not require positive protection as provided by the Canadian Rail Operating Rules (CROR) may be performed with a Safety Watch.

b) Duties of a Safety Watch
The sole duty of the Safety Watch is to protect working personnel through the observance of all movements and hazards from all directions. The Safety Watch must dedicate their entire attention to this task and never engage in distracting activities, such as the use of non-approved electronic devices. In addition, they are never to engage in any other distracting activities, including the work being undertaken.

c) Job Briefing
Prior to implementing Safety Watch protection, the person in charge, the Safety Watch and the employee(s) being protected must conduct a thorough job briefing to ensure that at a minimum the following items are covered and there is a clear understanding of:

- Who is the designated Safety Watch,
- Where the Safety Watch will be positioned,
- What work is to be performed,
- How the work is to be performed,
- If additional clearing time is required,
- The maximum speed of trains on that track and required sightline distance,
- The sightline distances at the work site,
- Where the workers will clear on the approach of movement and track units,
- How the warning is to be given,
- Where any tools are to be placed when clearing,
- Other risks at the work site.

This information must be documented (in writing) in the job briefing notes.

d) Determination of Adequate Clear Sightline Distance
There are a number of ways in which clear sightline distances can be determined. Employees should select the method that best suits their situation.

1. Track features, such as crossings, bridges, overpasses, turnouts, way side buildings, etc, whose mileage is known can be used as reference points to determine the sight distance to the work location.
2. Location of mileage boards can be used as a reference point to determine the sight distance to the work location.
3. If railway pole lines are present, these can be counted in either direction to obtain sightline distances.
4. If the work location is one that is frequented often (such as a turnout, road crossing, diamond crossing, etc), a tape measure, measuring wheel or a track unit with a distance counter can be used to measure sight distances for all future visits to that location.
5. The use of portable hand held optical distance measuring devices may be used to determine clear sight line distances.

Note: Employees may be required to demonstrate how the sightline distance was obtained. Please ensure this is information is recorded for permanent and ready access when required.

e) Clear Sightline Distances

Safety Watch protection will **NOT** be considered as adequate protection where sightlines, train speeds, weather conditions, restricted clearing ability, etc., do not allow sufficient time for each worker being protected to move to and occupy a previously arranged place of safety not less than 15 seconds before a train moving at maximum speed for that track, reaches that point.

Should more time be required to clear the track, it must be added to the 15 seconds.

Example: An employee is working under Safety Watch protection on a track where the maximum train speed is 35 mph. It is determined that it will take the employee 5 seconds to clear himself and his tools from the track and be in a place of safety after being warned of an approaching train. This 5 seconds must be added to the 15 seconds indicated above.

Therefore, from the table below, the clear sight lines required are found under the 20 second column for a train speed of 35 mph, or 1030 ft. of clear distance in either direction.

MINIMUM REQUIRED SIGHTLINE DISTANCES

Train Speed (mph)	Required Sight Lines (in ft.)			
	15 seconds	20 seconds	25 seconds	30 seconds
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15	330	440	550	660
20	440	590	735	880
25	550	735	920	1100
30	660	880	1100	1320
35	770	1030	1290	1540
40	880	1175	1470	1760
45	990	1320	1655	1980
50	1100	1470	1840	2200
55	1210	1615	2020	2420
60	1320	1760	2205	2640
65	1430	1910	2390	2860
70	1540	2055	2570	3080
75	1650	2200	2755	3300
80	1760	2350	2940	3520

SECTION 13 – TRACK SIGNS

TRACK SIGNS

Signs illustrated in this section are in accordance with current standards. Signs of older types still in service convey the same meanings.

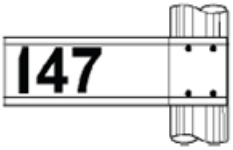
WHISTLE POST

Black letter W on reflective silver background
Located at least one-quarter (1/4) mile from the edge of all public crossings at grade, blind curves and tunnels.

PROHIBITED WHISTLE POST

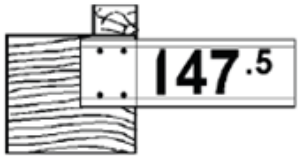
Black letter W encircled in red with red diagonal bar, on reflective silver background
Located at least one-quarter (1/4) mile from the edge of every public crossing at grade, where engine whistle signal Rule 14 (l) is prohibited by special instruction.

MILE POST



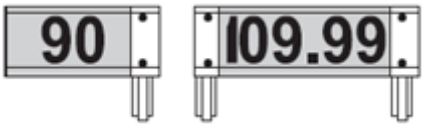
Black numerals on white background
Located at one mile intervals to designate subdivision mileage.

STRUCTURE NUMBER SIGN



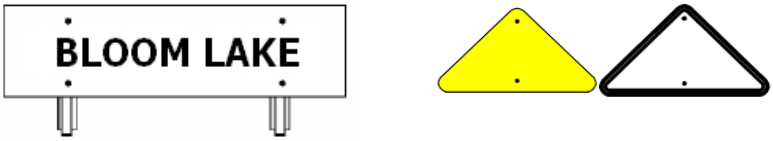
Black numerals on white background
To designate to nearest tenth of a mile the location of certain structures such as bridges, tunnels and snow sheds.

SWITCH MILE SIGN



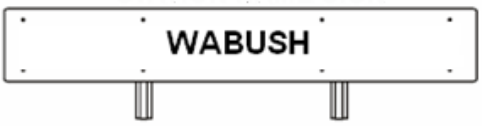
Black numerals on reflective silver background
Located opposite actual point of switch, to identify certain switches which are designated by mileage in Track Occupancy Permits or Clearances.

STATION MILE SIGN



Black letters on white background / reflectorized yellow triangle / reflectorized white triangle
Located one mile from station, siding switch, first main track switch where trains can enter or leave yard tracks, designated switch, or junction switch, whichever is the most outlying in each direction.

STATION MILE SIGN

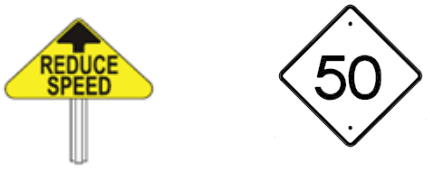


Black letters on white background
Located at mileage shown in time table, parallel to main track.

BEGIN HEAVY GRADE SIGN and END HEAVY GRADE SIGN

Black letters on reflective silver background
Placed at locations indicated in special instructions or in time table footnotes to mark the beginning and end of a downgrade which exceeds 0.8%, but does not exceed 1.8%, for a distance of 2 miles or more.

ADVANCE SPEED SIGN



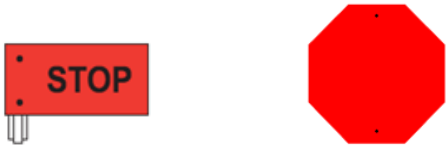
Black vertical arrow above black letters, on reflective yellow background or
black number on reflectorized diamond sign

Located one mile in advance of a permissible speed sign
marking the beginning of a zone of lower speed.

PERMISSIBILE SPEED SIGN

Black numerals on reflective yellow background
To mark the beginning of a speed zone specified in special instructions. When two speeds are shown on the sign, the upper speed applies to passenger trains and the lower speed to other trains and engines. When one speed is shown on the sign it applies to all movements.

STOP SIGN

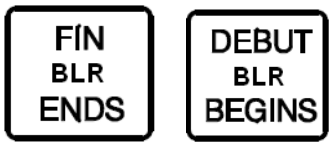


Black letters on reflective red background
Located 500 feet, except where otherwise indicated, from non-interlocked railway crossings at grade, non-interlocked drawbridges, and at other locations where its use is required.

END OF TRACK SIGN

Black check on reflective yellow background
Located at the actual termination point of track, to indicate end of track.

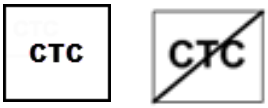
BEGINNING OF (named) RAILWAY SIGN



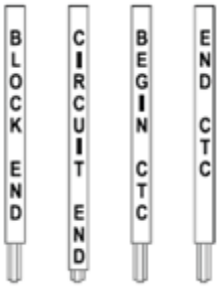
Black vertical arrow above black initials of railway, on reflective silver background
Located at actual point where the (named) railway authority begins.

BLOCK and CIRCUIT END, BEGIN and END CTC SIGNS

Begin CTC /End CTC

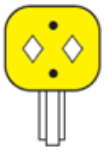


Block begin / Block end



Black letters on white background
BLOCK END - Indicates end of track circuit controlling a block or interlocking signal.
CIRCUIT END - Indicates end of track circuit controlling automatic warning devices at locations specified in special instructions, or other designated devices.
BEGIN CTC - Indicates beginning of centralized traffic control system territory.
END CTC - Indicates end of centralized traffic control system territory.

RESTRICTED CLEARANCE SIGN

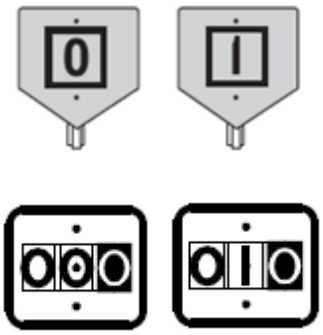


Two diamond shaped holes in yellow background
To call attention to restricted side or overhead clearance, or both, where employees must not ride sides or above the roof of a moving engine or car.

SNOW PLOW AND FLANGER SIGN

Black circles on reflective silver background
To call attention of snow plow and flanger operators to an obstruction to the operation of their snow removal equipment.

BEGIN MEASURED MILE SIGN and END MEASURED MILE SIGN



A black numeral within a black hollow square on reflective silver background
Placed exactly one mile apart, and located where required, to permit crews to verify accuracy of the Locomotive Speed Indicator and/or the Distance Measuring Device.

ENGINES PROHIBITED BEYOND THIS POINT SIGN

Black engine symbol encircled in red with red diagonal bar on reflective yellow square
Located at actual point beyond which an engine is prohibited from moving.

SPOTTING OF EQUIMENT PROHIBITED BEYOND THIS POINT SIGN

Black car symbol encircled in red with diagonal red bar and black arrow on white square
Located at sufficient distance from a road crossing, and to the outside of the outer track(s) to which it applies, in order to provide adequate sight distance of adjacent
main track for vehicles using the road crossing.
Indication: Cars, engines or track units may not be left between the sign and
the road crossing in the direction of the arrow.

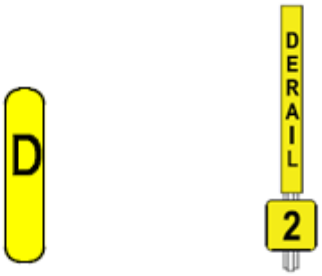
MAIN TRACK BEGINS SIGN

Black letters T over M symbol on reflective silver square
Located at the actual point where main track begins.

MAIN TRACK ENDS SIGN

Black letters T over M symbol with black diagonal bar on reflective yellow square
Located at the actual point where main track ends.
Note: These signs need not be placed where the main track begins or ends at a switch.

DERAIL SIGN

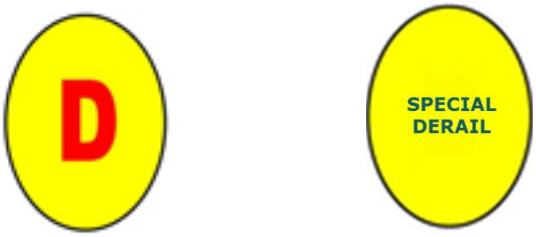


Black letters/numeral on reflective yellow background
DERAIL - Indicates location of derail.
DERAIL NUMBER - When added to DERAIL sign, indicates another derail, or other derails, on adjacent track(s) where derail signs cannot be installed because of clearance restrictions. Number refers to the total number of tracks having derails at the location marked by the derail sign.

DERAIL SWITCH SIGN

Black letters on reflective yellow background
Indicates location of a switch point derail

SPECIAL DERAIL

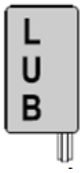


A derail that may be left in the non-derailing position
when no equipment is left on the track

OVERHEAD WIRE SIGN

Black letters, numeral, arrow and symbol on reflective yellow background
To call attention to crane operators that overhead wires are crossing the track.
Number indicates number of overhead wires.
Placed 200 feet in advance of the first overhead wire crossing the track on each approach.

LUBRICATOR LOCATION SIGN



Black letters on silver background
To indicate to snow plow operators the location of a rail lubricator mounted on track.

OCS BEGINS SIGN

Black letters on white reflective background

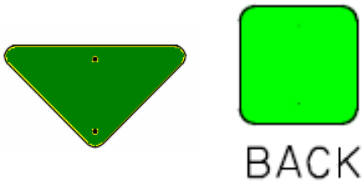
OCS ENDS SIGN

Black letters with black diagonal on white reflective background

PERMANENT SLOW ORDER SPEED SIGN

Black diagonal on yellow reflective square (front of the sign)

RESUME SPEED SIGN

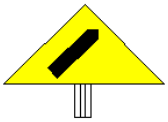


Inverted green triangle /Green reflective square (back of the sign)
Located at the end of a slow order, indicates that the movement can resume its authorized speed after the entire movement has pass the sign.

CROSSING CIRCUIT SIGN

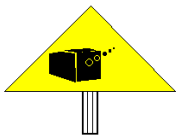
Black crossing circuit symbol on yellow reflective background

ADVANCE ONE MILE TO INTERLOCKING SIGN

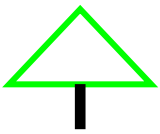


Indication: Proceed, prepare to stop at the interlocking signal. Note: this requirement does not apply when it is known that the track is to the interlocking signal and the indication of the signal is more favorable.

HOT BOX AND DRAGING EQUIPMENT DETECTOR SIGN

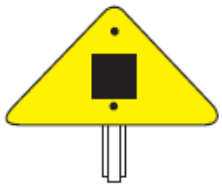


BROKEN RAIL SIGN



Temporary Rail Break signs will be reflectorized on both sides, and will be placed on one side of the track at the location of a temporary rail break to indicate its location. The location of the sign (side of the track) will be specified in the GBO issued. A temporary rail break sign remaining in place for more than one day must be equipped with warning flags in accordance with rule 843.

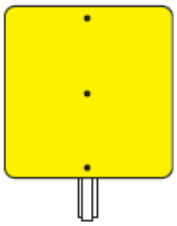
ADVANCE CAUTIONARY LIMIT SIGN



Black square on reflective yellow triangle
Placed at least one mile in advance of each cautionary limit sign.

CAUTIONARY LIMIT SIGN

Reflective Yellow Square
To define cautionary limits. Sign visible from both directions



RADIO ZONE (Channel)

DANGER SIGN DO NOT ENTER

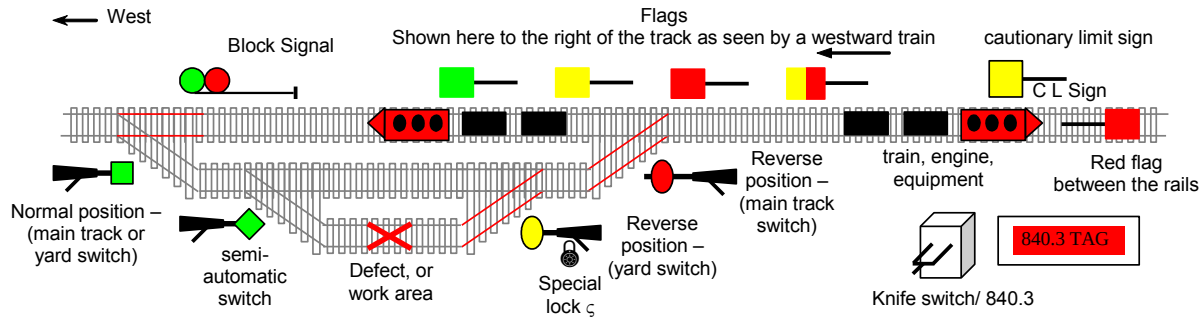
DANGER
DO NOT TREPASS
SIGN

Black and red writing on a white background with a « do not enter » sign located in the middle.

SECTION 14 – ILLUSTRATED FLAGGING DIAGRAMS

LEGEND

Following are the various icons used in the illustrations in this guide.



Note: in all instances where special locks are used in the application of Rule 841, employees must additionally include the prescribed "Tag" which includes the name of the Foreman, or person which applied the lock.

Introduction

In some cases the rules are simply stated, the track configuration simple, and the placement of flags will be obvious to employees. Often though, situations occur that require an interpretation of the rule to determine the correct flag placement. A few examples of these situations may involve signaled tracks, points where single track abuts multi-track, 3 or more tracks, interlocking limits, diversions, turnouts, abutting subdivisions, junctions, main tracks abutting non-main tracks, etc.

The resulting interpretations for placement of flags where the CROR rule is not obvious, is based on three simple standards, which are:

1. **When the rule is obvious, we follow the rule.**
   That is: In single track
   - The flags to the right of the track as seen from an approaching movement

   In multi-track:
   - The flags are placed to the outside of the outermost track and not placed between two main tracks.

Note: 842 (d), 843(b) – GBO must indicate the location of signals that cannot be placed at the distance prescribed by Rule 842 or 843.

2. **When the rule is not obvious, the placement of flags is <u>on the track affected only</u>.**

   This straightforward statement has the benefit to render the application simple to all concerned. If you see a flag, in more than 95% of the cases, the flag is associated with the defective track.

For examples: A yellow flag on the south track indicates that the slow order is on the south track, regardless of junctions, crossovers, etc.

If a yellow flag is located between the switches of a signaled siding, the same logical and simple statement applies; if the flag is located on the outside of the main track only, the restriction is on the main track only, if the yellow signal is on the outside of the signaled siding then the restriction is on the signaled siding.

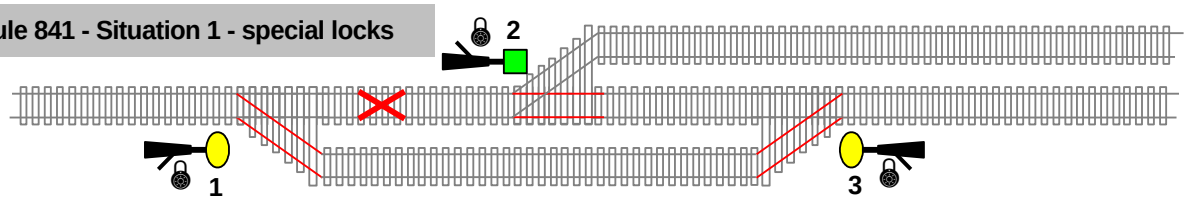
3. **A signaled track is "considered" as a main track.**

Limits of protection (Red and Green signals) and advance signals should not be placed between the switches of a signaled siding whenever possible. When signals are placed between the switches of a signaled siding, they will be placed in accordance with the requirements of Rule 845.

Rule 841 – Protection of track work on non-main track and in cautionary limits– Rule 41

NON-MAIN TRACK

Rule 841 - Situation 1 - special locks



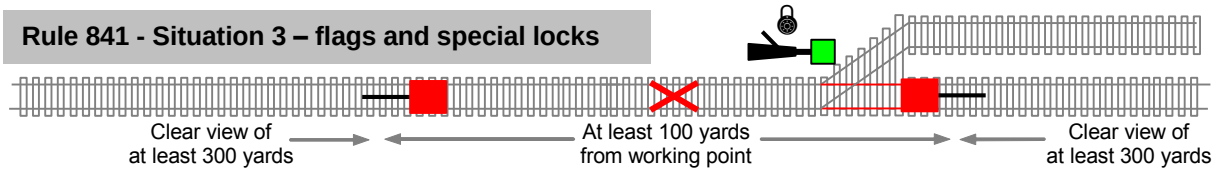
Note: Special locks are preferred over flags in the application of Rule 841, where possible.

In Situation 1, all tracks are designated as other than main tracks, and switches 1 and 3 are lined in reverse position, switch 2 is lined in normal position, all switches are locked with special locks, thus preventing a train or engine from operating on the portion of track where work is to be performed.

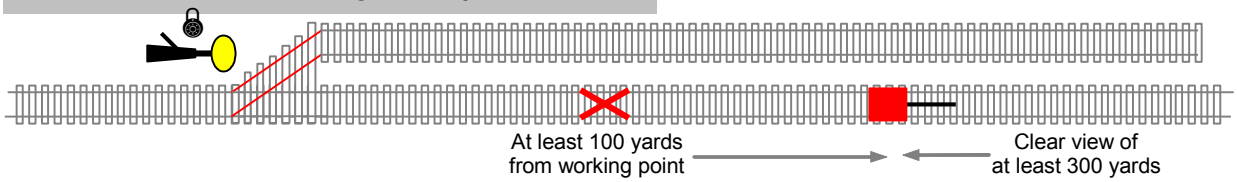
Rule 841 - Situation 2 - red flags

Situation 2 illustrates an example of an application of Rule 841, with the flags placed at least 100 yards from the work area, and where there is a clear view from an approaching movement of 300 yards.

Rule 841 - Situation 3 – flags and special locks

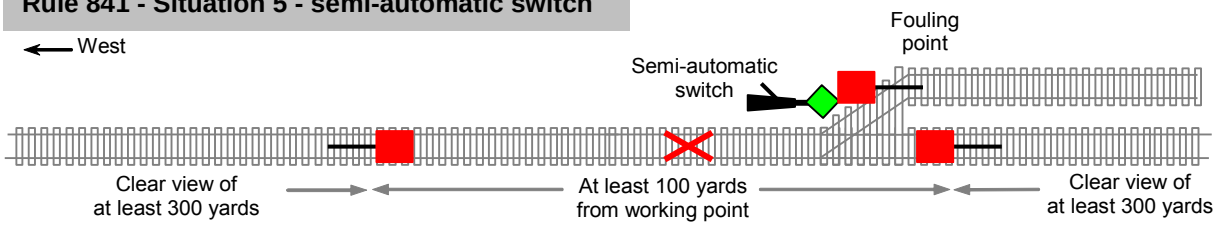


Rule 841 - Situation 4 – flags and special locks



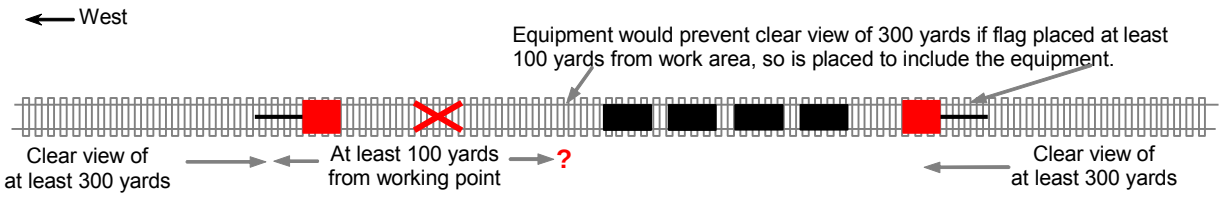
Situations 3 and 4 illustrate examples involving a combination of special locks and flags. The combination of special locks and flags is permitted, when necessary

Rule 841 - Situation 5 - semi-automatic switch



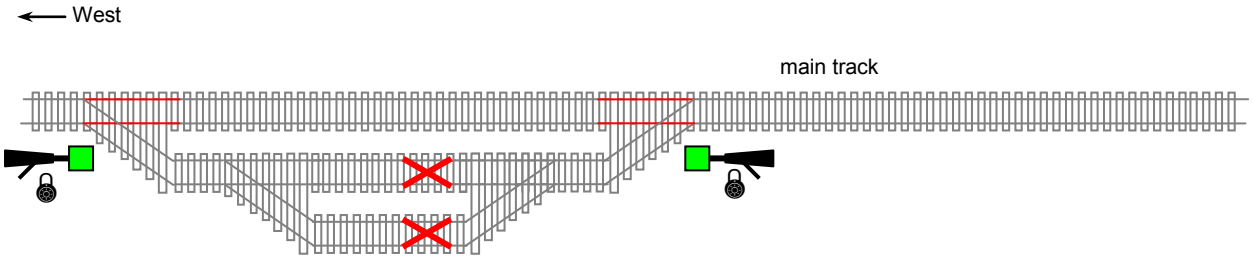
Situation 5 illustrates the placement of a red flag at the fouling point of a track connected using a semi-automatic switch. A special lock is not practicable to secure a semi-automatic switch, so a red flag between the rails at the fouling point must be used. Same would apply at a spring switch.

Rule 841 - Situation 6 - red flag includes equipment



Situation 6 is an example of a red flag placed to include equipment.

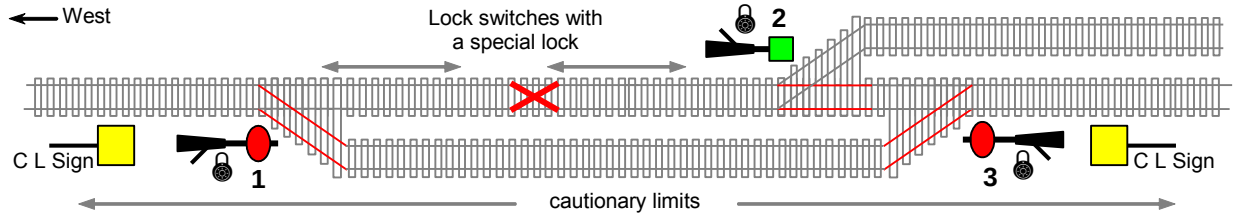
Rule 841 - Situation 7 – two tracks included



Situation 7 - Track work on siding and back track. This illustrates special locks applied to main track switches of a non-signalled siding. The protection includes all non-main tracks upon which are seen to be clear of movements, and which are protected so as to prevent access of a movement.

CAUTIONARY LIMITS

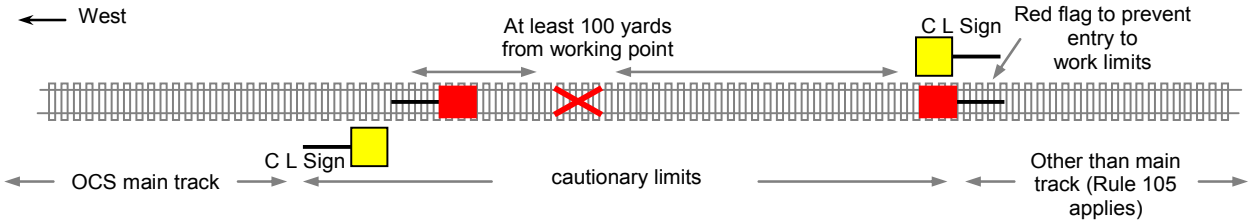
Rule 841 - Situation 1 - Protection applied



Situation 1 illustrates the proper lining of main track switches when they are used to protect track work, switches must line and locked with special locks to prevent access a movement from operating on the portion of track where work is performed:

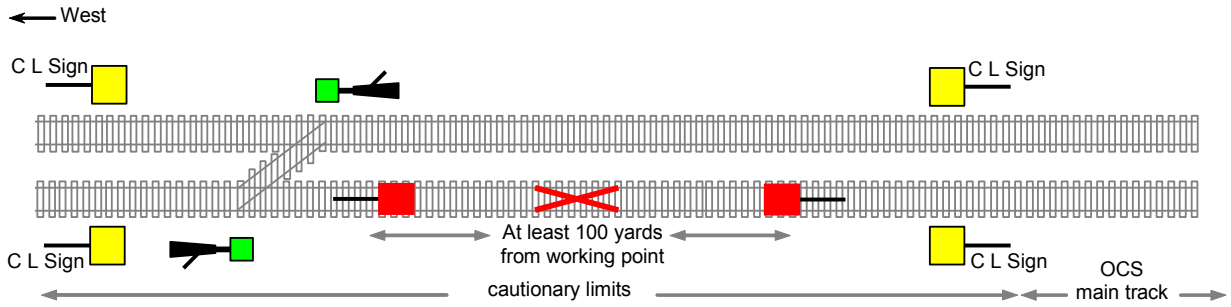
- red flags are placed between the rails at least 100 yards in either direction from the working point;
- the limits are protected by lining switches 1 and 3 in reverse position, and locked with special locks;
- switch 2 lined normal and locked with a special lock. Due to switch point direction, it is not possible to protect the limits by lining switch 2 in reverse position. Note that on GWCI, all switches between the switches protecting the limits must be locked in normal position with special locks.

Rule 841 - Situation 2 - Cautionary limits abuts OCS & Non-main track



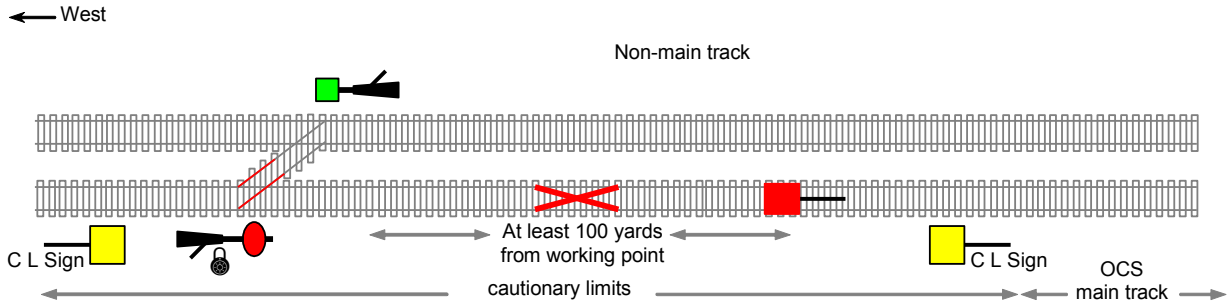
Situation2 illustrates cautionary limits, within main track OCS abutting to the west, and non-main track (Rule 105) to the east. There are no switches available to protect the limits.

Rule 841 - Situation 3 - Crossover



Situation 3 illustrates two main tracks within cautionary limits. Protection is required on the south track east of a crossover, red flags will be used to provide protection.

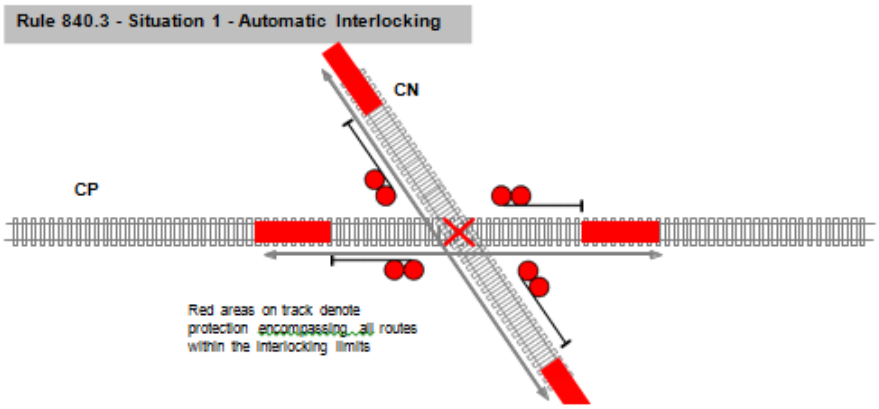
Rule 841 - Situation 4 - Crossover



Situation 4 illustrates a crossover switch used on the main track switch within cautionary limits to protect the working limit that is next to a non-main, the switch on the non-main track may also be left in the reverse position.

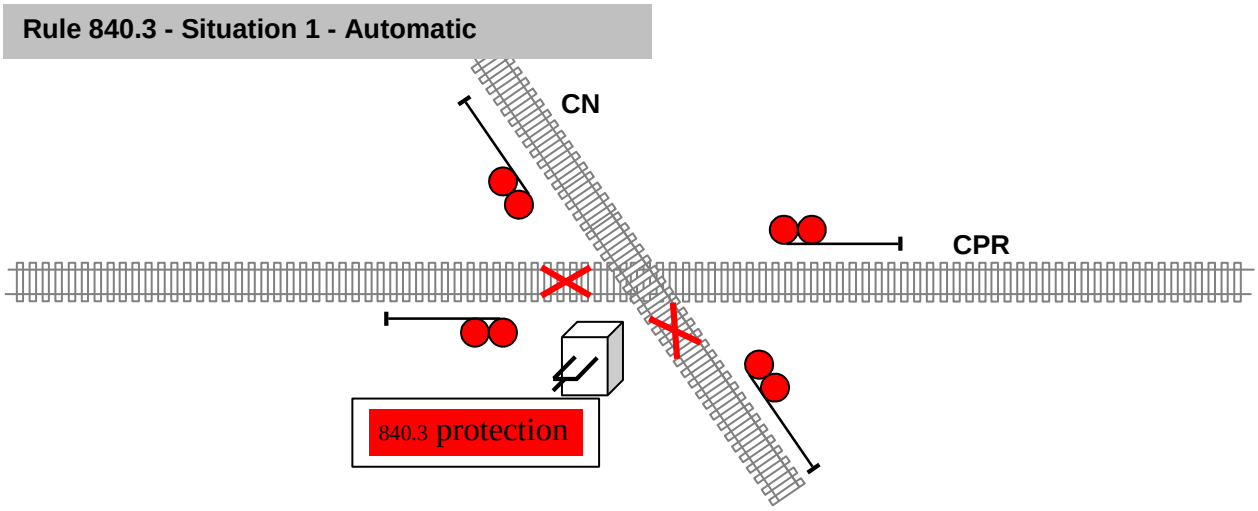
RULE 840.3 – PROTECTION OF TRACK WORK AT AUTOMATIC INTERLOCKING

When the foreman is in possession of other protection encompassing all routes within the interlocking limits, protection as per Rule 840.3 is not required.



Situation 1 illustrates the first paragraph in Rule 840.3, where protection encompasses all routes within the automatic interlocked railway crossing at grade. Whatever protection may be provided on the tracks abutting the interlocking limits would be appropriate providing it prevented entry to all routes, I.e.: TOP or Rule 842 on main tracks, Rule 841 in cautionary limits or on non-main track.

Note: Information regarding the type of interlocking (i.e.: Automatic, Remotely controlled, etc.) is located in time table footnotes. Footnotes may also contain specific instructions related to interlocking, and the protection required for track work, and the movement of track units.

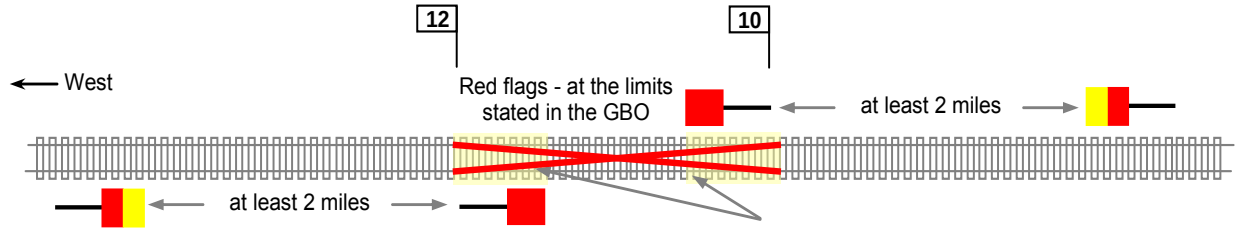


Situation 2 illustrates an application of Rule 840.3. After receiving permission from the RTC of both railways, the knife switch is opened, and either:

1. a visible indicator marked “40.3 protection” , or
2. a special lock is secured to the box marked “switches” while the knife switch is left in the open position.

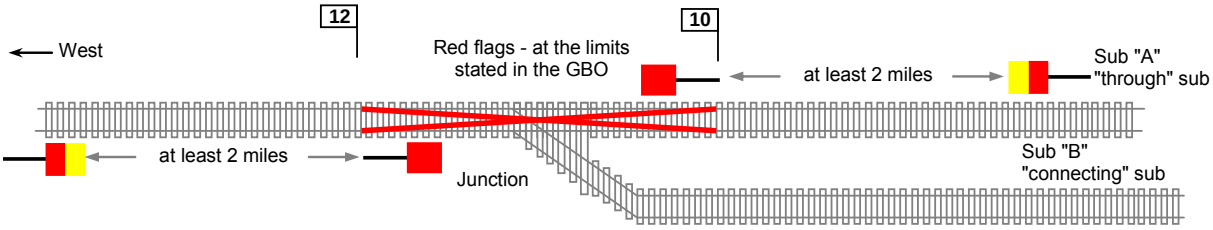
RULE 842 – PLANNED PROTECTION – RULE 42 FORM Y.

Rule 842 - Situation 1 - Single main



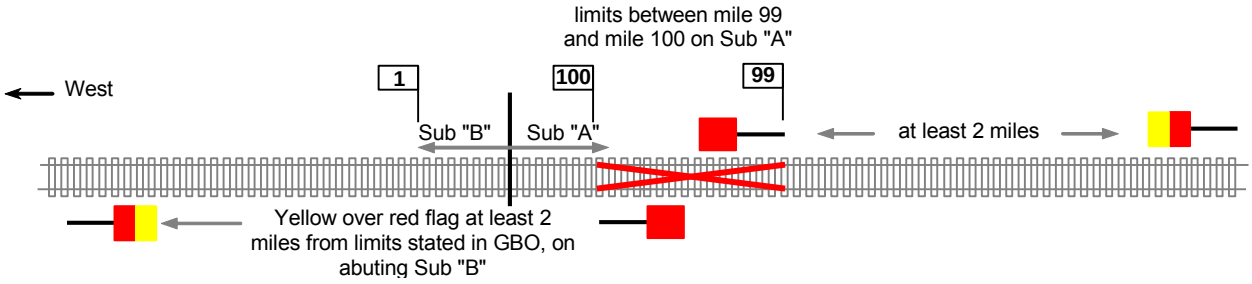
Situation 1 illustrates the proper placement of flags as prescribed by Rule 842 on a single main track with Form Y limits between mile 10 and mile 12. After receiving confirmation in writing from the RTC, and between the time stated in the GBO, place flags as indicated in Rule 842 (a) (i), (ii) and (iv).

Rule 842 - Situation 2 - Junction



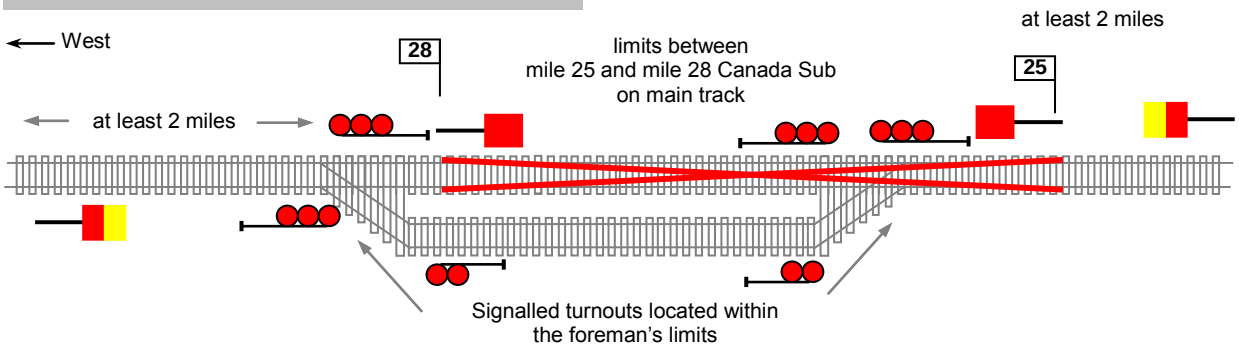
Situation 2 illustrates the proper placement of flags as prescribed by Rule 842 when a junction exists within the limits on the "through" subdivision (Sub "A"). Although there are rare exceptions, flags are not typically placed at the junction, nor on the “connecting” subdivision (Sub “B”). In this example, the Form Y limits are between mile 10 and mile 12 on subdivision “A”.

Rule 842 - Situation 3 - Abutting subdivisions



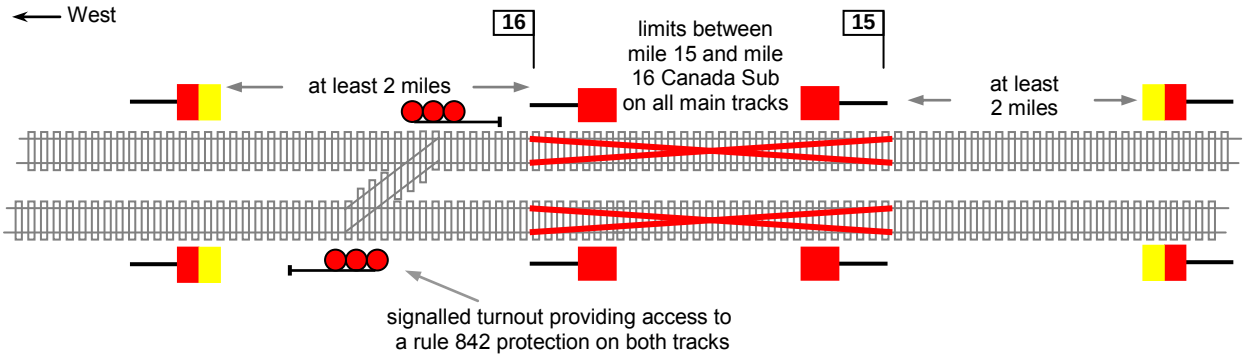
Situation 3 illustrates the proper placement of flags when the Form Y limits are within 2 miles of the end of a subdivision, which abuts another subdivision and where main track is continuous. The flags are placed at the distance prescribed by Rule 842 (a)(i) and (ii), even though the advance flag in this illustration will be located on the subdivision which abuts the actual Form Y limits.

Rule 842 - Situation 4 - Signalled turnouts



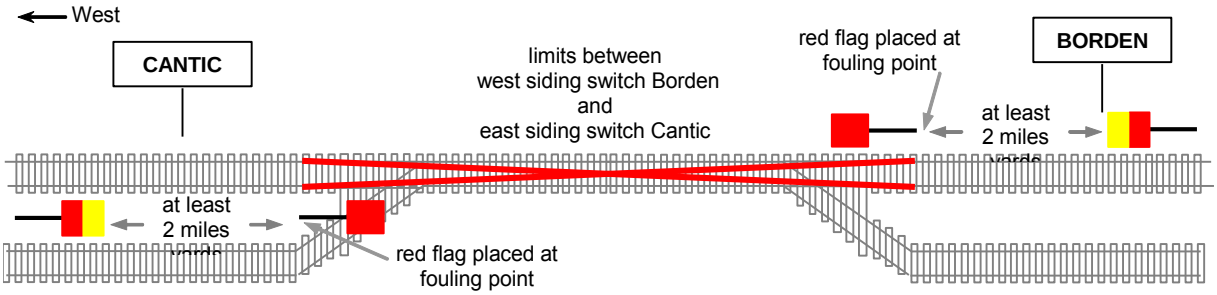
In Situation 4, illustrates Rule 842 protection on the main-track, the limits include a signaled turnout. In this situation, the foreman is required to establish a clear understanding in writing with the RTC as to the route the movements are to use.

Rule 842 - Situation 5 - Signalled turnout



Situation 5 illustrates an application of Rule 842 b) in two main tracks. In this situation, a foreman is requires to establish an understanding in writing with the RTC concerning the route (s) to be used.
Every movement must approach such location prepared to comply with the requirements of Rule 42 until it is known which route is to be used.

Rule 842 - Situation 6 - Switch to define limits



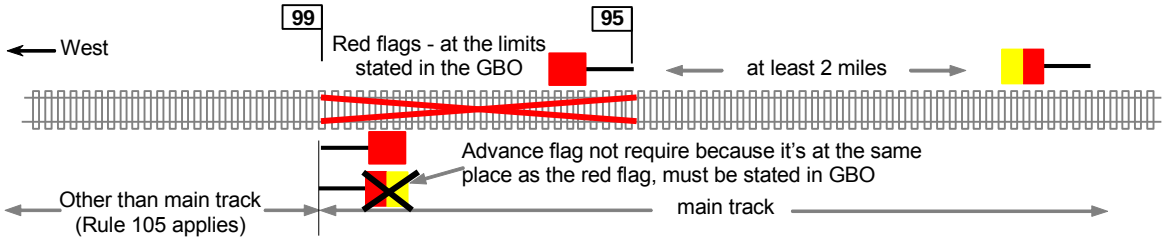
Situation 6 illustrates the correct placement of flags when a switch location is used to define the limits.

In this situation, Borden and Cantic are non-signalled sidings. The GBO limits read:
"between West Siding Switch Borden and East Siding Switch Cantic Canada Sub on main track. "

General rule O

In these rules when the distance prescribed for the placement of signals, signs or flags is not possible due to track configuration, the maximum distance available applies. If the maximum distance available will place an advance flag at the same location as the flag it governs the approach to, such advance flag need not be placed but such must be indicated in the GBO.

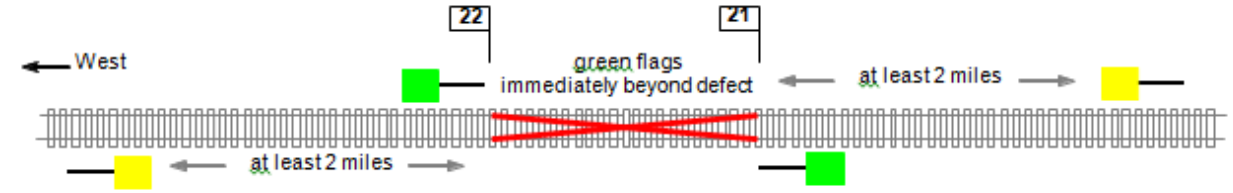
Rule 842 - Situation 7 - End of main track



Situation 7 illustrates a Form Y with limits between mile 95 and mile 99, where main track abuts other than main track at mile 99. The yellow over red flag governing eastward movements need not be placed if it's at the same location as the red flag at the point main track ends, and indicated in the GBO.
E.g.: "Yellow over red flag governing eastward movements not in place.

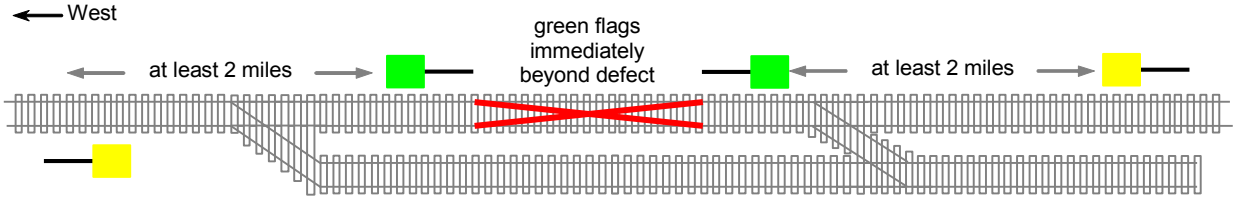
RULE 843 – SLOW TRACK PROTECTION

Rule 843 - Situation 1 - Single main track



Situation 1 illustrates the proper placement of flags as prescribed by Rule 843 on a single main track with Form V limits between mile 21 and mile 22. As soon as possible after receiving confirmation in writing from the RTC, place the flags as indicated in Rule 843(a)(i) and (ii).

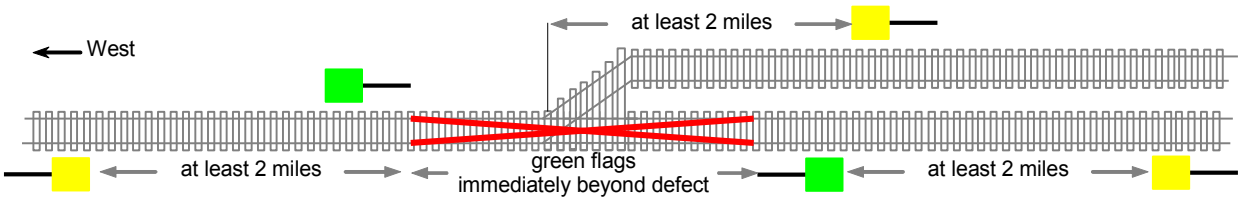
Rule 843 - Situation 2 - Single track abuts multitrack



Situation 2 illustrates a section of track where multi-track abuts single track. A speed restriction is placed on the north track. In the application of Rule 843, a yellow flag must be placed at the required distance, and on the track affected only. In this illustration even though a crossover between main tracks exists between the westward advance yellow flag and the restriction, an additional yellow flag is not required on the south track.

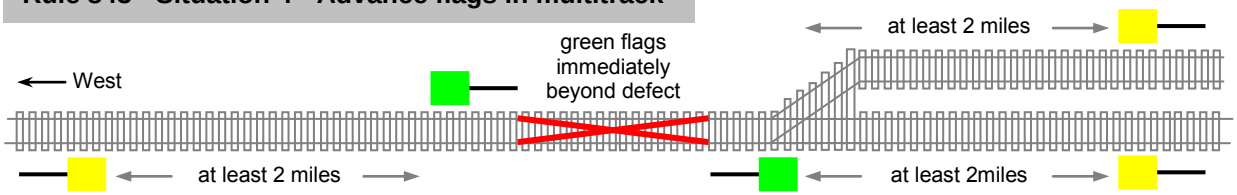
With regards to the eastward advance flag, since a main track exists at the required distance, the flag is placed at the required distance to the right of the main track.

Rule 843 - Situation 3 - Defect spans single/multitrack



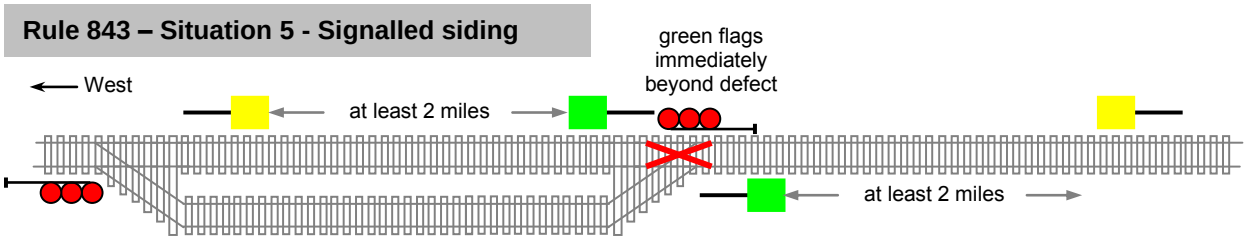
Situation 3 illustrates a speed restriction on the south and main tracks, spanning a begin/end two track switch. In this situation, an additional advance flag is required on the north track, at least 2 miles from the switch where a westward movement will enter the defective track.

Rule 843 - Situation 4 - Advance flags in multitrack



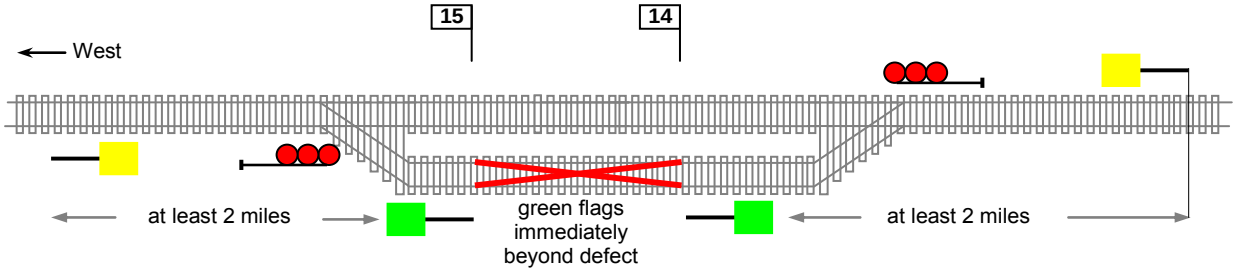
Situation 4 illustrates a defect in single track but within 2 miles of a multi-track portion of the subdivision. In this situation, since westward movements on both the north and south main track are affected, an advance flag is placed to the outside of both the north and south tracks.

Rule 843 – Situation 5 - Signalled siding



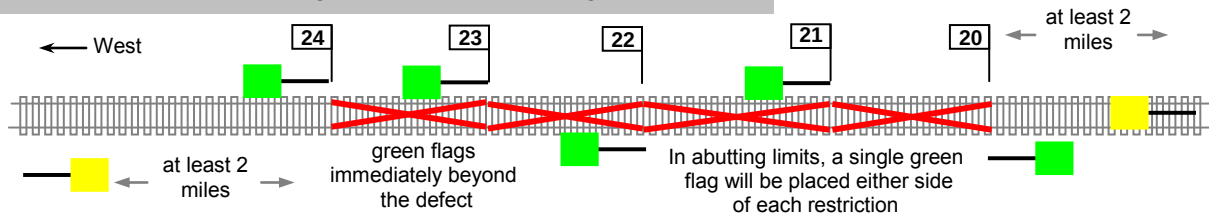
Situation 5 illustrates a speed restriction on the main track. A yellow flag is located between the switches of a signaled siding. A signaled siding is "considered" as main track, rules applicable to the main track applies, the track concerned, the flags will only be placed outside the main track.

Rule 843 - Situation 6 - Signaled siding



Situation 6 illustrates a Rule 843 protection on a signaled siding within 2 miles of the end of the signaled siding in both directions. In this situation, the speed restriction is on the siding between mile 14 and mile 15, the yellow flags are located 2 miles from the speed restriction as prescribed, by placing them on the main track.

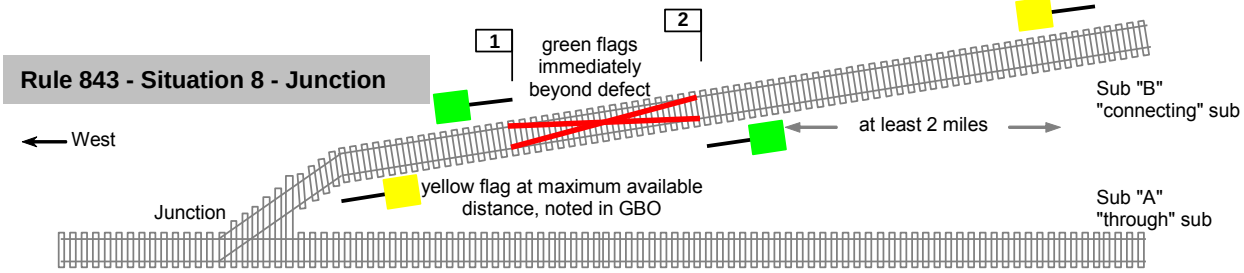
Rule 843 - Situation 7 - Single main track abutting restrictions



Situation 7 illustrates the placement of flags when a single GBO is issue for abutting slow track protection, a single flag will be displayed to either side of the track to identify each restriction within the limits.

The GBO must indicate the location of flags that cannot be placed at the distance prescribed.

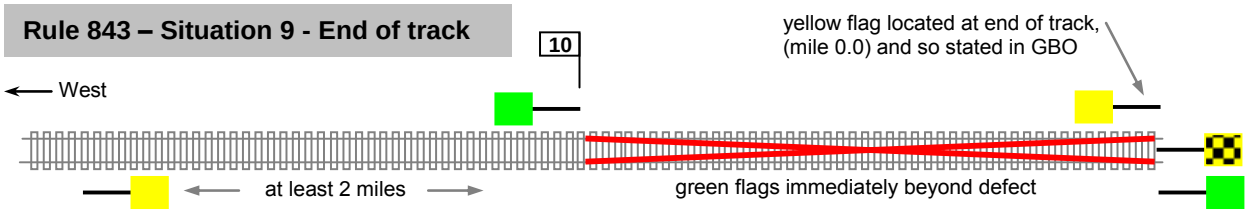
Rule 843 - Situation 8 - Junction



Situation 8 illustrates a speed restriction between mile 1 and mile 2 on the connecting sub, within 2 miles of the junction. This situation requires an advance flag to be placed less than 2 miles from the defect, and indicated in the GBO, e.g.;
"Yellow flag governing eastward movements located at mile 0.0".

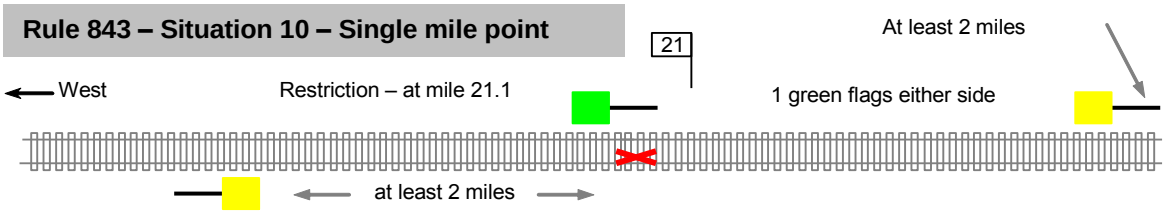
The yellow flag is placed at the maximum distance available, as near to the junction switch as possible, but should be placed such that it is not mistaken as a flag governing trains operating only on Sub "A".

Rule 843 – Situation 9 - End of track



Situation 9 illustrates an example of a speed restriction extending from the end of track. No distance is available to place the yellow flag governing westward movements, resulting in flag placed at the end of track, and indicated in the GBO. **e.g.:**
Yellow flag governing westward movements located at mile 0.0".

Rule 843 – Situation 10 – Single mile point

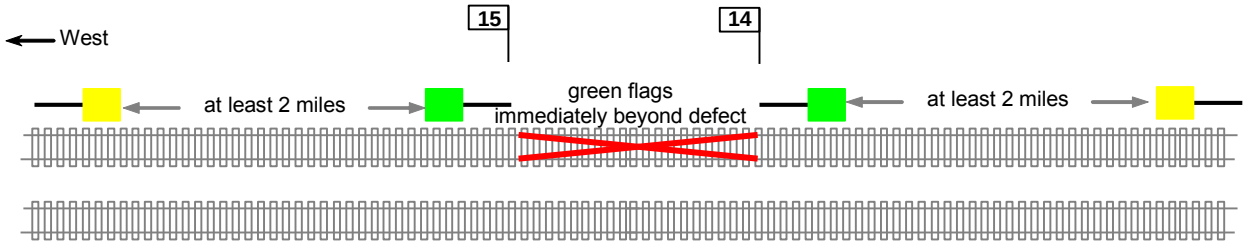


Situation 10 illustrates an application of Rule 843(e) where a restriction is provided "at" mile 21.1, a single mile point. In this situation only one green flag is required, and may be placed oneither side of the track in single track.

RULE 845 - SIGNAL PLACEMENT MULTI-TRACK.

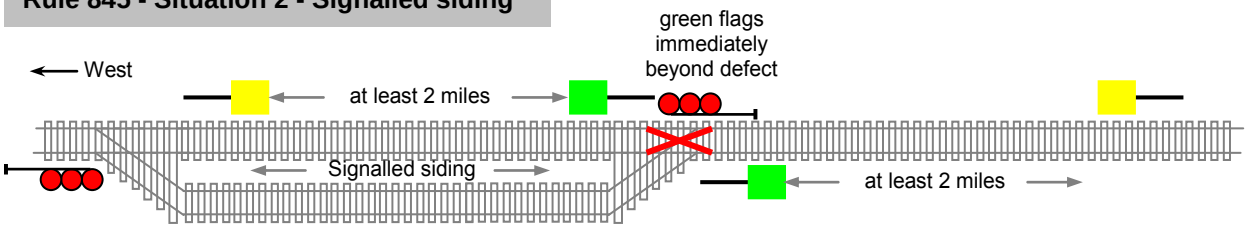
Except on a subdivision designated in special instructions, signals required by Rules 842 and 843, must be placed to the outside of the outermost track(s) affected and not between the main tracks.

Rule 845 - Situation 1 - Two main tracks



Situation 1 illustrates a Rule 843 application with a restriction that applies only on the north track between mile 14 and mile 15. In this type of situation, the flags are all placed to the "outside" of the track affected.

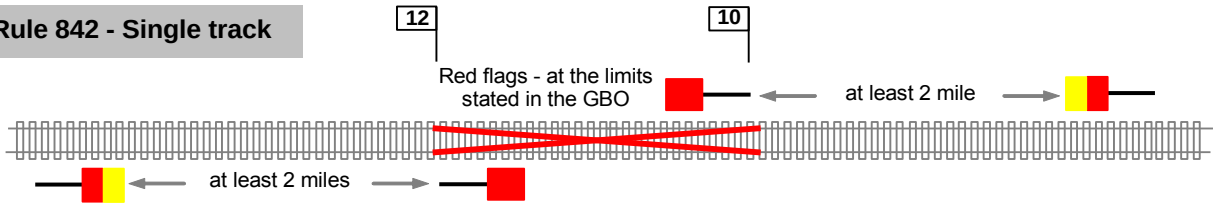
Rule 845 - Situation 2 - Signalled siding



Situation 2 illustrates the placement of an advance flag for Rule 843 when the location of the flag is between switches of a signalled siding. A signalled siding is considered as a main track and Rule 845 applies. The flag is then placed to the outside of the track affected (main track only).

RULE 842 - JOB AID QUICK REFERENCES

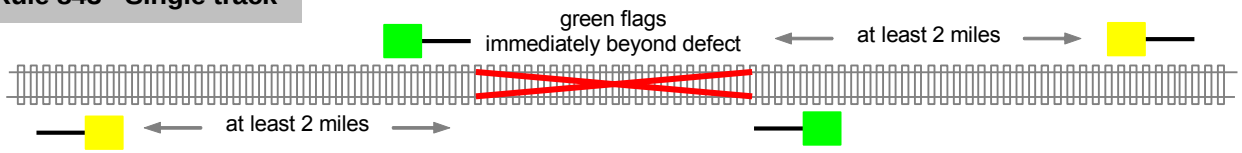
Rule 842 - Single track



Rule 842 – 2 tracks

RULE 843 - JOB AID QUICK REFERENCES

Rule 843 - Single track



Rule 843 - Two tracks

KLTR SMS

KNOB LAKE & TIMMINS RAILWAY

a Genesee & Wyoming Company

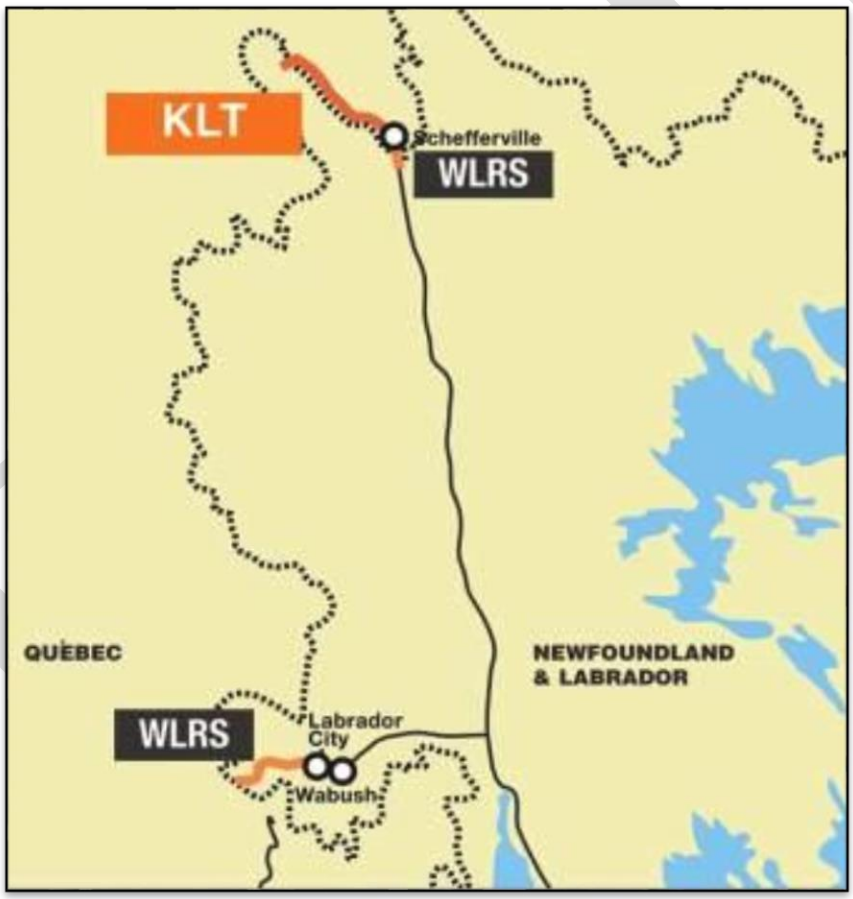
SAFETY MANAGEMENT SYSTEM

January 2019

Safety is priority in our work and in our life!

INTRODUCTION

Knob Lake & Timmins Railway (KLTR) is a federally regulated railway operating in Labrador and Northern Québec (Schefferville), Canada. KLTR operates and maintains the 21-km railway from the TSMC mine to the Tshiuetin Railway tracks near Schefferville, Québec. KéRail built and owns the tracks from the Québec border to the interchange point with Tshiuetin Railway. This Safety's Management System (SMS) has been developed as required by the *Railway Safety Act* and the *Railway Safety Management System Regulations, 2015.*



DESCRIPTION

KLTR operates the following rail network in the province of Newfoundland & Labrador and Québec.

AAR reporting marks	KLTR
Timmins subdivision	Knob Lake – Timmins : 15.4 miles Maximum zone speeds : 25 MPH
TMLR	Loop spur: 1.95 miles Maximum zone speeds : 10 MPH
Total route miles	17.35 miles
Approximate annual carloads	30,000
Average number of employees	10
Connections with other railways	Tshiuetin Rail Transportation Inc., Menihek Subdivision MP 352.8 & KLTR Timmins subdivision MP 0.00
Traffic/primary commodities	Iron ore, general freight and petroleum products
GWCI - Head office	9001, boul. de l'Acadie, suite 600 Montréal (QC) H4N 3H5
KLTR - Regional office	9001, boul. de l'Acadie, suite 600 Montréal (QC) H4N 3H5
Locomotive maintenance facilities	QNS&L – Locomotive shop 1, rue Retty Sept-Îles, QC or Centre Ferro 332, rue des Pionniers Sept-Îles, QC, J4R 4K2

OBJECTIVES

A Safety Management System (SMS) is a formal framework for managing risk. It makes safety part of day-to-day railway operations.

SMS helps KLTR to manage the safety of its operations by requiring the railway to:

- identify safety concerns, assess the level of risk they represent, and take steps to reduce those risks where required;
- build a safety culture in day-to-day operations at all levels of the company;
- involve company employees by:
    - collaborating or consulting with them;
    - informing them of risks and how the company has dealt with these risks; and
    - developing a procedure for employees to report contraventions and safety hazards to the company, and a policy for protecting employees who report contraventions and safety hazards.

SMS will improve safety effectiveness and efficiency by:

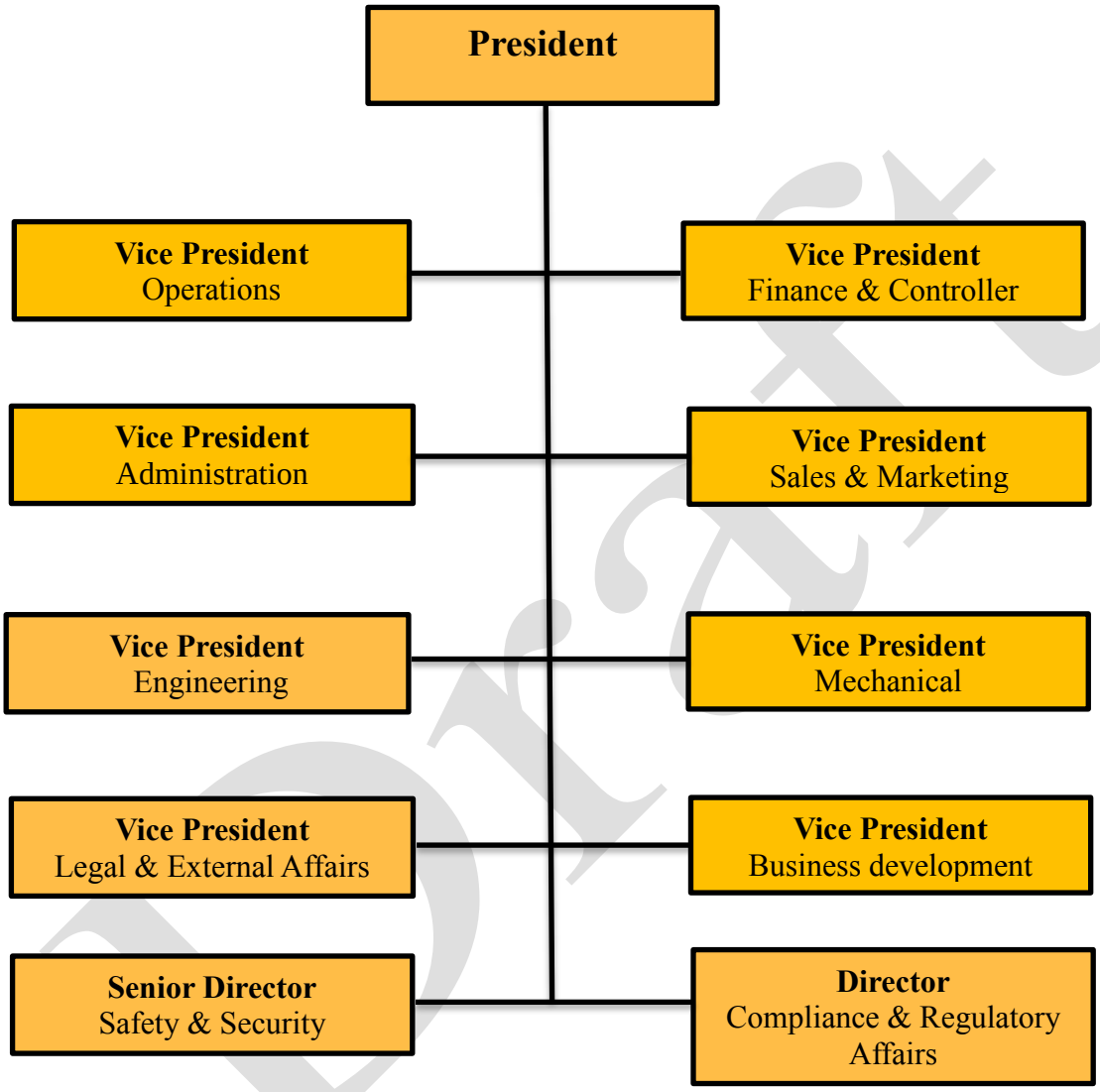
- promoting accountability and timely remedial actions in the management of safety, without the regulator prescribing one-size-fits-all requirements;
- enabling companies to be more proactive by leveraging operational expertise to identify hazards, and assessing and reducing risks; and
- enabling measures to be taken to reduce risks that may exceed regulatory standards.

The purpose of the *Railway Safety Management System Regulation, 2015* is to establish the minimum requirements with respect to the SMS in achieving the highest level of safety in its railway operations.

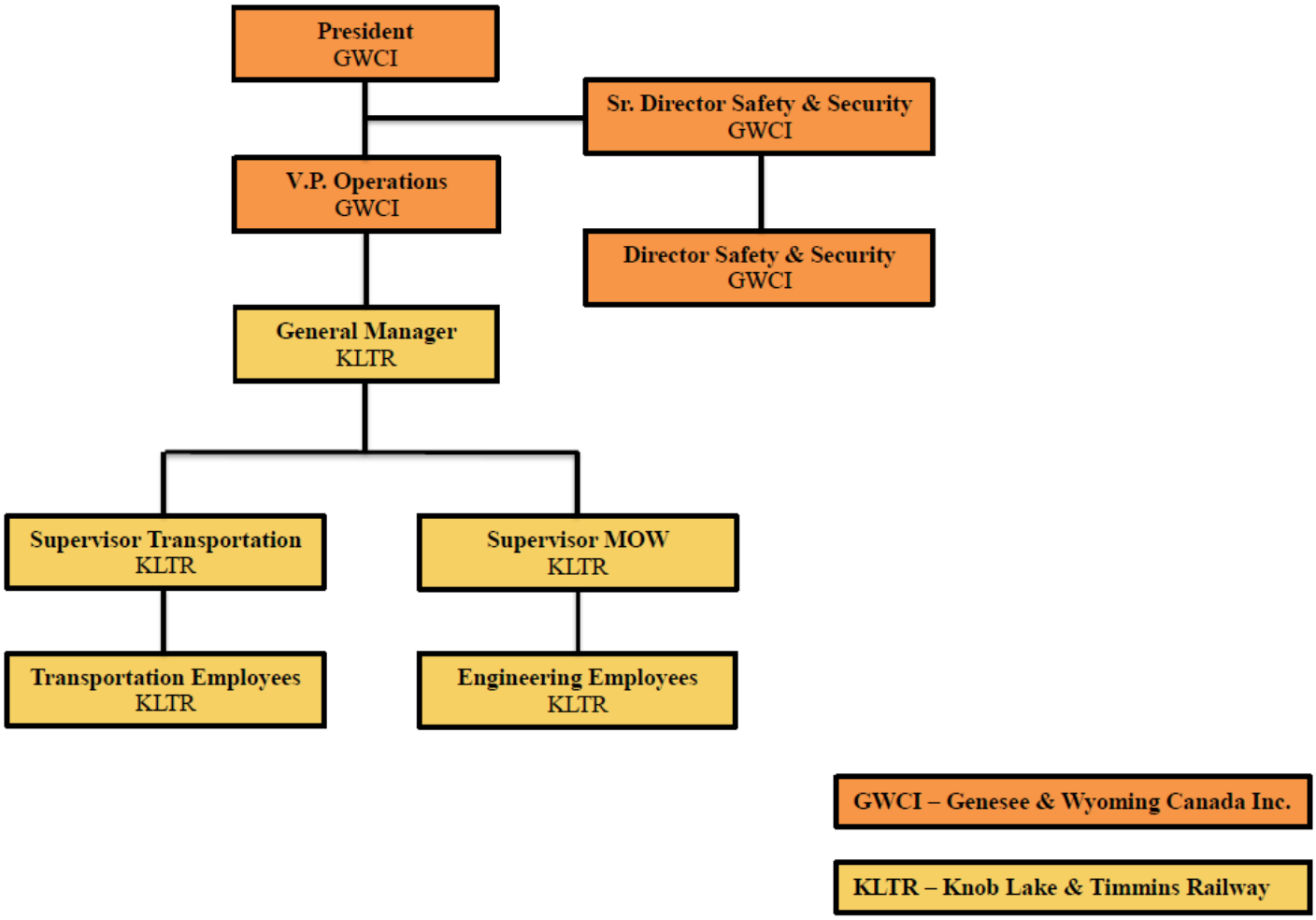
DISTRIBUTION REQUIREMENT FOR THE KNOB LAKE & TIMMINS RAILWAY SMS

- President - Genesee & Wyoming Canada Inc.
- Vice President, Operations - Genesee & Wyoming Canada Inc.
- Senior Director, Safety & Security - Genesee & Wyoming Canada Inc.
- Director, Safety & Security - Genesee & Wyoming Canada Inc. - East
- Director, Compliance - Genesee & Wyoming Canada Inc.
- Manager Training - Genesee & Wyoming Canada Inc.
- General Manager - Knob Lake & Timmins Railway
- All field supervisors
- Health & Safety member(s)

GWCI – Organizational chart – Canada Region Head Office



KNOB LAKE & TIMMINS RAILWAY – ORGANIZATIONAL CHART



KLTR has developed and implemented a Safety Management System (SMS) that meets the regulatory requirements of Part 1 of the Railway Safety Management System Regulations, 2015 that includes an Index and the following processes:

Section 1 - Process for accountability

Section 2 - Process with a respect to a safety policy

Section 3 - Process for ensuring compliance with regulations, rules and other instruments

Section 4 - Process for managing railway occurrences

Section 5 - Process for identifying safety concerns

Section 6 - Risk assessment process

Section 7 - Process for implementing and evaluating remedial action

Section 8 - Process for establishing targets and developing initiatives

Section 9 - Process for reporting contraventions and safety hazards

Section 10 - Process for managing knowledge

Section 11 - Process with respect to scheduling

Section 12 - Process for continual improvement of the safety management system

INDEX

KLTR will maintain an up-to-date index of all processes that it has implemented.

The index will identify:

- The date of the last revision of the Safety Policy;
- Individual(s) designated by the Accountable Executive to develop and implement one or more processes (if applicable)
- Procedures, plans and methods associated with each process and the dates of the last revision;
- The position in the railway that has responsibility for the development and implementation of procedures, plans and methods.

The Accountable Executive is responsible to maintain the Index up-to-date.

SECTION 1

PROCESS FOR ACCOUNTABILITY

SECTION 1 - PROCESS FOR ACCOUNTABILITY

The General Manager of KLTR is responsible for maintaining and implementing the Safety Management System (SMS). Therefore, the General Manager is designated as the Accountable Executive. The General Manager is responsible to ensure a safe and efficient operation of the railway and must ensure that the requirements of the safety management system are being met.

The General Manager provides day-to-day oversight and supervision of the railway's operations and has signed a declaration certifying acceptance of accountability for the Safety Management System.

The Accountable Executive has the prerogative to designate one or more persons to be responsible for the development and the implementation of processes required by the *Safety Management System Regulations.* However, that person must occupy a management position. If any issues occur following the implementation of procedures, plans or methods, explanations must be provided by the designated individuals (if any) in his/her annual report to the Accountable Executive.

1.1 ANNUAL UPDATE

If the Accountable Executive has designated responsibilities to develop and implement a process to a manager, on an annual basis, that individual must report to the Accountable Executive:

a) Any problems that may have occurred while implementing the procedures, plan or methods, and the manner in which those problems have been or are being resolved or if applicable, the reasons why they have not been resolved: and
b) The effectiveness of the procedures, plans and methods in contributing to the improvement of the safety of the railway company's operations.

1.2 SIGNED DELARATION

- As soon as an Accountable Executive is designated, the Minister of Transport will be advised.

- Within 30 days after he or she has been designated as the Accountable Executive, Genesee & Wyoming Canada Inc. (corporate support) will ensure that the Minister is being provided a signed declaration by the newly appointed Accountable Executive.

2.0 DOCUMENTATION

The General Manager (Accountable Executive) must have a signed copy of the most up to date Declaration.

SECTION 2

PROCESS WITH A RESPECT TO A SAFETY POLICY

SECTION 2 - PROCESS WITH A RESPECT TO A SAFETY POLICY

2.1 SAFETY POLICY

The Safety Policy demonstrates senior management's commitment to a full integration of a positive safety culture throughout the railway. The company also recognizes the importance of consultation and co-operation between management and employees for an effective implementation of the Safety Management System.

Employees, supervisors, managers and contractors involved in the operation and maintenance of KLTR share the responsibility for safe railway operations. All employees of KLTR must fully promote and subscribe to the railway's Safety Policy. The railway's Safety Management System (SMS) promotes involvement from all level within the company. The Safety Policy will be reviewed annually and will be communicated to all employees through safety boards/screens, safety meetings/briefings and annual town hall meetings.

The prevention of accidents and injuries for KLTR'S employees is our highest priority. We must strive to make safety an integral part of our day-to-day operations. Each of us bears the responsibility for respecting company and government rules and regulations regarding safety. We must build and maintain a positive attitude towards accident prevention and conduct ourselves in a manner that will avoid accidents and injuries. Everyone is responsible for his or her safety. All members of the management team are responsible to ensure that safe practices are being followed at all times and that safe working conditions are provided at all time to all employees under their supervision. Our objective is to develop safety awareness amongst all employees and to maintain a working environment that minimizes exposure to dangerous situations. KLTR wants all employees and contractors to be safe wherever they are. All employees must accept their responsibilities and carry them out cooperatively and consistently. The result will be a safe working organization that is effective and free of all hazards.

2.2 SAFETY VISION

We believe that our employees are our most valuable resource and that every accident or injury can be prevented.

KLTR will achieve this vision through:

- A culture that makes the safety of our employees our highest priority.
- An environment that provides continuous self-examination as to the effectiveness of our safety processes and performance.
- Providing the proper resources and tools to help reduce accidents and injuries by decreasing risk exposure.
- Compliance to company and government rules, regulations and standards.
- Providing adequate training that will allow our employees to protect themselves from all hazards.
- Empowering our entire workforce to take responsibility for their safety, the safety of fellow employees, and the safety of the communities in which we operate.

2.3 KLTR'S COMMITTMENT

At the beginning of each year (January):

- The Safety Policy will be reviewed to ensure that it continues to reflect the company's safety philosophy. However, the Safety Policy may not be changed if the Accountable Executive is of the opinion that it is still appropriate.
- It will be signed and dated by the Accountable Executive and the President of Genesee & Wyoming Canada Inc.
- The Safety Policy must be communicated to the employees through safety boards/screens, safety meetings/briefings, town halls, etc. In the event that the Safety Policy is being updated, the changes will be communicated to the employees.

2.4 RECORD KEEPING

KLTR will maintain proper records to indicate the date that the Safety Policy was communicated to the employees as well as all changes that may have been done to the said policy. The information will be recorded into Safetrack.

2.5 DOCUMENTATION

The Safety Policy must posted in conspicuous locations.

SECTION 3

PROCESS FOR ENSURING COMPLIANCE WITH REGULATIONS, RULES AND OTHER INSTRUMENTS

SECTION 3 - PROCESS FOR ENSURING COMPLIANCE WITH REGULATIONS, RULES AND OTHER INSTRUMENTS

Compliance to all government regulatory requirements and company policies/rules is essential in our quest to be an injury/accident free railway. The General Manager (GM) is responsible to keep the list of applicable regulatory instruments up to date. As the Accountable Executive, the GM is also accountable to ensure that the railway operates in compliance with all applicable regulatory requirements.

3.1 LIST OF REGULATORY INSTRUMENTS

KLTR will maintain an up to date list of all applicable regulatory instruments. The list will entailed:

- Regulations;
- Rules that the railway is signatory to;
- Applicable engineering standards;
- Exemptions;
- Notices and Orders;
- Ministerial Orders;
- Emergency Directives.

3.2 PROCEDURE OF KEEPING THE LIST OF REGULATORY INSTRUMENTS UP TO DATE

1) The list of regulatory instruments will be updated when new/amended regulatory instruments are coming in to force.

2) As active member of all regulatory committees under the purview of the Railway Association of Canada, KLTR is being kept abreast of all changes related to regulatory instruments (i.e. Regulations, Rules, Emergency Directives, Standards, etc.). The Director of Compliance & Regulatory Affairs (corporate support) will inform the Accountable Executive of all changes with respect to regulatory instruments.

3) When advised of regulatory changes, the Accountable Executive or is designate will update the list of regulatory instruments to include the new or amended instruments as well as the methods to verify compliance.
4) The Index will be updated accordingly to reflect the updated version of the list of regulatory instruments.

5) If KLTR is being issued a Notice and Order (N&O), the Accountable Executive will ensure that the railway is in compliance with the N&O ;until the situation is resolved and the N&O has been revoked.

3.3 COMPLIANCE WITH APPLICABLE REGULATORY INSTRUMENTS

3.3.1 Operations

Verification of compliance with applicable operations rules is achieved through proficiency testing by using an "employee score card". In addition, supervisors are accountable to measure compliance by also focusing on "rules of the month", "rules of the week" and "rules of the day". These specific rules are being communicated by supervisors to the employees through daily job briefings, weekly safety meetings and emails. The rationale for selecting those focused rules is based on:

- Risks/consequences exposure (risk based);
- Non-compliance trends;
- Random selection;
- Following and investigation/reenactment.

The results of all proficiency tests will be discussed with the employees that are being tested. Regardless of the outcome of an efficiency test, the supervisor will inform the employee of the result. Following the identification of non-compliances, the supervisor will ensure that the employee(s) properly understands the rule. Depending on the severity of the non-compliance, the employee may be subject to a formal investigation. Yearly minimum efficiency test targets for each supervisor will be determined by the Accountable Executive and communicated to all supervisors.

The results of all proficiency tests must be entered into the *Safetrack* database, which include corrective measures and a due date for the retest.

3.2.2 Maintenance of Equipment

Compliance verifications are conducted through observations and inspection on relevant tasks and procedures. These cover all applicable railway safety requirements listed within the railway's SMS regulatory instruments list that meets the requirements of Transport Canada with respect to the maintenance of rolling stocks and other applicable regulatory instruments.

The Accountable Executive determines the number of observations that must be performed by each supervisors. Regardless of the outcome of an efficiency test, the supervisor will inform the employee of the result. Following the identification of non-compliances, the supervisor must ensure that the employee(s) properly understands the rule. Depending on the severity of the non-compliance, the employee may be subject to a formal investigation. The results of those observations are recorded into the Safetrack Database including a due date for retest.

To ensure that the equipment is being maintained and repaired according to Transport Canada's rules and regulations, employees are provided appropriate training that meets the requirements of Transport Canada **(see Section 10 of HRCY's SMS for further details)**. The employees are provided forms (checklists) that are used to ensure that the equipment is being operated in accordance with prescribed rules and regulations.

All locomotives and cars must be maintained as prescribed by the rules that the railway is signatory to, regulations and all other regulatory requirements (e.g. Emergency Directives, Exemptions, Notice & Orders and Ministerial Orders).

3.2.3 Maintenance of Infrastructures

Compliance verifications are conducted through observations and inspection on relevant tasks and procedures. These cover all the applicable railway safety requirements listed within the railway's SMS regulatory instruments list that meets the requirements of Transport Canada with respect to the maintenance of infrastructures. The Accountable Executive is responsible to determine the number of tests/observations that each supervisors must performed every year.

The results of all observations will be discussed with the employees that are being tested. Regardless of the outcome of an efficiency test, the supervisor will inform the employee of the result. Following the identification of non-compliances, the supervisor must ensure that the employee(s) properly understands the rule. Depending on the severity of the non-compliance, the employee may be subject to a formal investigation. The results of those observations are recorded into the Safetrack Database.

However, results of inspections such as Track Geometry, Sperry Can, signals systems and other infrastructures are being kept in other systems.

- Track Inspections (ENSCO): all information pertaining to track inspections are gathered into the Ensco system. The system flags when inspection are due and keeps all the results.
- Track geometry and Sperry car inspection results are being kept into the Ensco system.
- Signals (AssetPro): This system supports any testing schedule and provides electronic signature certification for paperless documentation of inspections, repairs and configuration management.

All of the above information is available at all time and being used for several types of analysis.

To ensure that the infrastructures are being maintained and repaired according to Transport Canada's regulatory instruments, employees are provided appropriate training that meets

the requirements of Transport Canada **(see Section 10 of KLTR's for further details)**. All infrastructures must be maintained as prescribed by Transport Canada rules, regulations and all other regulatory requirements (e.g. Emergency Directives, Engineering Standards, Exemptions, Notice & Orders and Ministerial Orders). With respect to bridges, inspections are performed by specialized contractors **(see Section 10 of KLTR's for further details)**.

3.4 Quarterly Compliance Report

For each quarter, the Accountable Executive must signed a report to attest for:

- The number of TIH carloads
- The number of crude oil carloads
- The number of other dangerous goods carloads
- The number of Key Trains operated
- Train crew certifications (training)
- Trains left unattended on mainlines (securement)
- Work/Rest Rules (verification of a sample of time sheets)
- Track inspector training
- Sperry car inspections conducted
- Track geometry car inspections
- Bridge inspections
- Signal inspections
- Locomotive inspection
- Reflectorization material inspection (locomotive)

The Quarterly Compliance Reports provide valuable information on several aspect of the railway's operations. The reports must also be signed by the President of Genesee & Wyoming Canada before being forwarded to Genesee & Wyoming's head quarter in Jacksonville, US.

3.5 Linkages

Special emphasis may be placed on issues identified during the analysis of Safety Concerns **(Section 5 of KLTR's SMS)**.

3.6 Documentation

The railway must keep records of the following documents:

- List of all regulatory instruments
- Results of efficiency tests (Safetrack)
- All inspection records
- Quarterly compliance records

SECTION 4

PROCESS FOR MANAGING RAILWAY OCCURRENCES

SECTION 4 - PROCESS FOR MANAGING RAILWAY OCCURRENCES

Supervisors will report and review railway occurrences to the General Manager of KLTR. Immediately upon notification of a personal injury to an employee, the supervisor must ensure the employee is looked after (i.e. first aid, medical assistance), that any hazardous conditions are properly protected and that no one else is endangered. He/she will also complete internal and regulatory documentation and if warrant, a re-enactment procedure will take place. All train accidents, incidents and personal injuries will be investigated in order to determine the leading factors and whether an accident interview report will be completed or a formal investigation will be conducted.

The General Manager of KLTR or his/her designate will timely complete verbal and written accident/incident reports to GWCI Vice-President, Operations and to Senior Director, Safety & Security. The General Manager of KLTR must ensure that records of accidents/incidents are kept. All employees will be informed that a procedure for reporting a railway occurrence is in place.

4.1 ACCIDENT AND INCIDENT INVESTIGATIONS

Finding the root cause of each accident, regardless of the severity, is critical to the implementation of corrective measures as well as to prevent recurrence. The investigating team must determine a cause(s) as well as preventative/corrective measures and informed the General Manager who is ultimately responsible for implementing appropriate corrective actions. There are two categories of preventative actions – immediate and long-term correction.

Immediate Protection: The purpose of immediate protection is to secure the site. The leader of the investigating team must immediately implement protective actions before operations can resume at an accident/incident site.

Long-Term Corrective Actions: Once the cause of an accident is determined and all relevant conditions and failures have been identified, Long-Term corrections must be implemented. The purpose of these actions is to reduce the likelihood of a similar accident from recurring in the future.

4.2 OCCURRENCE REPORTING

The *SMS Regulations* define a "railway occurrence" as an occurrence that is reportable under section 5 of the federal *Transportation Safety Board Regulations*. The operator of the rolling stock, the operator of the track and any crew member that have direct knowledge of a railway occurrence must report the following railway occurrences to their immediate supervisors.

- A person is killed or sustains a serious injury as a result of
  - Getting on or off or being on board the rolling stock, or
  - Coming into contact with any part of the rolling stock or its contents;

- The rolling stock or its contents
  - Are involved in a collision or derailment,
  - Sustain damage that affects the safe operation of the rolling stock,
  - Cause or sustain a fire or explosion, or
  - Cause damage to the railway that poses a threat to the safe passage of rolling stock or to the safety of any person, property or the environment;

- A risk of collision occurs between rolling stock;

- An unprotected main track switch or subdivision track switch is left in an abnormal position;

- A railway signal displays a less restrictive indication than that required for the intended movement of rolling stock;

- Rolling stock occupies a main track or subdivision track, or track work takes place, in contravention of the Rules or any regulations made under the *Railway Safety Act*;

- Rolling stock passes a signal indicating stop in contravention of the Rules or any regulations made under the *Railway Safety Act*;

- There is an unplanned and uncontrolled movement of rolling stock;

- A crew member whose duties are directly related to the safe operation of the rolling stock is unable to perform their duties as a result of a physical

incapacitation which poses a threat to the safety of persons, property or the environment; or

- There is an accidental release on board or from a rolling stock consisting of a quantity of dangerous goods or an emission of radiation that is greater than the quantity or emission level specified in Part 8 of the *Transportation of Dangerous Goods Regulations*.

In addition, the following occurrences also have to be immediately reported to the VP Operation and Senior Director Safety & Security in order to inform all parties on the GWI Incident Notification List (IncidentNotification@gwrr.com):

- Derailment, collision or incident that blocks a main track or classification yard switching lead;
- Injury or fatality of employee who is on duty or fulfilling job requirements;
- Injury or fatality of a third party (including contractors, trespassers or invitees) that occurs on or involves any Company owned or leased property or equipment;
- Grade crossing incidents involving Company trains or tracks or employees;
- Any event involving a significant release of an environmental hazard, or threat to public safety;
- Company owned motor vehicle incidents or motor vehicle incidents in which the driver is an employee who is on duty or fulfilling job requirements, when there are injuries or substantial property damage;
- All other injuries and incidents that meet or exceed abnormal condition or disorder of a railroad employee that causes or requires the railroad employee to be examined or treated by a qualified health care professional.

The Incident Notification email will be provided the basic known information surrounding the incident, including but not limited to:

- Name of the railway where the incident occurred;
- Date and time of the incident;
- Name and contact information for Company officer who is responsible to the incident;
- A summary of known facts (no judgment or assumption) about the incident;
- The city or town nearest to the incident;

- The extent of all injuries;
- If emergency responder are involved;
- If Dangerous Goods are involved;
- Estimated cost of damage (if known);
- Any other pertinent information.

This email does not replace any report or form that has to be submitted.

4.2.1 Reporting Occurrences

- Initial reporting must be immediately done by the employee involved to a supervisor or to the RTC. RTC has the responsibility to report occurrences when required by the TSB and other regulatory authorities.
- The occurrences must be also reported as soon as possible to: GM, VP operations, Senior Director Safety & Security.
- Within the end of the employee tour of duty a written report **(see templates in Annex)** must be completed and sent to all concerned and to the **Coordinator Safety and Compliance – who's that?**
- All occurrences must be fully investigated with a documented close out report providing the corrective action(s) required, timelines for implementation and monitoring plan.
- The closeout/reenactment report will be submitted to the VP Operations and the Senior Director of Safety & Security within 5 days, more time may be granted for major incidents/accidents.
- KLTR'S Joint Health & Safety committee will monitor all reports to ensure closeout, corrective actions and post incident / accident follow-up are being made. **(See Annex for template/example)**
- The responsible functional group leader or his/her delegate will have the ultimate responsibility of monitoring corrective actions or processes in the field to ensure adequacy.

The closeout report/re-enactment must identify, when applicable:

- Description of the incident
- Root cause of accidents and incidents.
- Negative trends or intolerable risks.
- Deficient rules, instructions, or operating practices.
- Areas that require formal rules, instructions, operating practices.
- Common human factor errors to focus training efforts and coaching upon.
- Infrastructure problems that require correction or risk mitigation.

- Systemic issues requiring further proficiency testing, management attention, and health and safety focus.
- Measures to be taken

4.2.2 Instructions for the reporting

- Instructions to employees:
  - With respect to the reporting of incidents and accidents, information is contained in the GWCI General Operating Instructions or General Engineering Instructions. However, all employees are instructed to report all accident/incidents to their immediate supervisors.

- Instructions for regulatory reporting:
  - GWCI General Operating Instructions and General Engineering Instructions outline instructions for regulatory reporting for field managers and GWCI Rail Traffic Control Centre.

4.2.3 Human Factor Incidents and Near Miss Incidents

The railway will investigates all Human Factor Incidents (HFI) and Near Miss Incidents (NMI) that have or could have resulted, under different circumstances, in harm to people, damage to property or the environment.

A Human Factor Incident (HFI) is the result of a rule violation committed by an on-duty employee causing monetary loss.

Near Miss Incident (NMI) is the result of a rule violation committed by an on-duty employee that did **NOT** result in monetary loss, but had the potential to cause injury and/or destruction of property. Ex. Cardinal Rule Violation

Definitions

Rule Violation is any infraction (voluntary or involuntary) of guidelines, practices, rules and/or regulations established by the company, industry and/or government.

On-duty Employee is any employee performing company-related activities, driving company vehicles, or operating company equipment – whether owned, leased, or rented. *This includes participating in company-sponsored events during or outside normal work hours while on/off company property.*

Monetary Loss is any devaluation of company assets or reallocation of company resources to replace or repair damages resulting from an at fault incident.

4.3 REENACTMENT PROCEDURE

A reenactment will be performed shortly after a notification is received of a personal injury to an employee, a Human Factor Incident or a Near Miss Incident, if a re-enactment can lead to valuable corrective measures. The supervisor must:

1) Ensure that the employee is looked after (first aid, medical assistance or transportation to hospital if required);
2) Ensure that the site is properly protected and that nobody else is endangered;
3) Undertake the investigation process;
4) Contact a Safety & Health Committee member(s) and request that he/she get to the site;
5) Involve other employees that may bring value-added to the process.

4.4 OCCURRENCE REVIEW

Occurrences provide information that the railway must analyze as part of the process for identifying safety concerns **(Section 5 of KLTR's SMS)**. The objective for reviewing

occurrences is to determine if immediate corrective actions are needed and if an in-depth investigation should be conducted.

4.4.1 Procedure for reviewing a Railway Occurrence

Step 1: Schedule a meeting

The review of railway occurrences will be a standing item on the agenda of the Health & Safety committee and will be addressed within one month of the occurrence. Meeting participants (review team) will include:

- Health and Safety committee representative(s);
- Field supervisors;
- General Manager;
- Subject-matter expert(s) if required.

Step 2: Review Railway Occurrence

The review team will gather all required information prior from the meeting, including the Railway Occurrence report as well as information concerning similar events in order to consider best practices.

Step 3: Root Cause

During the meeting, the review team will analyze the reenactment documentation and will identify or confirm the root cause(s) of the occurrence.

Step 4: Identification of mitigation measures

The review team determines if current procedures (e.g. training, operation Instructions, company policies, etc.) need to be changed to prevent the reoccurrence of a similar event.

Step 5: Report and implementation

The review team will document their finding and recommendations and my recommend other correctives actions if necessary.

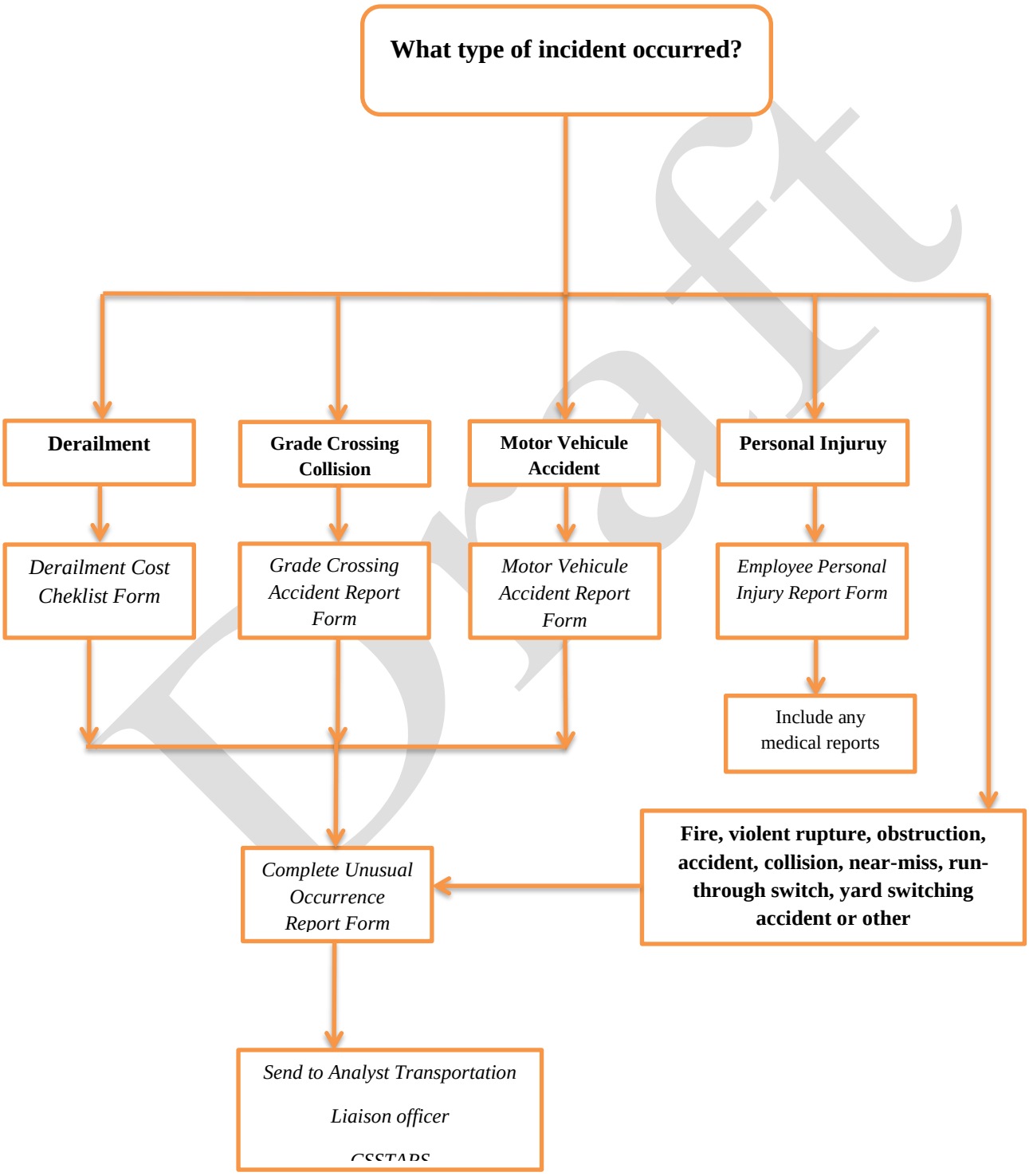
4.5 COMMUNICATION TO EMPLOYEES - RECORD KEEPING

KLTR uses the following to communicate the reporting procedure for railway occurrences to its employees:

- Safety Board
- Safety meetings/briefings
- General Operating Instructions (GOI)
- General Engineering Instructions (GEI)

The railway will keep records of communication and the manner in which it was carried out for 6 years.

FORMS REQUIRED FOR INCIDENT REPORT



SECTION 5

PROCESS FOR IDENTIFYING SAFETY CONCERNS

SECTION 5 - PROCESS FOR IDENTIFYING SAFETY CONCERNS

The process to identify safety concerns is a cornerstone of the SMS process aimed at improving the safety of railway operations. This process requires the railway to regularly analyze safety data and feed any identified concerns into its risk assessment process (**Section 6 of the KLTR's SMS**).

The railway must, on a continual basis, conduct analyses of its railway to identify safety concerns, including any trends or emerging trends, or any repetitive situations/behavior. These analysis must be conducted on a continual basis in order to identify trends as soon as possible. If new data is not available, the railway would be required to perform an analysis when new data become available.

The analysis must at the minimum, be based on:

- reports of railway occurrences;
- internal documentation relating to railway occurrences;
- reports of injuries;
- the results of any inspections conducted by the railway company or by a railway safety inspector;
- reports of contraventions or safety hazards that are received by the railway company from its employees;
- complaints relating to safety that are received by the railway company;
- data from safety monitoring technologies;
- the conclusions of the annual report referred to in subsection;
- findings of any audit reports (external and internal).

The objective of the safety reporting systems (including data collection and analysis), is to identify safety trends and understand their root causes in order to implement corrective actions.

5.1 ANALYSIS OF SAFETY RELATED DATA

The primary source of data collected from the operational field consists of efficiency tests and accident/incident reports. Currently two databases exist for the collection and analysis of these data. The database for efficiency testing information is called *SafeTrack*, which provides complete flexibility in configuring craft requirements, a streamlined interface for

quickly entering and querying efficiency testing data, an interface for viewing employee requirement due status and a powerful set of reporting capabilities and it stores and provides the ability to retrieve analysis reports in flexible formats for all crafts. The above-mentioned information is queried monthly to verify the level of compliance with respect to all efficiency tests performed and to determine if the supervisors have met their objectives in terms of efficiency tests.

The accident/incident database Marsh ClearSight stores all train incident and personal injury data. These data are downloaded into spreadsheets and are available on an inter-company network computer drives for analysis. This data is used monthly by management, the Safety & Security Department for trend analysis. The data pertaining to railway occurrences and personal injuries is also used to evaluate the railways performance (yearly targets) as set in **Section 8 of KLTR's SMS.**

5.2 PROCEDURE FOR CONDUCTING THE ANALYSIS

The following outlines the procedure for the analysis of safety concerns and the implementation of appropriate corrective measures.

5.2.1 Data Sources

- Marsh ClearSight: railway occurrences and personal injuries;
- Reenactment reports and internal investigation reports: internal documentation relating to railway occurrences;
- Internal inspection reports and Health & Safety inspection reports: inspection reports;
- Reports of contraventions or safety hazards received by the railway (including through 1-800-: all reports received by the railway company from its employees;
- Complaints received by the company: all complaints relating to safety that are received and documented by the railway company;
- Hot Box detectors, event recorders, crossing equipment, etc.: data from safety monitoring technologies;
- SMS Annual reports: correctives measures required as the result of annual compliance monitoring with respect to the implementation of SMS;

- Internal Audit Reports: correctives measures required as the result of internal audits;

5.2.2 Responsibilities

- Supervisors and managers are responsible to analyze all data sources;
- The Health & Safety Committee may be involved when appropriate in the analysis of safety concerns;
- The Health & Safety Committee will reviewed all reported safety concerns and corrective measures to be implemented. The form provided at Annex J must be filled by the Health & Safety Committee and attached to the monthly meeting minutes.

5.2.3 Analysis

- Safety concerns must be analyzed as soon as they have been identified.
- The analysis must focus on:

  - Causal factors:
    - Substandard conditions
    - Substandard acts
    - Lack of training
    - Lack of/or inappropriate PPE
    - Others

  - Severity or potential circumstances
  - Potential of reoccurrence
  - Systemic issue
  - Trends

- Corrective/mitigating measures must be considered
- Corrective/mitigating measures must be implemented when appropriate
- All safety concerns will be discussed at the Health & Safety Steering committee and will be included in the minutes of the meetings.

5.2.3 Records

Analysis of all safety concerns must be documented and kept of file for a period of 6 years.

5.2.4 Linkage with Risk Assessment (Section 6 of KLTR's SMS)

Safety concerns may require a formal risk assessment. In the event that a risk assessment is required, the process outlined in Section 6 of the railway's SMS must be followed.

SECTION 6

RISK ASSESSMENT PROCESS

SECTION 6 - RISK ASSESSMENT PROCESS

A risk assessment is a systematic process use to determine the probability and the severity of consequences on certain work related activities on persons, property, processes and the environment. When this determination is made, measures can be implemented that can effectively eliminate or control the risks.

The level of detail in a risk assessment will depend on the risk, purpose of the analysis, and information and resources available.

The objective of a risk assessment is to ensure that significant risks are identified and that appropriate actions are taken to mitigate these risks. Risk Assessment comprises the logical sequence of:

- Identifying and analyzing risks or hazards;
- Perform Risk Assessment using appropriate risk matrix;
- Determine methods of mitigating risks and understating the residual risks;
- Implementing the appropriate risk control strategies;
- Monitoring the results to verify that the implemented strategies are adequate, and properly mitigate the risks.

The risks will be processed through the appropriate risk matrix and relevant risk control strategies will be implemented, monitored and documented. Although risk assessments may need to be performed for new activities (e.g. operational changes), a review of the railway's Safety Concerns **(Section 5 of KLTR's SMS)** is also an essential tools to identify potential risks.

Risk assessments will be performed when:

(a) it identifies a safety concern in its railway operations as a result of the analyses conducted under **Section 5 of KLTR's SMS**;
(b) it proposes to begin transporting dangerous goods, or to begin transporting dangerous goods different from those it already transports; or
(c) a proposed change to its railway operations, including a change set out below, may affect the safety of the public or personnel or the protection of property or the environment:
  (i) the introduction or elimination of a technology, or a change to a technology,
  (ii) the addition or elimination of a railway work, or a change to a railway work (applies only to railway companies),
  (iii) an increase in the volume of dangerous goods it transports,
  (iv) a change to the route on which dangerous goods are transported, or

(v) a change affecting personnel, including an increase or decrease in the number of employees or a change in their responsibilities or duties.

6.1 RESPONSIBILITIES

It is the joint responsibility of management and employees to complete the "Risk Management Assessment Matrix" for hazards identified on the railway.

6.2 RISK MATRIX

Potential risks for the SMS must be assessed using the following table:

		CONSEQUENCES			
		1 - Catastrophic	**2 - Critical**	**3 - Marginal**	**4 - Negligible**
PROBABILITY	**A – Frequent**	**1**	**3**	**7**	**13**
	B- Probable	**2**	**5**	**9**	**16**
	C- -Occasional	**4**	**6**	**11**	**18**
	D – Remote	**8**	**10**	**14**	**19**
	E - Improbable	**12**	**15**	**17**	**20**

Note: *Probability is quantified by type of activity and by frequency of the activity.*

People

Consequences

1. Death or permanent disability
2. Loss of work or change in type of work
3. Medical treatment
4. First aid
5. No treatment required

Material Damage

Consequences

1. Over $250,000
2. $50,000 to $250,000
3. $5,000 to $50,000
4. $1,000 to $5,000
5. Under $1,000

Environment

Consequences

1. Irreparable damage
2. Significant damage or reportable incident (gov.)
3. Minor incident (technical non-compliance)
4. Minor incident
5. No cumulative damage

Operations

Consequences

1. Delay of over 24 hours
2. Delay of 8 to 24 hours
3. Delay of 4 to 8 hours
4. Delay of 1 to 4 hours
5. Delay of under 1 hour

The risk level will be established as follows:

RISK TYPE	RISK LEVEL
Catastrophic	1-5
Critical	6-9
Marginal	10-17
Negligible	18-20

6.2.1 Risk Assessment matrix (Operational)

There are systematic approaches for estimating risk qualitatively by using an appropriate decision making tool. The previous table can be used to measure and categorize risks in order to determine the probabilities and potential consequences.

Probability

- **Frequent:** Is likely to occur frequently or >1/100: can happen immediately.
- **Probable :** Is likely to occur several times in the next 12 months or 1>1000: can happen in the medium term.
- **Occasional :** Is likely to occur sometime within the next 12 months or >1/10,000 times: can happen in the long term.
- **Remote :** Is unlikely to occur in the next 12 months or >1/100,000: can happen in the long term.
- **Improbable :** Unlikely; may be assumed that it may never occur or >1/1,000,000: will practically never happen.

Consequence

- **Catastrophic :** Multiple deaths or permanent disability, major property damage, unable to continue operation.
- **Critical :** Death, permanent disability, temporary disability in excess of 3 months, major damages that significantly affect the operation.
- **Marginal :** Minor injury, lost workday accident, minor property damage and some degradation of the operation.
- **Negligible :** Remote possibility of injury

Risk acceptability criteria

- **1-5**: Unacceptable: This level is unacceptable and requires immediate changes immediately
- **6-9**: Undesirable: This level identifies potentially serious problems requiring changes
- **10-17**: Acceptable: This level documents acceptance of residual risk - Although the level is not expected to cause serious problems, changes should be made if they are technically and economically feasible
- **18-20**: Acceptable: Although changes are not required at this level to reduce risk, changes may still be recommended to improve functionality.

6.2.2 Seasonal Risk Management Guidelines

Summer Spike Issues		
Environmental Change	**Personal Issues**	**Social Issues**
Temperatures increase	Physical stress from heat	Schools are out
Thunderstorms	Family vacation costs	Road traffic changes
Severe weather	Friends/family visits	Trespassers on property
Rail conditions		
Personal health conditions		
Holiday Spike Issues		
Environmental Change	**Personal Issues**	**Social Issues**
Temperatures decrease	Physical stress from cold	School Buses on road
Rain/Sleet/Icing	Holiday costs	Schools are in session
Snow/Blowing Snow	Friends/family visits	Road traffic changes
Wind Chill Factor	PPE condition	Trespassers in rail cars
Rail conditions		
Poor footing		
Winter Spike Issues		
Environmental Change	**Personal Issues**	**Social Issues**
Lowest Temperatures	Physical stress from cold	School Buses on road
Snow/Blowing Snow	Holiday Bills	Schools are in session
Wind Chill Factor	PPE Disrepair	Road traffic changes
Icy at night/in morning	Heating bills	Trespassers in rail cars
Rail conditions	Car problems	
Poor footing		
Personal health conditions		

6.2.3 Risk control

The General Manager and the Health & Safety committee of KLTR, including employee representatives will identify safety issues, conduct risk assessments when appropriate, and ensure that corrective measures are implemented. A spreadsheet will be used to note any identified risks and what mitigating measures, policies or procedures are required to be implemented. Once the risks that require remedial actions have been identified, KLTR will determine the actions to be taken in order to mitigate those risks. Since the risks are a combination of probability and severity of consequences, the remedial action must eliminate or reduce the risk to a tolerable level.

AREA	RISKS	RISK CONTROL STRATEGIES
Interface with other Railways and customers	-Restricted clearances collisions -Receiving or delivering of defective equipment -Equipment left foul -Unauthorized track/yard occupancy	-Supervision and proficiency testing -Ensure safe interface between railways and customers and railway -Assess the training and qualifications and of customers and other parties whose activities may directly affect railway safety -Methods of ensuring that other railways and customers are aware of their safety responsibilities
Supervised by: -Operations -Engineering -Mechanical	-Failure to be qualified in or follow standard rules and procedures	
Train and equipment Operations	-Failure to follow rules or procedures -Misunderstood or missed communications -Derailments -Collisions -Human reliability -Unintended movements -Changes in times of operation or frequency -Changes in timetable speeds	-Human factors analysis -Rules violation monitoring -Training programs -Monitoring of supervisors and employees -Development and implementation of operating rules and procedures -Work process mapping
Supervised by: -Operations		

-RTC's -Engineering		
Dangerous goods and hazardous materials transportation	-Receiving or delivering defective or leaking tank cars or containers -Negative public perceptions adversely affecting operations -Risk to employees from spills, leaks and container failure -Risk to the public and communities from large-scale accidents and incidents	Identifying and feeding back containment failure data and maintenance deficiencies to the shippers of the dangerous goods -Criteria for identifying and activating external resources for dangerous occurrences -Knowledge of and compliance with the applicable standards, rules and regulations -Procedures for liaison with and management of external resources at dangerous occurrences -Integrating the organization into community and industry awareness and emergency response programs
Supervised by: -General Manager -Operations -RTC's -Health and Safety Committee		

Environmental impact	-Noise and fumes -Damage to the environment from accidents, including dangerous goods and fuel spills -Damage to the environment from ongoing operations	-Knowledge of and compliance with the applicable standards, rules and regulations
Supervised by: -General Manager -Operations-Mechanical -RTC's -Health and Safety Committee		
Equipment, infrastructure and facilities	-Flooding -Track condition -Washouts -Bridge failures -Unsafe equipment -Equipment failures leading to collisions, derailments and/or employee injuries	-Design and construction standards and procedures -Modification review and approval process -Procedures to document changes to equipment and systems, including on as-built drawings -Inspection and maintenance standards & procedures, including cycles, record-keeping procedures, and corrective action and implementation monitoring procedures

Supervised by: -General Manager -Mechanical Officer -Health and Safety Committee	-Slope failures -Safety appliances -Shops -Unsafe facilities -Bulk storage facilities for dangerous goods -Areas of recent work	-Facility inspection -Safety technology -Devices on railway equipment (locomotive event recorders, reset control devices) -Relevant safety policies -Procurement procedures to prevent the introduction of defective or deficient materials and supplies or unauthorized hazardous materials

Once the assessment and classification of risks is completed, the General Manager will identify and evaluate the existing mitigating measures to determine if the risk is eliminated or reduced to an acceptable level. If the evaluation concludes that the risks are not at an acceptable level, management will need to implement appropriate action **(see Section 7 of the KLTR's SMS)**.

6.2.4 Identifying the risks that require Remedial action

The procedure for identifying the risk that may require remedial action(s) entails the following steps:

Step 1 – Triggering circumstances

Triggering circumstances:

- When a safety concern exists **(section 5 of the KLTR's SMS)**;
- The railway is proposing to begin transporting dangerous goods, or begin to transporting different dangerous goods;
- The railway is proposing to make change to its railway operations that may affect the public, personnel safety or the protection of the environment such as:
  - The introduction or elimination of a technology, or a change to a technology,
  - The addition or elimination of a railway work, or a change of a railway work,

- An increase in the volume of dangerous good transported,
- A change to the route on which dangerous goods are transported,
- A change affecting personnel, including an increase or decrease in the number of employees or a change in their responsibilities or duties.

KLTR will assemble the necessary information and experts, which will include:

- Information about the circumstances that triggered the risk assessment;
- Appropriate personnel, including subject matter experts, management and a representative of the employees who are affected by the risk;
- Information about the safety requirements (rules, regulations, etc.) and voluntary safety controls that KLTR has in place that relate to the triggering circumstances;
- Information from similar events that resulted in a TSB investigation or other industry information or best practices that are relevant to the situation;
- Information about the operational environment. KLTR will consider potential impact on people, environment or property.

These steps will be instrumental to clearly define the circumstances that triggered the requirement to conduct the risk assessment.

Step 2 – Identifying risks

Once the triggering circumstances have been described and the context is clearly understood, potential risks will identify. The company will then consider the most severe potential outcomes.

Step 3 – Risk analysis / assessment

For each identified risks, the probability of occurrence and the severity of the consequences. Will be assessed. An assessment scale will be used for the probability and severity of the consequences. Each risk must be documented with the factors taken into account including who/what could be affected: personnel, public, the environment or the property. **(See section 6.1 for additional information)**.

Step 4 – Identification of risks that require remedial action

Risks that requiring remedial actions will then be identified and the Risk Matrix will be used for the evaluation. This process will help to visualize the risks being assessed to determine if the level of risk is tolerable

This step will assist in determining the risks that require remedial actions by considering the probability of occurrence and the severity of the consequences.

Step 5 – Identification of the remedial action(s)

Once the risks that require remedial actions have been identified, the remedial actions to be taken to mitigate those risks will be determined. Since risk is a combination of probability and severity, this step will help to reduce the adverse consequences related to the identified risks.

The remedial action(s) that are selected must reduce the risks to an acceptable level. The effectiveness of the remedial action(s) will be evaluated to assure its efficiency **(Section 7 of the KLTR's SMS)**.

6.3 CONSULTATION WITH THE EMPLOYEES

When risks that require remedial actions have been identified and remedial actions need to be implemented, the railway will consult with the with the employees affected by the risks employees' representatives representing the employees affected by the risks. The Health & Safety committee members should also be consulted.

6.4 COMMUNICATION WITH THE EMPLOYEES

When risks that requiring remedial actions have been identified, the employees affected by the remedial actions to be implemented will be advised.

6.5 RECORD KEEPING

With respect to Section 6.3 and 6.4, records will be kept of the dates that the consultation and the communication took place. Records must be retained for 6 years.

6.6 NOTIFICATION TO THE MINISTER

Before initiating any proposed changes that require remedial actions, the Federal Minister of Transport must be notified. **Unless requested by the Minister, the risk assessment does not need to be sent to the Minister.**

SECTION 7

PROCESS FOR IMPLEMENTING AND EVALUATING REMEDIAL ACTION

SECTION 7 - PROCESS FOR IMPLEMENTING AND EVALUATING REMEDIAL ACTION

One of the most critical part of a risk assessment is the implementation of remedial actions. By assessing the risk and taking the necessary remedial action(s) before making changes to its operations, the railway can proactively assess and prevent potentially dangerous situations. Risks can either be eliminated or reduced to an acceptable level. However, the railway must also evaluate the effectiveness of the remedial actions in order to determine if the risks are properly mitigated and therefore, perform the activity safely.

7.1 PROCEDURE FOR SELECTING REMEDIAL ACTIONS

By assessing the risk and taking the necessary remedial actions before making changes to the operations, the railway can control potentially dangerous situations and therefore, prevent harm to people, property and the environment. This procedure ensures that appropriate remedial actions are being selected in order to control the risks related to a proposed operational change or a new activity.

In order to do so, the railway commits to:

- involve and consult with appropriate personnel and subject matter experts;
- consider multiple options and best practices;
- assess whether the remedial action will reduce the likelihood or severity of the consequences of risks; and
- obtain management approvals (General Manager);
- consult with the bargaining agents or with the employee representatives (Health & Safety Committee).

7.2 PROCEDURE FOR IMPLEMIENTING REMEDIAL ACTIONS

Once the railway has selected the appropriate mitigating measure(s), it must ensure proper implementation.

To implement the selected remedial action(s), the railway commits to:

- determine the positions in the company responsible for implementing and evaluating the remedial action and involve related personnel;
- identify and allocate resources;
- if required, develop training, job aids (procedures, bulletins, etc.), and promote awareness, which may necessitate the creation of internal procedures; modify support documentation (e.g. GOI, policies, etc.).
- Discuss at safety meetings/briefings

The railway may choose the most appropriate above-listed tool or a combination thereof.

7.3 PROCEDURE FOR EVALUATING THE EFFECTIVENESS OF REMEDIAL ACTIONS

In order to ensure that the implemented remedial actions are effective, the railway will evaluate the effectiveness on the mitigating measures that have been implemented.

The person responsible must verify if the mitigating measures implemented have corrected the identified issue(s) permanently. If the issue(s) still persists, it must be subject to a more exhaustive analysis in order to develop and implement other mitigating measures that will eliminate or reduce the risk to an acceptable level. The General Manager is accountable to ensure that the evaluation of the effectiveness of the remedial action(s) is performed in compliance with this procedure.

7.3.1 Consultation with the employees

When evaluating the effectiveness of the remedial actions, the employees who are affected by the risk will be consulted.

The consultation will be led by management and employees representative will be invited to participate. The Health & Safety committee will lead the process to evaluate the effectiveness of remedial actions.

SECTION 8

PROCESS FOR ESTABLISHING TARGETS AND DEVELOPING INITIATIVES

SECTION 8 - PROCESS FOR ESTABLISHING TARGETS AND DEVELOPING INITIATIVES

8.1 Safety Targets

Each year, KLTR will establish annual targets with respect to:

- Personal Injuries
- Train Accidents
- Human Factor Incidents

Personal injuries will be measured using a frequency index expressed per 200,000 manhours and meet the criteria of the Federal Railroad Administration (FRA) as they pertain to personal injuries.

Train Accidents will be measured using a frequency index expressed per 200,000 manhours and meet the yearly monetary threshold as determined by the FRA for the current year.

Human Factor Incidents is the result of a rule violation committed by an on-duty employee causing monetary loss.

- Rule Violation is any infraction (voluntary or involuntary) of guidelines, practices, rules and/or regulations established by the company, industry and/or government.

- On-duty Employee is any employee performing company-related activities, driving company vehicles, or operating company equipment – whether owned, leased, or rented. This includes participating in company-sponsored events during or outside normal work hours while on/off company property.

- Monetary Loss is any devaluation of company assets or reallocation of company resources to replace or repair damages resulting from an at fault incident.

The targets must be realistic and attainable. The targets should show an improvement from the previous years, however, management could determine that status-quo may be more realistic. Although the railway's overall target is an aggregate of several functional targets, each employee, supervisor and manager's personal target is 0. The targets will be monitored on a monthly basis and report will be distributed via emails and posted throughout the railway property.

8.2 SAFETY INITIATIVES

In order to support the annual safety targets, KLTR will develop and implement initiatives that will contribute to the achievement of its objectives. The initiatives must clearly demonstrate how they support the targets. In order to do so, several sources of information may be used to determine the appropriate alternatives such as:

- Results of efficiency tests;
- Analysis of Safety Concerns **(Section 5 of KLTR's SMS)**;
- Reports of contraventions and Safety Hazards **(Section 9 of KLTR's SMS)**;
- Internal Audit Reports;
- Annual Reports;
- Issues identified by the Health & Safety Committees;
- Inspection reports.

The Initiatives may not remain static throughout the year. If the monthly reviews show that the targets are not being achieved, the railway may decide to implement new initiatives in order to correct the situations. Furthermore, if new opportunities of improvement are being identified during the year, the railway may implement new initiatives to support its targets.

The initiatives may take the form of:

- Focused efficiency tests;
- Increased surveillance and monitoring;
- Training;

- Information sessions (e.g. safety briefings/meetings, Town hall meetings, etc.);
- Safety blitzes;
- New personal protective equipment;
- New programs/procedures;
- New/enhanced support documentation (e.g. GOI, GEI, company rules/policies;
- etc.

The initiatives will clearly outlined:

- Who's the accountable person(s);
- Timeline;
- Deliverables;
- Expected outcomes.

8.3 Communication

The targets and the associated safety initiatives will be communicate to all employees using several channels such as:

- Safety Bulletins
- Safety Briefings/Meetings
- Town hall Meetings
- Safety Electronic Boards
- Bulletin Boards

The General Manager is accountable to ensure that the information is being communicated to all employees.

8.4 Record Keeping

The railway will keep records of the date and the manner in which the targets and the associated initiatives were communicated to the employees. The records will be kept for 6 years.

SECTION 9

PROCESS FOR REPORTING CONTRAVENTIONS AND SAFETY HAZARDS

SECTION 9 - PROCESS FOR REPORTING CONTRAVENTIONS AND SAFETY HAZARDS

Reporting contraventions to regulatory instruments, company policies or a safety hazards without fear of reprisal, encourages employees to identify and report hazardous situations that might otherwise go unnoticed. The objective is to advance safety through collecting, analyzing and sharing data.

9.1. REPORTING PROCEDURE

When an employee files a report concerning a contravention to regulatory instruments, company policies or an identified safety hazards, the following procedure must be followed:

When to report

Contraventions or safety hazards must be reported as soon as possible after experiencing or witnessing the situation or the issue.

How to report

The employees at KLTR need to report any contravention to regulatory instruments, company policies or a safety hazards verbally or in writing to their immediate supervisor. If the employee wishes to report a contravention to regulatory instruments, company policy or a safety hazards, the form found under at Annex Q (?) should be used.

Note: The employee may also contact anonymously the reporting service at

1-(800)-589-3280

What to include in a report

- The location, date and time;
- Details of the contravention or safety hazards;
- Consequences, if any (e.g. death, injuries, HFI, derailment, spill of dangerous; goods, safety threat, incident, non-compliance).

Reporting contact

Report of contraventions or safety hazards may be reported to:

- Immediate Supervisor

- Director of the Department
- Director of Safety & Security
- General Manager and Senior Director of Safety & Security

9.2 INVESTIGATING PROCEDURE

The railway will:

- Analyze/investigate every report of contravention to regulatory instruments, company policies or identified safety hazards according to Section 5.2.3 of the railway's SMS **(Section 5 – Process for Identifying Safety Concerns)**;
- If warrant, a risk assessment may be performed;
- The Health & Safety committee members will be informed of the report(s) at monthly meetings.
- If the report is not anonymous, the individual who filed the report will be informed of the outcome of the investigation and the appropriate corrective actions implemented if required.

9.3 REPORTING POLICY

The reporting policy encourages employees to report contraventions to regulatory instruments, company policies or identified safety hazards by protecting them from reprisal. KLTR will not retaliate against an employee who in good faith, came forward to report contraventions to regulatory instruments, company policies or safety hazards.

In its Safety Policy, KLTR *encourages employees to report safety concerns and commits not to pursue any reprisals against an employee who, in good faith would report it* **(Section 2 of KLTR's SMS – Process for a Safety Policy)**

However, the company may consider disciplinary actions against an employee when there is:

- Willful wrongdoing or deviation from established policies, procedures or guidelines;
- Intent to cause harm;
- Reckless behavior;

- Other circumstances where management deems that disciplinary actions may be required.

9.4 COLLABORATION WITH EMPLOYEES

When developing the Reporting Policy and the Reporting Procedure, KLTR commits to collaborate with the Health & Safety Committee members and to consider their input.

9.5 COMMUNICATION

KLTR will communicate is Reporting Policy through safety meetings/briefings, town halls, etc. The Safety Policy, which entails the Reporting Policy will be posted on bulletin boards.

9.6 RECORD KEEPING

KLTR will maintain proper records to indicate the date and the manner by which the Reporting Policy was communicated to the employees as well as all changes that may have been done to the said policy. Records will be kept for 6 years.

SECTION 10

PROCESS FOR MANAGING KNOWLEDGE

SECTION 10 - PROCESS FOR MANAGING KNOWLEDGE

A process for managing knowledge is essential to ensure that employees have the knowledge, skills, qualifications and supervision needed to perform their assigned duties safely and that non-employees (contractors) have the knowledge needed to carry out their activities safely while on the railway's property.

The positions considered essential to safety are:

- Locomotive Engineer
- Conductor
- Trainmaster/Assistant Trainmaster
- Locomotive Operator
- Locomotive Electrician
- Diesel Mechanic
- Carman
- Track Foreman/Track Supervisor/Inspector
- Trackman
- Signal Maintainer (Qualified)
- Employees operating Track Units Handling Equipment
- Contractors affecting railway operations (including Rail Traffic Controllers).

KLTR ensures that all employees performing essential activities to rail safety have acquired the skills, qualifications and knowledge to carry out their duties safely. Furthermore, KLTR will ensure that its employees maintain their knowledge by periodically retraining them as well as providing adequate training to address the introduction of new technologies.

All supervisory positions who have direct responsibility and accountability for the duties related to the above-mentioned positions, which are essential to safety, are subject to the same training requirements as the employees occupying these positions (essential to safety).

10.1 DUTIES AND REQUIRED TRAINING – POSITIONS ESSENTIAL TO SAFETY

10.1.1 LOCOMOTIVE ENGINEERS

Locomotive Engineers (with previous experience as conductor)

Main Duties

- Interprets train orders, train signals and railroad rules and regulations to transport freight or passenger trains in a safe manner;
- Inspects locomotive for operational readiness by making FRA and Company required checks and tests;
- Receives train consist which provides the physical make-up of train and includes weights, lengths, location of loads and empties, and cars requiring special handling;
- Applies knowledge of territory, including terrain, grades, curves, and grade crossings, in order to give prescribed warning signals and to otherwise operate the train in a safe manner;
- Complies with train orders, train signals, radio communications and railroad rules and regulations to operate the locomotive in an efficient and safe manner;
- Observes track to detect obstructions and to anticipate operating problems as required by federal or company rules. Diagnose minor malfunctions and performs minor maintenance and servicing activities when maintenance personnel are not available;;
- Confers with conductor or traffic control personnel by radio to give or receive information and to give instructions concerning stops, delays or oncoming trains;
- Notifies proper authorities and prepares reports to explain accidents, unscheduled stops or delays;
- May be required to perform other duties as requested, directed or assigned such participating in risk assessments.

Locomotive engineers (rules qualified with no previous experience as locomotive engineer)

Knowledge Required (training)

Training will be accomplished by a combination of classroom and on-the-job training. The candidates will spend a minimum of 10 days (80 hours) in the classroom.

The classroom training consists of:

- Safety rules and procedures
- Brake systems and test
- Locomotive operation
- Train Handling

It be followed by on-job-training where the candidates will be mentored for a minimum of 240 hours.

Evaluation

At the end of the classroom training, the candidate needs to complete an exam and obtain a passing mark of at least 85%. Candidates will then be monitored periodically to evaluate their level of proficiency. The candidates will be evaluated by a supervisor/instructor for the territory that he/she will be required to operate on.

Requalification

The candidate will be re-examined within 3 years of the initial classroom qualification.

The classroom training consists of:

- CROR
- Train marshalling
- Brake systems and test
- Freight car and train inspection
- Locomotive operation
- Train Handling
- Passenger evacuation procedures (if applicable)
- Safety rules and procedures
- Transportation of dangerous goods, (if applicable)
- Environment
- Security awareness

Locomotive engineers (with previous experience as locomotive engineer)

Knowledge Required (training)

Re-qualification training will be accomplished in a classroom for a minimum of 2 days (16 hours). The classroom training consists of:

- CROR,
- Train marshalling
- Brake systems and test
- Freight car and train inspection
- Locomotive operation

- Train Handling
- Passenger evacuation procedures (if applicable)
- Safety rules and procedures
- Transportation of dangerous goods (if applicable)
- Environment
- Security awareness

The candidate will also receive on-job training for 40 hours on the physical characteristics of the territory he/she is required to operate on.

Evaluation

At the end of the classroom training, the candidate needs to complete an exam and obtain a passing mark of at least 85%. Candidates will then be monitored periodically to evaluate their level of proficiency. The candidates will be evaluated by a supervisor/instructor or designated instructor for the territory that he/she will be required to operate on.

Requalification

The candidate will be re-examined within 3 years of the initial classroom qualification on the above-mentioned classroom training.

10.1.2 CONDUCTOR:

Main Duties

- Manages and controls the movements of the cars by using lantern, hand and/or flag signals or radio to indicate when to start, stop, back-up or set or release air brakes;
- Operates track switches (visually checks switch condition and direction) to change the direction of the engine or cars within yard limits or on the main railroad; may apply or release hand brakes to switch or perform other duties;
- Follows the lists of work, respecting the order of those cars (block the trains);
- Collects the release sheets (ex: rail passage authorization);

- Prepares required daily reports and switch lists, manually or with a computer by filling out forms;
- Inspects the condition of the train and equipment in movement and while stationary;
- Follows and complies with the various rules, railroad safety procedure and standards of Transport Canada
- Interacts with the railway authorities;
- May be required to perform other duties as requested, directed or assigned such as participating in risk assessments.

New hire conductor (no previous experience)

Knowledge Required (training)

Training will be accomplished by a combination of classroom and on-the-job training. The candidates will spend a minimum of 10 days (80 hours) in the classroom. The classroom training consist of:

- CROR
- Train marshalling
- Brake systems and test
- Freight car and train inspection
- Passenger evacuation procedures (if applicable)
- Safety rules and procedures
- Transportation of dangerous goods (if applicable)
- Security awareness

It be followed by on-job-training where the candidates will be mentored for a minimum of 240 hours.

Evaluation

At the end of the classroom training, the candidate needs to complete an exam and obtain a passing mark of at least 85%. Candidates will then be monitored periodically to evaluate their level of proficiency. The candidates will be evaluated by a supervisor/instructor for the territory that he/she will be required to operate on.

Requalification

The candidate will be re-examined within 3 years of the initial classroom qualification on the above-mentioned classroom training.

New hire conductor with previous classroom training (e.g. college or railway)

Knowledge Required (training)

Training will be accomplished by a combination of classroom and on-the-job training. The candidates will spend a minimum of 5 days (40 hours) in the classroom.

The classroom training will consist of:

- CROR,
- Train marshalling
- Brake systems and test
- Freight car and train inspection
- Passenger evacuation procedures (if applicable)
- Safety rules and procedures
- Transportation of dangerous goods (if applicable)
- Security awareness
- Environment

It will be followed by on-job-training where the candidates will be mentored for a minimum of 160 hours. Candidates will then be monitored periodically to evaluate their level of proficiency.

Evaluation

At the end of the classroom training, the candidate needs to complete an exam and obtain a passing mark of at least 85%. Candidates will then be monitored periodically to evaluate their level of proficiency. The candidates will be evaluated by a supervisor/instructor for the territory that he/she will be required to operate on.

Requalification

The candidate will be re-examined within 3 years of the initial classroom qualification on the above-mentioned classroom training.

New hire conductor (with previous experience)

Knowledge Required (training)

Re-certification training will be accomplished in a classroom for 2 days (16 hours).

The classroom training consist of:

- CROR
- Train marshalling
- Brake systems and test
- Freight car and train inspection
- Passenger evacuation procedures (if applicable)
- Safety rules and procedures
- Transportation of dangerous goods (if applicable)
- Security awareness
- Environment

The candidate will then receive on-job training of 40 hours on the physical characteristic of the territory he/she is required to operate on.

Evaluation

At the end of the classroom training, the candidate needs to complete an exam and obtain a passing mark of at least 85%. Candidates will then be monitored periodically to evaluate their level of proficiency. The candidates will be evaluated by a supervisor/instructor for the territory that he/she will be required to operate on.

Requalification

The candidate will be re-examined within 3 years of the initial classroom qualification on the above-mentioned classroom training.

10.1.3 TRAINMASTER/ASSISTANT TRAINMASTER

Main Duties

- Responsible for managing the safety performance, operating practices, and financial productivity of the operation;
- Responsible for customer interface and monitoring the quality of the service in accordance with the terms of any applicable contractual arrangements;
- Assists in railcar switching function as required;
- Assumes a leadership role in supervising crews, schedules, personnel, and maintains payroll within the targeted budget;
- Conducts efficiency and operating tests according to company practices;
- Conducts incident investigations and prepares associated reports-derailments, personal injury, etc;
- Hires new employees to fill vacancies; trains new employees in operating practices according to federal regulations and company policies; administers discipline as needed;
- Other projects and duties such as participating in risk assessments.
- May be required to perform other duties as requested, directed or assigned such participating in risk assessments.

Knowledge Required (training)

Same as for Locomotive Engineer and/or Conductor.

Evaluation

Same as for Locomotive Engineer and/or Conductor.

Requalification

Same as for Locomotive Engineer and/or Conductor.

10.1.4 LOCOMOTIVE OPERATORS (includes electricians and diesel mechanics)

Knowledge Required (training)

Training will be accomplished by a combination of classroom and on-the-job training. The candidates will spend a minimum of 8 hours in the classroom.

The classroom training consists of:

- Safety rules and procedures
- CROR
- Locomotive operation

It be followed by on-job-training where the candidates will be mentored for a minimum of 8 hours.

Evaluation

At the end of the classroom training, the candidate needs to complete an exam and obtain a passing mark of at least 85%. Candidates will then be monitored periodically to evaluate their level of proficiency. The candidates will be evaluated by a supervisor/instructor for the territory that he/she will be required to operate on.

Requalification

The candidate will be re-examined within 3 years of the initial classroom qualification on the above-mentioned classroom training.

10.1.5 LOCOMOTIVE ELECTRICIAN (if required to move equipment)

Main Duties

- Ensure compliance with the different rules and regulations for safety, operations and Transport Canada
- Troubleshoot and test single and three phase electrical systems on diesel electric locomotives, which include grounded components and wiring, high and low voltage, wheel slip, transition and electrical load or no load conditions.
- Performs periodic and annual inspections and understands different regulations pertaining to inspections.

- Maintain, wire, repair, rebuild, inspect and install electrical equipment, including but not limited to rheostats, control systems, transformers, motors, generators, electric lighting fixtures, cab heaters, batteries and their charging systems, speed recorders, air compressor controls, temperature switches, starters, axle generators, coils, contactors, relays and governors.
- Responsible for preventative maintenance on all electrical components.
- Will be required to perform other duties as requested such as participate to risk assessments.

Knowledge Required (training if required to move equipment)

Training will be accomplished in part in a classroom for a minimum of 8 hours.

The classroom training consists of:

- Safety rules and procedures
- CROR (non-main track)
- Operating instructions
- Transportation of dangerous goods (if applicable)
- Security awareness
- Environment

It be followed by on-job-training where the candidates will be mentored for a minimum of 8 hours.

Evaluation

The candidates must complete a written exam with a passing mark of at least 85%.

Requalification:

The candidate will be re-examined within 3 years of the classroom qualification on the above-mentioned classroom training.

10.1.6 DIESEL MECHANIC (if required to move equipment)

Main duties

- Repairs railroad materials;
- Inspects inbound and outbound trains;
- Performs preventative work on our equipment's;
- Performs security inspections on our equipment's;
- Update the locomotive equipment's;
- Diagnoses locomotives default problems ;
- Repairs locomotive components;
- Able to work with the Field Manuel of the A.A.R INTERCHANGE RULES;
- Creates different reports for the Mechanical Department Supervisors and/or Directors;
- Works safely and is up to date on the training of transportation of dangerous commodities;
- Performs all other related tasks such as participate to risk assessments.

Knowledge Required (training)

Re-certified training will be accomplished in part in a classroom for a minimum of 8 hours.

The classroom training consists of:

- Safety rules and procedures
- CROR (non-main track)
- Operating instructions
- Transportation of dangerous goods (80%)
- Security awareness
- Environment

Evaluation

The candidates must complete a written exam with a passing mark of at least 85%.

Requalification:

The candidate will be re-examined within 3 years of the classroom qualification.

10.1.7 CARMAN

Main Duties

- Inspects railcars and components related to railway and the company standards.
- Installs and repairs railcars components such as compressors, air valves and other equipment;
- Performs periodic maintenance, on request and preventive maintenance of cars, structures, chassis, safety components and others;
- Uses manual, electrical and hardware tools to weld;
- Prepares inspection, maintenance and repair reports to record details on prescribed forms that are consistent with established procedures;
- Perform other related administrative duties such as participate to risk assessments.

Knowledge Required (training)

The training will be accomplished in a classroom for a minimum of 8 hours.

The classroom training consists of:

- Safety rules and procedures
- Certified Car Inspection
- CROR (non-main track, if required to move locomotives)
- Operating instructions (non-main track, if required to move locomotives)
- Transportation of dangerous goods (80%)
- Security awareness
- Environment

It be followed by on-job-training where the candidates will be mentored for a minimum of 8 hours.

Evaluation

The candidates must complete a written exam with a passing mark of at least 85%.

Requalification

If required to move locomotives, the candidate will be re-examined within 3 years of the classroom on the following topics:

- Safety rules and procedures
- Certified Car Inspection
- CROR (non-main track, if required to move locomotives)
- Operating instructions (non-main track, if required to move locomotives)
- Transportation of dangerous goods (80%)
- Security awareness
- Environment

10.1.8 TRACK FOREMAN/TRACK SUPERVISOR/INSPECTOR (including assistants)

Main Duties

- Enforces compliance with safety procedures, use of PPE keeping required records.
- Performs track inspections;
- Deals/interacts with regulatory authorities (Transport Canada and provincial and municipal authorities)
- Directs and manages the day-to day activities of the Maintenance of Way crew;
- Interfaces with others to ensure efficient and organized operations of the railroad along with the Maintenance of Way;
- Monitors and closely controls all maintenance and other related costs associated with the Maintenance of Way department;
- Assists to ensure department meets its track, signal and capital projects service goals;

- Other duties as assigned.
- May be required to perform other duties as requested, directed or assigned such participating in risk assessments.

Knowledge Required Track Inspector/Supervisor (initial training)

Training will be accomplished in part in a classroom for a minimum of 32 hours (Track Safety Standards) for Track Inspectors/Supervisors. A minimum of 16 hours on CROR/GEI including Rules for protection of track work & track unit for Track Foreman.

The classroom training for **Track Foreman** consists of:

- Safety rules and procedures
- CROR (including Rules for protection of track work & track unit)
- General Engineering instructions (GEI)
- Transportation of Dangerous Goods (if applicable)
- Security Awareness
- Environment

Evaluation for Track Foreman

Candidates must complete a written exam with a passing mark of 85%. For Track Foremen, it will be followed by on job training with mentoring for a minimum of 80 hours.

The candidate will be evaluated by a supervisor instructor or designated instructor for territory qualification he/she is required to work on.

Requalification for Track Foreman

The candidate will be re-examined within 3 years of the classroom qualification on the above-mentioned classroom training.

The classroom training for **Track Inspector/Supervisor** consists of:

- Railway Track Safety Rules

Evaluation for Track Inspector/Supervisor

For Track Inspector/Supervisor, it will be required to work as a Track Foreman or Trackman for at least 1 year. Upon completion of the one year period, candidates must complete a written exam with a passing mark of 85%.

Requalification for Track Inspector/Supervisor

The candidate will be re-examined within 3 years of the classroom qualification on the above-mentioned classroom training.

10.1.9 TRACKMAN

Main Duties

- Performs the duties involved with the maintenance repair activities surrounding the Maintenance of Way functions, carries out responsibilities in accordance with the organization's safety policies and applicable rules;
- Performs the day to day activities of a Maintenance of Way employee such as unloading and/or assisting in the distribution of track, removing and replacing ties, rails, pulling and driving spikes, shoveling rock ballast, loading and unloading equipment and material;
- Operates tools in the performance of duties such as rail saw, track wrench, spike maul, tie adz, claw bar, and others as needed;
- Restores the track after derailments;
- May be required to perform other duties as requested, directed or assigned such participating in risk assessments.

Knowledge Required (initial training)

Training will be accomplished in a classroom for a minimum of 8 hours on safety rules.

Evaluation

Candidates will always be under the supervision of a qualified foreman.

10.1.10 QUALIFIED SIGNAL MAINTAINER

Responsibilities

- Performs inspections, maintenances or repairs to:
  - Signalisation and telecommunications systems (ground, underground or overhead)
  - Railroad crossing warning systems (includes underground and overhead equipment)
  - Relay stations
  - The tracks circuits (ground, underground, overhead)
  - The switches
  - Energy supply (ground, underground, overhead)
  - Aerial lines
- Follows and complies with the various rules, railroad safety procedure and standards of Transport Canada.
- Operates rail or highway vehicle for transportation wo wayside locations to install, inspect, test and maintain or repaired grade crossing warning systems, signals and signal equipment.
- Verifies the cables conductivity and resistance using the appropriate instruments.
- Prepares required reports, manually or with a computer by filling out forms.
- Performs all other related tasks such as participate to risk assessments.

Knowledge Required (training)

Training will be accomplished in part in a classroom for a minimum of 16 hours for:

- Engineering Safety Rules
- General Engineering Instructions (GEI)
- Dangerous Goods (if applicable)
- CROR
- Fall Protection

Training will be accomplished in part in a classroom for a minimum of 40 hours for:

- Ladder and Stairway Safety
- WHMIS
- Personal Equipment Protection Training

Evaluation

Candidates must complete a written exam with a passing mark of 85%. It will be followed by on job training with mentoring for a minimum of 8 months. The candidate will be evaluated by a supervisor/instructor for territory qualification he/she is required to work on.

Requalification

The candidate will be re-examined within 3 years of the classroom qualification on:

- Engineering Safety Rules
- General Engineering Instructions (GEI)
- Dangerous Goods (if applicable)
- CROR
- Fall Protection

10.1.11 EMPLOYEES OPERATING TRACK UNITS HANDLING EQUIPMENT

Knowledge Required (training)

Training will be accomplished in part in a classroom for a minimum of 8 hours, in addition to Foreman qualification consisting of:

- Brake systems and test
- Freight car and train inspection

Evaluation

The candidates must complete a written exam with a passing mark of at least 85%. This will be followed by on job training for a minimum of 8 hours. The candidate will be evaluated by a supervisor\instructor for territory qualification he/she is required to work on.

Requalification

The candidate will be re-examined within 3 years of the classroom qualification.

10.2 CONTINUING EDUCATION REQUIREMENTS FOR ALL EMPLOYEES

All employees (except employees performing administrative tasks) will receive annual training when appropriate (internally of externally) on:

- Environmental Protection
- Security Awareness
- Toxic by Inhalation (TIH) Products
- Training GWI "Target Zero "
- Respiratory protection program
- Fall Protection
- Chainsaw
- First Aid
- Defensive Driving
- Lock out/Tag out
- Other training as deemed appropriate

10.3 METHOD FOR SUPERVISING EMPLOYEES

KLTR performs both scheduled and spontaneous safety observations (efficiency tests) and inspections to ensure that employees are complying with regulatory requirements as well as company policies.

The results of the observations are recorder into the SafeTrack database. In the event that the employee was not in compliance, SafeTrack requires the supervisor to enter a date by which the employee must be retested.

10.4 METHOD FOR VERIFYING THAT PERSONS OTHER THAN EMPLOYEES HAVE THE REQUIRED KNOWLEDGE.

These following applies to contractors that are granted access to the railroad's properties to perform maintenance, repair or specialty work on or about railroad property; on other properties the railroad is responsible for and/or on property directly adjacent to the railroad track. **They do not apply to contractors providing incidental services that do not influence safety, such as janitorial services, food & drink services, laundry, or other supply services.**

The railway's Contractor Safety Rules are provided to all contractors. KLTR will keep records for each of the contractors that are granted access to the property. Contractors are also subject to task observations and the results are recorded into SafeTrack.

Contractors' Responsibilities:

- Contractors' employees must be trained in the work practices necessary to safely perform their work;
- Contractors must demonstrate full knowledge of appropriate regulatory requirements;
- Contractors must prepare a record, which contains the identity of its employee(s), the date of their training and means used to verify that the employee understood the training;
- Contractors must ensure that each employee follows the railroad's safety rules and procedures;.
- Contractors must advise KLTR representatives of any hazards presented by the contractor's work when they occur;
- Unless otherwise provided in the contract, contractors are responsible for restoring ballast, filling holes created when replacing ties and removing all debris generated as a result of the work that is being performed. Permanent

or temporary safety precautions must be in place each day prior to the contractor leaving the worksite. These safety precautions are the responsibility of the contractor when providing hazard protection;

- Contractors must comply with all applicable transportation department rules when rail cars are involved in the project (e.g. Riding on equipment, 3 Points of Contact, 3 Step Protection, Getting on or off equipment.);

- Contractors must review all pertinent railroad safety rules and regional procedures prior to the commencement of work on railroad property;

- Contractors employee injuries and all railroad property damaged by the contractor must be reported to the railway;

- The railway will keep proper documentation to demonstrate that each contractor's employees have received and understands the purpose of the Genesee & Wyoming Inc. Contractor Safety Rules.

10.4.1 RAILTERM (Contractor)

Rail Term provides rail traffic control for RAIWAY for centralized traffic control (CTC) and dark territory. As Rail Term provides services on a permanent basis, it has committed by contractual agreement to provide the following training to its employees.

Canadian Rail Operating Rules RTC Training and Recertification

The duration of the initial training is 60 hours and the recertification is 12 hours.

Knowledge Required (Training)

- Canadian Rail Operating Rules (CROR):
- CROR general rules and time tables;
- Signal general;
- Protection of track work and track conditions;
- Operation of movements;
- Radio and general procedures;
- Protection of temporary slow orders (TSO) and other GBO;
- Occupancy Control System (OCS;
- Centralized Traffic Control and Interlocking;

- Review of recent of on-conformities and proficiency testing trends;
- RTC Manual;
- Transportation of Dangerous Goods.

Course Material

- Current RAC (railway specific) Canadian Rail Operating Rules (CROR);
- Current time table;
- Current GOI;
- Current RTC Material;
- Current Supplements, if any;
- RTC CROR Re-cert training program (PowerPoint);
- Current Emergency Response Guidebook;
- Railway specific instructions;
- ERG/First Responder video.

Evaluation

For initial training and recertification, the passing grade is 90%

SECTION 11

PROCESS WITH RESPECT TO SCHEDULING

SECTION 11 - PROCESS WITH RESPECT TO SCHEDULING

Fatigue is one of the most critical safety issues facing the railway industry today. There is no doubt that fatigue can have a detrimental impact on human performance and safety. To reduce fatigue in the workplace and help ensure safe railway operations, this process targets situation where employees are required to work schedules identified as "higher-risk" for fatigue. A fatigued person may be less alert and take longer to react than someone who is not fatigued. Fatigue increases the likelihood of errors and can lowers performance. Given the link between shift scheduling, employee fatigue and risk of accidents, shift scheduling must align with human factors principles to help:

- Minimize fatigue in the workplace;
- Reduce fatigue-related accidents or incidents; and
- Increase employee health, productivity, and morale.

1.1 PRINCIPLES OF FATIGUE SCIENCE

While most people require 7 to 9 hours of uninterrupted nightly sleep, some require more or less than this. The duration and quality of sleep has direct effect on the level or alertness. Obtaining less than the minimum required quantity of good quality restorative sleep, even by one to two hours, can cause reduced alertness and performance the next day. Excessively long shifts and/or consecutives shifts that remove the opportunity for sleep or disrupt the normal daily rhythm will:

- Reduce quality and quantity of sleep;
- Lead to an accumulated sleep debt;
- Progressively worsen alertness and performance.

Ongoing sleep disruption leads to chronic sleep loss, further deteriorations in work performance, and long term physical and mental problems. The key principles applied to the scheduling of the employees are that:

- Human fatigue is governed by physiology;
- Human alertness is affected by circadian rhythms;
- Human performance degrades in relation to hours of wakefulness and accumulated sleep debt;
- Human have baseline minimum physiological sleep needs.

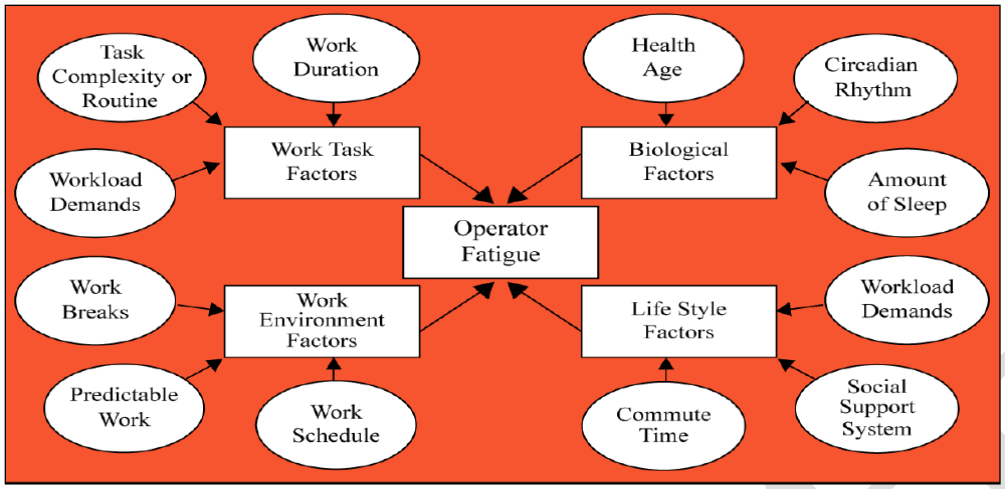


Figure 11.1 - Factors contributing to fatigue

11.2 FATIGUE MANAGEMENT

Discussion at Safety Meetings

Fatigue will be carried out as an agenda item at Safety & Health Committee meetings. Discussions of current practices and issues will be encouraged and new developments or recommended practices will be presented for consideration

Facilities

The Trainmaster and the Safety & Health Committee representatives will monitor conditions in yard offices and away-from-home lodging facilities. The Trainmaster will handle any issues raised.

Crew Calling Procedures

Under the Work/Rest Rules, crews are entitled to a minimum of 6 hours undisturbed rest at away-from-home terminal, and 8 hours undisturbed rest at home terminals. Current contractual agreements provide for a one hour call at away-from-home terminal and a two hours call at home terminal. At no time will the rest period be interrupted for operational purposes. **Will need to be adapted to local reality.**

When it is known in advance that unscheduled trains are required or are anticipated, the Trainmaster will advise affected crew members as soon as possible so that they may plan their rest accordingly.

Existing Operations

Existing operations will be monitored on a regular basis in order to identify any fatigue related safety concerns.

New or Proposed Operations

All new or proposed operations may be subject to the Risk Analysis Process **(Section 6 of KLTR's SMS)** and evaluated to determine their potential effects on fatigue.

11.3 METHODS FOR APPLYING FATIGUE PRINCIPLES

Employees require to work between midnight and 06:00 AM (regular schedule – not applicable to train crews)

Employees who works on a regular night shift schedule (e.g. 00.00 to 08:00) are provided 16 hours of consecutive recuperative time per period of 24 hours (a day) and two consecutive days off. It is the responsibility of the employee to ensure that he/she is properly rested before commencing work.

Employees require to work beyond his or her normal work schedule (not applicable to train crews)

The employees that may be required to work more than four hours beyond their regular schedule (e.g. overtime) or that may be subject to be called outside their regular shift (e.g. signal maintainers), will be provided, if requested, extra time to rest prior from commencing their next shift. In the event that an employee would feel that fatigue might be an issue, he or she would be provided extra rest.

Employees that are not being provided a minimum of 72-hour notice prior from commencing work (method needs to be selected)

The only employees that may not be aware of their schedule at least 72 hours in advance are the train crews and mostly the ones on the spare board. At all time, the provisions of the Work/Rest rules will be respected.

All work assignments will:

- not exceed 12 hours;
- not require more than one tour of duty;
- if required to turn around, a break of at least 30 minutes will be provided;
- require employees' consent to accomplish the turn and only if the employees feel sufficiently rested and alert to continue.

It is understood that any crewmember will be immediately relieved on route on request if fatigue makes it unsafe to continue.

11.3.1 MONITORING AND REPORTING

To ensure that train crews are working within the parameters prescribed by the Work\Rest Rules, the Trainmaster is responsible to monitor hours worked and take appropriate actions when needed. The Director, Compliance & Regulatory Affairs (GWCI) performs quarterly audits of time sheets **(linked with Section 3 of KLTR's SMS)**. The Trainmasters will also verify on a quarterly basis that the worksheets are duly completed. If not, the crew(s) will be notified.

The Trainmaster must report any instances to the Vice President Operations (GWCI) where crews were on duty in excess of 12 hours. These instances must be reported to Transport Canada as soon as possible, but not later than 48 hours after the fact.

Please refer to the subsection on Section on Fatigue Management Plan.

11.4 EMERGENCIES

If an emergency occurs, please refer to Subsection 6.2.4 of the *Work/Rest Rules* and to the above Section on Specific Fatigue Management Plan.

An emergency is define as:

A sudden or unforeseen situation where injury or harm has been sustained, or could reasonably be sustained to employee(s), passenger(s), the public or the environment such as those involving a casualty or unavoidable accident, an Act of God, severe storms, major earthquakes, washouts, derailments or where there has been a delay resulting from

a cause not known to the railway company at the time employees leave the terminal and which could not have been foreseen.

Except as outlined above, normal operating problems that are inherent in railway operations that do not constitute an "Emergency", include but are not limited to:

a) crew shortages;

b) broken draw bars;

c) locomotive malfunctions;

d) equipment failure;

e) broken rails;

f) hot boxes;

g) switching;

h) doubling hills;

i) meeting trains;

j) train length.

It is incumbent upon railway companies to establish that excess service could not have been avoided. When an emergency does occur, railway companies must exercise due diligence to avoid or limit such excess service.

11.5 FATIGUE MANAGEMENT PLAN (FMP)

The Fatigue Management Plan (FMP) is to reduce fatigue and improve on-duty alertness of operating employees. The railway, operating employees and their designated representatives will be involved in the development and implementation of the FMP including changes to such plans.

The FMP will consider:

a) Education and training

b) Scheduling practices

c) Dealing with emergencies

d) Alertness strategies

e) Rest environments

f) Implementation policies

g) Evaluation of fatigue management plans and crew management effectiveness

The FMP will address:

- how operating employees, who work more than one tour of duty under the provisions of subsection 5.1.3 of the *Work/Rest Rules*, will be afforded the opportunity to be involved in the decision to accept a subsequent tour of duty, based on their fitness at that time;
- processes in place that provide rest provisions that allow employees to elect to take rest prior to a subsequent shift or tour of duty, such will satisfy the requirements of the above paragraph;
- the circumstances under which operating employees in road service, not taking rest, will be provided the option to take a break of up to 45 minutes off-duty between consecutive working tours of duty where the combined on-duty time will exceed 12 hours.

A specific FMP must be in place to address fatigue of operating employees in the following circumstances:

a) where continuous on-duty hours exceed 12 hours;

b) where there are more than 64 hours on-duty in a 7 day period; and

c) emergency situations.

Filing/reporting requirements (Transport Canada)

- MFP must be filed with Transport Canada.

- Specific MFP and changes thereto must be filed with the Department. These plans for specific operational situations are to be filed 15 days prior to their implementation.

- The railway must file a report with Transport Canada, as soon as possible, but not later than 48 hours following, when an Operating employee operates in excess of the maximum duty times permitted

under the provisions subsections 5.1.1 and 5.1.3 under an emergency situation (as defined in the Work/Rest Rules).

11.6 COMMUNICATION

The principles of fatigue science that were taken into account to mitigate fatigue and methods used to apply those principles will be communicated to the affected employees.

The General Manager is accountable to ensure that the information is being conveyed to all employees.

11.7 RECORD KEEPING

The railway will keep records of the date and the manner in which the targets and the associated initiatives were communicated to the employees. The records will be kept for 6 years.

SECTION 12

PROCESS FOR CONTINUAL IMPROVEMENT OF THE SAFETY MANAGEMENT SYSTEM (SMS)

SECTION 12 - PROCESS FOR CONTINUAL IMPROVEMENT OF THE SMS

12.1 INTERNAL MONITORING

12.1.1 Monitoring

The railway will, on a continual basis, monitor the implementation of its Safety Management System (SMS) to verify whether the bargaining agents, the selected representatives or employees are being involved in the processes. The monitoring must also be used to determine whether the targets established by the railway are being achieved, and whether the procedures, methods and plans required are being followed and implemented. (Role of the S&H Committee will need to be determined)

12.1.2 Deficiencies in implementation

If deficiencies are being identified with respect to bargaining agents or employee representatives' involvement, annual targets or the implementation of procedures, plans and methods, the railway will investigate to identify contributing factors and implement corrective measures.

12.1.3 Annual Report

On an annual basis, the railway will prepare an Annual Report setting out the conclusions of monitoring activities who will be brought to the attention of the Accountable Executive. In the event that the railway performs a full-scope audit, the annual report will not be produced if during that same year.

12.2 INTERNAL AUDIT

The railway will rely on the Director, Compliance & Regulatory Affairs (GWCI) to lead the internal audits. The audits of all processes will be conducted on a 3-year cycle. The railway may conduct an audit of all processes at once or perform multiple focus audits throughout the 3-year cycle. The railway will verify the suitability, adequacy and effectiveness of all the associated procedures, plans and methods. A statistically valid sample of employees will be interviewed during the audits to validate the level of implementation of each process and to verify if the employees or representatives are being involved in the processes.

The audit will therefore consist of:

- Document verification;
- Managers, supervisors and employee interviews;
- Draft report;
- Final report;
- Corrective action plan.

12.2.1 Document verification

The document verification will be performed by assessing the level of implementation of all processes by using the railway's Audit Manuel.

12.2.2 Managers, supervisor and employees interviews

The SMS Audit Employee questionnaire will be used to interview managers, supervisors and employees. Although most of the interviews will be conducted one-on-one, when appropriate, employees may be interviewed in groups.

12.2.3 Draft Report

Within two weeks after the audit is completed, the Accountable Executive will get a draft report for comments. The Accountable Executive will be provided two weeks to forward comments to the Lead Auditor.

12.2.4 Final report

Within a week after the comments have been received from the Accountable Executive, the Lead Auditor will prepare the final report. The final report will then be forwarded to the Accountable Executive for his/her signature.

12.2.5 Corrective Action Plan

Once the Accountable Executive will have signed and accepted the final SMS audit report, he/she will prepare a corrective action plan to address all findings identified in the SMS final audit report. The Accountable Executive will then sign the corrective action plan.

12.3 AUDIT PLAN

At the beginning to each fiscal year (January to December), the railway will determine the scope of its focused audit. The focused audit will be conducted within the first two quarters of the current fiscal year the audit will be performed according to the procedure outline in Section 12.2.

GWCI VIOLATION REPORTING REQUIREMENTS

EI – 1.012: Violation Reporting Requirements

Effective January 1, 2017

PURPOSE: To establish uniform procedures for reporting and handling all Engineering FRA violations.

SAFETY: Observe all applicable safety rules, operating rules, Road Way Worker Rules, and regulations.

LOCATION: This policy has been adopted by all North American subsidiaries of Genesee & Wyoming, Inc.

I. DISCUSSION

The Federal Railroad Administration (FRA) and Transport Canada (TC) conduct routine and special inspections of track, structures and signals. During the course of these inspections, any item that is not in compliance with any FRA or TC Regulation (including Train Handling, Operating Rule, Roadway Worker, Hazardous Materials, etc.) is noted as a defect on the Inspector's report. The Inspector has latitude to designate a defect as a violation and to recommend penalties against the affected railroad and/or its employees. Designation of a defect as a violation is based upon the Inspector's judgment. Circumstances of the violation may or may not support the Inspector's judgment and there may be lessons learned that need to be shared with the G&W system; therefore it is important to gather factual data to accurately depict the track and/or property condition or action that the Inspector has taken exception to.

II. PROCEDURE

A. The railroad representative accompanying the Inspector should read all inspection reports carefully before signing to determine that the correct railroad name, subdivision or branchline, milepost prefix, and milepost location are applied and if any defect is designated as a violation. When a violation is designated, the railroad representative must immediately notify the Director of Maintenance of Way or Regional Assistant Vice President - Engineering. The Director or A.V.P – Engineering will then notify the Regional Vice President Engineering as well as the Director of Structures (for bridge defects) or Director of Communication and Signals (for signal defects), as appropriate.

B. Within one (1) business day of the violation being written, the involved Roadmaster or Track Supervisor, Director of Structures or Signal Supervisor will send the Regional V.P. - Engineering a report that lists the facts surrounding the incident. Included in the narrative of this report is a statement of why the violation was written along with the Roadmaster's, Director of Structure's or Signal Supervisor's position on the matter. The report should include photographs and/or drawings where applicable. Note: It is critical that the defect be documented immediately (before any repairs are made) with photographs, measurements, drawings and diagrams as appropriate.

C. Within one week of the violation being written, the Regional V.P. - Engineering will prepare a detailed report giving a recommendation on the position the railroad should take with respect to the violation. The detailed report must include appropriate documentation, such as a copy of the violation letter as written by the inspector, copies of railroad inspection reports for the area identified in the violation, last geometry car run (if applicable), date corrected, remedial and corrective actions, etc., that can be

used to support the recommended railroad position. Recommended documentation such as photographs of measurements and procedure used for measurements, drawings, payroll records, and dispatcher logs can also be used to support the recommended railroad position. The Regional V.P. - Engineering or his designee will submit this report to the Regional Senior Vice President of the respective region, the Corporate Vice President Engineering, and the Director of Compliance responsible for management of all FRA violations. The lists below will be used as a checklist to aid in the gathering of supporting documentation.

1.) **<u>Mandatory Documentation</u> for Violations:**

a. Roadmaster, Director of Structures, or Signal Supervisor response with details of violation to be turned into Region Office within one (1) business day.
b. Region response with details to be turned into Corporate Office within one (1) week of violation being written.
c. Region agrees or disagrees with violation and justification.
d. Include last geometry car inspection report (for Main Line track defects) for area identified in the violation.
e. Include last two (2) months track inspection reports for area identified in the violation.
f. Include last bridge inspection report (for bridge defects) for structure identified in the violation.
g. Include last two (2) months signal inspection reports (for signal defects) for area identified in violation.

2.) **Recommended Documentation for Violations:**

a. Pictures to support our standing on violation.
b. List any coaching and counseling given to employee involved, if any.
c. List any additional or re-training given to employee, if any.
d. Include any pictures taken after violation was created.
e. Include any measurements and procedures used for measurements
f. Payroll records.
g. Dispatcher logs.

GWCI DERAIL POLICY

EI – 1.005: Derail Policy

Effective January 1, 2017

PURPOSE: To provide a policy governing standards for the installation and maintenance of derails.

SAFETY: Observe all applicable safety rules, operating rules, Road Way Worker Rules, and regulations. Derails must be installed in accordance with the manufacturer's instructions.

LOCATION: This policy has been adopted by all North American subsidiaries of Genesee & Wyoming, Inc.

PRIORITY: All derails installed after the effective date of this document shall meet the requirements of this document. Existing derails installed less than 50 feet from the "fouling point" shall be evaluated to determine if a derailed car has the potential to foul the track being protected. If it is determined that a derailed car has the potential to foul the track being protected the derail shall be moved to the standard location within 18 months of the effective date of this document. Existing derail locations at tracks where the industry moves cars or have the track descending toward the track being protected shall be evaluated and the derail replaced with switch point derails within 24 months of the effective date of this document if required by the evaluation. Derail evaluations shall be conducted by the Roadmaster and Trainmaster or General Manager and shall be documented on the Derail Evaluation Form (attachment A) and shall be retained for a period of one year after the date of evaluation or one year after the derail is moved or replaced, whichever is longer.

I. DISCUSSION:

The purpose of a derail is to safely derail rolling equipment in the clear of and away from the track it is intended to protect.

II. PROCEDURE:

A. Derails must be installed at the following locations:
   1. At all industry tracks.
   2. When there is any possibility of equipment that has been left standing on tracks other than main tracks or sidings being moved by gravity so as to obstruct a main track or siding. *(In Canada, as per regulatory requirement TSR Part E.II.)*
   3. On bulk loading/unloading facility tracks where cars are dropped by gravity toward the main or other track that is to be protected.
   4. At tracks used to tie up locomotives on a regular basis.
   5. Moveable bridge spans not protected by a signal system

B. There are 4 basic types of derails described as follows. To determine the type of derail to use see item 3 of this section.
   - Hinged – operated by hand, a hinged derail cannot be operated by electrical operation.
   - Sliding – designed to be operated by a hand throw operating stand or electrical operation.
   - Switch Point (single or double) – consisting of either a single switch point or complete switch, which directs the wheels onto the ground at the end of the points.
   - Portable derails – used to provide protection to personnel working on or about track to make working limits inaccessible, or to protect equipment stored temporarily on a track not normally used for storage.

EI-1.005 Derail Policy

1. Derails must be placed on all tracks as specified in this document. Requests for deviations from this standard must be made in writing to the Regional V.P. – Engineering and Corporate V.P. – Engineering. Derail installations or removals must be coordinated with the General Manager so that the proper General Orders may be issued to notify train crews of the changed condition.
2. Power operated derails shall be installed and maintained in accordance with plans and instructions provided by the manufacturer, under the direction of a qualified Signals and Communications employee or consultant.
3. The type of derail to be used is determined by the following conditions:
    a. Hinge and sliding type derails may be used where the speed of the equipment to be derailed will not exceed 15 MPH.
    b. Sliding derails are to be used at locations where power operation is required.
    c. The preferred model derail is a Western Cullen Hayes model SA-XS Hinged Type Derail.
    d. Switch Point Derails are to be used if the equipment to be derailed could exceed 15 MPH, the track approaching the main line descends at a .5% grade or greater, or If customer moves cars within the facility or on any track, by any means.
4. Derails must be installed in such a way that equipment will derail away from the track being protected. Derails come in Left-hand "LH" type (to derail cars to the left) and Right hand "RH" type (to derail cars to the right) or bi-directional. Normally bi-directional derails are not as reliable due to the sharper derail angle. However, the model SA-XS is a longer design with an angle similar to single direction derails. By facing in the same direction as the movement of a potential rolling car, determine which direction away from the track to be protected the car must be derailed. (either right or left)
5. If derails are to be installed in signaled track, make sure the installation meets the requirements of FRA 236.303 or equivalent Transport Canada Regulation.
6. Derail operating stands and targets:
    a. The preferred stand for a sliding derail is the Western-Cullen-Hayes model HRS-100 high rise stand.
    b. Switch point derails should use a switch stand consistent with others in the area and equipped with an ergonomic handle and a target.

C. Derail Installation Specifications

1. The physical location for derails is governed by local conditions such as grade and length of track.

    - For new installations:

      Derails shall never be located less than 50 feet behind the "fouling point" with the protected track on all new installations. Where practical, derails should be located 100 feet from the fouling point, but in any case at a location that a derailed car could not continue to move to the foul of the protected track after being derailed (see Engineering Standard Drawing ES1028.0, example 3).

    - At existing locations:

      The grade of the track and other physical conditions must be taken into account when locating the derail. If the derail cannot be located 50 feet from the "fouling point", it must be located such that a derailed car cannot travel into the foul of the protected track.

      If the derail must be located closer than 50' from the fouling point, the Regional V.P. – Engineering shall inspect the location to make a determination if a bent guardrail must be

installed between the rails to provide additional assurance that the equipment will not foul the protected track.

2. Whenever possible locate derails in tangent track. If a derail must be placed in a curve, do not locate the derail on a curve where the wheels tend to bind against the opposite rail. On curved track locate the derail on the outside rail of the curve.

3. To eliminate the possibility of cars running over hinge and sliding derails without derailing, the derails must be of the proper size to fit the rail according to the following table:

Derail Size	Weight of Rail	Height of Rail
No. 4	65 lb. or less	4-1/2" or less
No. 5	65 to 85 lb.	4-1/2" to 5-1/2"
No. 6	90 to 112 lb.	5-1/2" to 6-1/2"
No. 7	115 to 136 lb.	6-1/2" to 7-1/2"
No. 8	136 to 140 lb.	7-1/2" to 8-1/2"

4. In the derailing position, the derail block must cover the ball of the rail and lay flat on the top of the rail throughout the underside of the derailing block surface. In order to achieve this, the ties may be adzed evenly if the derail is set too high. Steel shims, to a maximum of ½" thick may be used if the derail is set too low.

   Where insulated joints are in the affected area, derails must be placed far enough behind the joints so that equipment derails before fouling the track circuit.

5. Derails, except those power operated, must be equipped with a standard switch lock that is chained to the derail, the operating stand, or tie.

6. Ties to which derails are fastened if practicable should be good quality 7"x 9" track or switch ties (depending on derail type) but in any case must be sound and well tamped. The top surfaces of the ties shall be on the same plane (level) with each other.

7. Derails must be installed with the tie plates in place. If necessary, tie plates can be cropped off on the gauge side to prevent the base of the derail from resting on the plate shoulder. The base of the derail must rest flush on the ties to provide a proper fit on the top of the rail.

8. Derails shall be installed in accordance with the manufacturer's instructions.

9. Provide adequate drainage to keep derails out of water so there is no ice build-up when freezing conditions exist.

10. Where there is a potential for rail creep, install a sufficient amount of anchors to restrict the rail movement.

11. Hinged, sliding and portable derails are to be painted orange for visibility. **PPG HPC7-805 Blazed Orange** paint shall be used for this purpose. Please see Engineering Standard Drawing ES 1028.0 for clearance tie marking requirements. Switch point derails must be equipped with a target.

12. Derail signs must be installed on both sides of a sign-post to indicate the location of the derail for all derails not equipped with a target on a stand. The sign should be located no less than 6' or

more than 9’ from the gauge side of the rail containing the derail. In areas where heavy snow conditions are possible, derail sign-posts should be raised accordingly. If the derail is operated with a high or low mast stand, derail signs may be omitted if the stand is equipped with a target. The derail sign is detailed on Engineering Standard Drawing ES1014.0.

13. When derails are installed on parallel tracks and a derail sign cannot be placed beside each derail because of clearance restrictions, use 1 sign to indicate the number of derails on adjacent tracks. The number of derails should be written using a numeral.
14. For new installations switch-point derails should be of the same rail section as the main line switch and must be constructed with undercut stock rails and switch points.

D. Inspection and Maintenance

1. Switch point derails shall be inspected on foot at least monthly in conjunction with monthly turnout inspections and documented in Digital Track Notebook (DTN). All other derails will be inspected on foot once per year and documented in Digital Track Notebook (DTN).
2. Inspect derails on Private or Industrial tracks that connect with Genesee & Wyoming railroads regardless of who is responsible for the maintenance of the track.
3. Switch point derail inspections shall comply with FRA 213.133, 213.135 and 213.235 or TC E-54 Subpart D XI, XII, and Subpart F(3).
4. Additional inspections of derails are required after every derailing incident to ensure:
   - The derail has not been damaged and is still in good working order.
   - The ties are still sound and the derail is securely fastened.
5. Derails and locks must be regularly lubricated and kept in working order in all weather conditions.
6. Derails and derail signs must be kept clear of vegetation, snow, and debris.
7. Derail signs must be visible at all times and kept clean. Signs must also be replaced when necessary to ensure indications show clearly.
8. Signals and Communications employees must be notified before adjusting or disconnecting derails equipped with signal devices.

E. Attachments:

1. Derail Evaluation Form
2. Western-Cullen-Hayes Derails; Installation, Inspection and Maintenance Guide
3. Western-Cullen-Hayes Installation Instructions for Western-Cullen-Hayes Sliding Derails

Derail Evaluation Form

Date: _____ Region: _____

Railroad: _____ Subdivision: _____

Mile Post: _____ Industry or Location Name: _____

1) What is the existing derail type? _____

2) Does the industry move railroad cars by any means?

   Y __

   N __ - Skip to question 6.

3) Does the industry track descend toward the track being protected?

   Y __ - If answers to questions 1 and 2 are yes a switch-point derail is required.

   N __

4) What means does the industry use to move the cars?

   ____ - car puller

   ____ - locomotive or track mobile

   ____ - end-loader or similar equipment

   ____ - gravity towards the track being protected. (switch-point derail required)

   ____ - gravity away from the track being protected

   ____ - other, explain: _____

5) What training do industry employees receive regarding the safe movement of rail cars?

   _____

6) What is the distance from the 14 foot fouling point to the existing derail? _____ feet

7) What is the distance from the derail to the nearest railroad car for normal industry operations?

   _____ feet

8) Does the industry track descend toward the track being protected?

   Y __ - Percent grade toward track being protected: _____% (measurement required)

   N __

9) Is derail located in tangent track? Y ____ or N ____

10) Does the derail direct cars away from the track being protected? Y ____ or N ____

11) Is the derail painted PPG HPC7-805 Blazed Orange? Y ____ or N ____

12) Is the derail equipped with a target or a derail sign? Y ____ or N ____

13) Are clearance ties marked in accordance with Engineering Standard Drawing ES1028.0?
Y ____ or N ____

14) In the opinion of the evaluation team does the existing derail adequately protect the track?

Y: explain: _____

N: explain: _____

15) Action to be taken:

____ - no action required.

____ - existing derail moved to a min. 50 feet from 14' fouling point. Date of correction: _____

____ - existing derail to be replaced with a switch-point derail. Date of correction: _____

____ - derail to be painted as required by G&W standard. Date of correction: _____

____ - derail sign to be installed per G&W standard. Date of correction: _____

____ - other, explain: _____ Date of correction: _____

Comments: _____
_____
_____

Evaluation Performed by:

Engineering: _____ (signed)

Transportation: _____ (signed)

DERAILS

Installation

Inspection

Maintenance

SERVING THE INDUSTRY SINCE 1903

WESTERN-CULLEN-HAYES, INC.
2700 W. 36TH Place, Chicago, IL. 60632
(773) 254-9600 FAX (773) 254-1110

WESTERN-CULLEN-HAYES, INC.
120 N. 3rd St., P.O. Box 756, Richmond, IN 47374
(765) 962-0526 FAX (765) 966-5374

INDEX

1.0 PURPOSE OF A HAYES® DERAIL

A Hayes® Derail is a device designed to limit movement of free rolling uncontrolled railroad cars. This is accomplished by guiding the flange of a car wheel up and over the rail head and deflecting it laterally to drop the wheel clear of the rail on the field side (outside) of the rails. Movement of the car is halted by the wheels lodging in the tie cribbing and ballast.

2.0 MODELS OF HAYES® DERAILS

2.1 SLIDING, See Figure 1

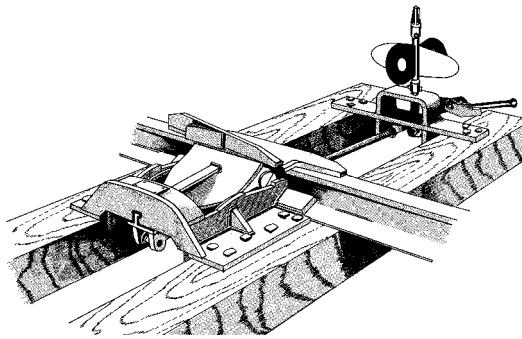


Figure 1-HB Sliding Derail with 2 Tie Operating Stand

Model HB Sliding Derail is designed to be operated on and off the rail in a sliding motion.

Model HB has three connecting lugs used for attaching switch circuit controller, operating devices or other equipment.

Model HBX derails from either direction (two-way). We recommend its use only when it is necessary to derail from either direction at low speeds. Figure 2 depicts the length and angle of deflection of our Model HB Derail. Figure 3 depicts the length and angle of deflection of Model HBX. The greater angle of deflection in Model HBX results in less derailing efficiency than Model HB.

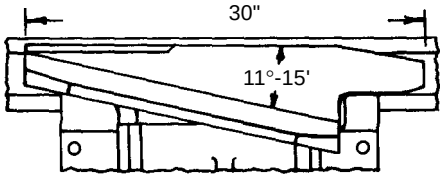


Figure 2-HB Derail (Right)

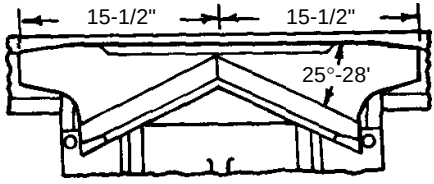


Figure 3-HBX Derail

All sliding derails must be used in conjunction with a manual operating stand, (conventional or high rise) or power assisted device, (ELDO, Delectric or Switch Machine).

2.2 HINGED, See Figure 4

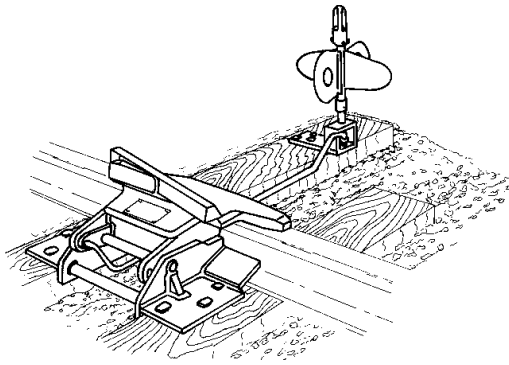


Figure 4-EB Hinged Derail with Target Stand

Model EB is our standard single deflection hinge derail. The derail block is thrown over in a vertical semi-circle on and off the rail by hand. Hinge derails cannot be operated by stand or power.

Model EBX is a double-end (two-way) hinge derail similar to Model HBX sliding derail. Recommended use is only when necessary to derail from either direction at low speeds. Figure 3 depicts the length and angle of deflection of Model EBX and HBX. The greater angle of deflection in Model EBX results in less derailing efficiency than Model EB.

Model EBF is the same as Model EB except it incorporates a heavy gauge metal blue flag. The flag can be raised or lowered with the derail, providing blue flag protection.

Model EBXF is same as Model EBF except it is a double-end (two-way) derail with blue flag.

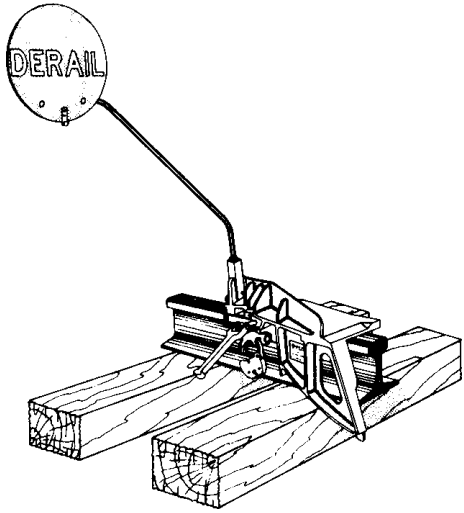


Figure 5 - LPTS PORTABLE DERAIL

2.3 Model LPTS portable derail, is made of high strength low alloy steel providing strength and durability, yet is light-weight. It fits all standard "T" rail sections from 75 to 136 pounds and is single direction throw. The derail can be padlocked on rail and is furnished with a blue flag

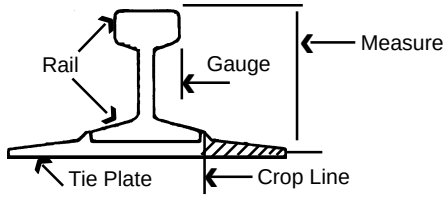
2.5 FIELD SIDE

Model KA is for use when between gauge equipment restricts standard derails. It is made using high-strength steel construction. This unit will function in ice, snow or sand conditions with less maintenance than other derails. Operation can be by manual operated stand, DeLectric Operator or Electric Lock Derail Operator (ELDO). Shims provided for exact fit to variety of rail sizes. Unique swivel action is easy to operate. Installation instructions are provided with units.

3.0 PREPARATION FOR INSTALLING HAYES DERAILS

3.1 Site Requirements

When preparing to install a Hayes Derail determine the most suitable location for the derail. Choose the model best adapted to the service required.



DERAIL SIZE	FOR RAIL (AND TIE PLATE) MEASURING
4	3/1-2 inches to 4-1/2 inches high
5	4-1/2 inches to 5-1/2 inches high
6	5-1/2 inches to 6-1/2 inches high
7	6-1/2 inches to 7-1/2 inches high
8	7-1/2 inches to 8-1/2 inches high

Provide a right hand or a left hand derail as the direction of derailing requires, unless a double-end derail is to be used. The requirements for the correct installation of a Hayes Derail are:

1. The track must be in good condition at the two ties where the derail is to be installed. The ties should be sound and well tamped up, are at right angles to the rail and must hold the rail firmly to the gauge.

2. The derail must be made a fixed part of the track.

3. If rail tie plates are used, they must be cropped even with the base of the rail; they should never extend under the derail.

4. Drainage must be adequate to prevent water from collecting around the derail. While water will not affect the function, ice can hinder the movement of the derail.

3.2 Selecting Correct Size

A Hayes Derail must be the correct size for the rail. The size number of the derail is stamped on the nameplate. This number indicates the distance in inches, from the top of the rail to the surface on which the derail will be secured.

If tie plates are used, they must be cropped even with the base of the rail on the gauge side. Total height measurement must include rail and tie plate. Always state total measurement so proper size of derail will be provided.

Remember, derail size is in even inches and is determined by the vertical height of the rail and tie plate, if any, at the derail location. Not every vertical distance is in even inches, (example: 5-3/4" rail on a 3/4" tie plate equals 6-1/2" vertical distance). Derails can be shimmed not more than one-half inch or the mounting surface lowered, (adzed) not more than one-half inch to accommodate height variations.

3.3 Selecting Correct Derailing Direction
Stand between the rails; look in the direction of the area to be protected and determine if the rolling equipment should be derailed to the right or left. Remember, a right hand derail will be mounted on the right hand rail and conversely with the left. Derails are always mounted on the gauge side (inside) of the rail with the exception of special Model KA derails.

4.0 INSTALLING SLIDING DERAILS (HB SERIES)

4.1 Locating the Derail
The distance the derail is to be placed from the point requiring protection should be determined by the probable distance the car will travel after being derailed. This depends on length of track, the grade and the condition of the soil. (Frozen ballast will permit farther travel than unfrozen.)

Always place the derail where it will be assisted by the track configuration. Placing the derail on the rail against which the wheels bind assists the derail in doing its work; placing it on the opposite rail may hinder derailment. Note Figures 6, 7 and 8.

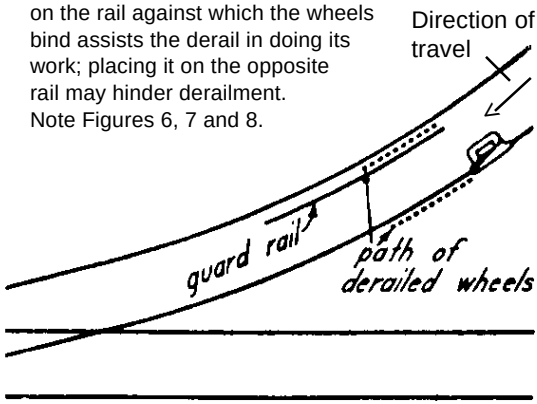


Figure 6 - Correct Location of Derail on Curve

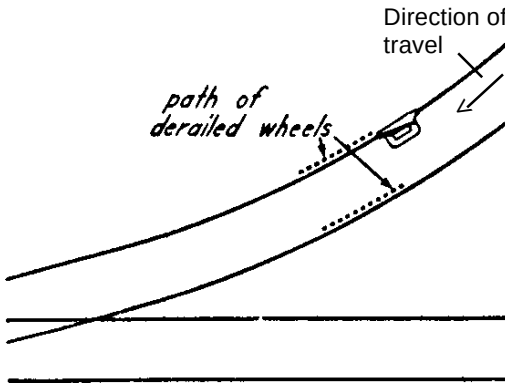


Figure 7 - Incorrect Location of Derail On Curve

CURVES: DO NOT LOCATE A DERAIL ON A CURVE WHERE THE WHEELS HAVE A TENDENCY TO BIND AGAINST THE OPPOSITE RAIL. ON CURVED TRACK LOCATE THE DERAIL ON THE OUTSIDE RAIL OF THE CURVE, ORDERING A RIGHT OR LEFT ACCORDINGLY.

IF LOCAL CONDITIONS FORCE THE USE OF A DERAIL ON THE INSIDE RAIL OF A CURVE WE RECOMMEND THE USE OF A WCH WHEEL CROWDER WITH THE DERAIL.

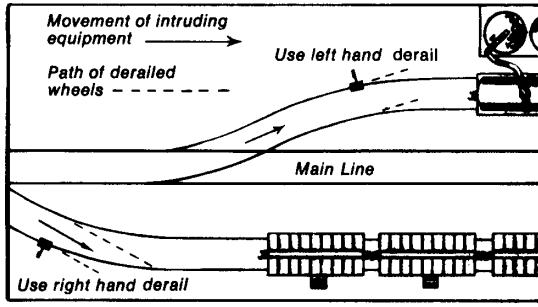


Figure 8 - Movement of Intruding Equipment,
Path of Derailed Wheels

4.2 Positioning the Derail Relative to The Rail

Figure 9 shows a correct installation. The derail is positioned so that its horizontal flanges are on the same plane as the rail base, and the rail height and derail size agree.

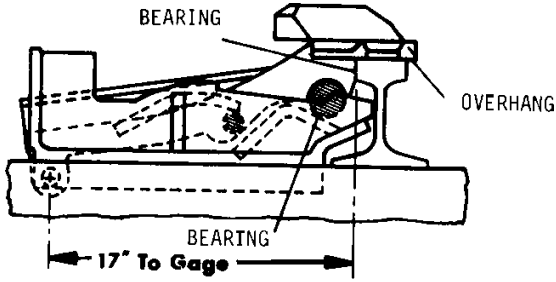


Figure 9 - HB Size 6 on 6" Rail
CORRECT For Installing Without Tie Plates

Figure 10 is correct when a tie plate is used. Shim under the derail so that the height of derail and shim equals the height of rail and tie plate.

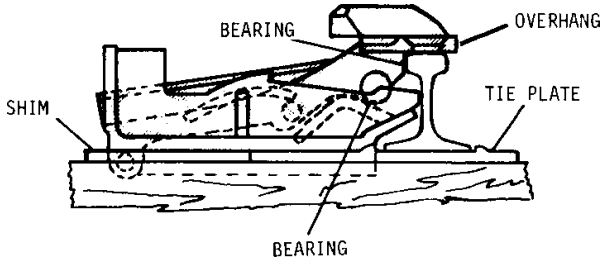


Figure 10 - HB CORRECT For Installing
With Tie Plates

Figure 11 is not correct. The derail shoe does not properly cover the rail head. This is the condition that can result from using a tie plate under the rail without matching shims under the derail, even though the rail height and derail size agree.

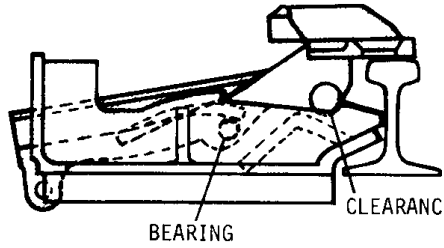


Figure 11 - HB Size 6 on 6-1/2" Rail
INCORRECT: Rail Higher Than
Size of Derail

Figure 12 also is not correct. This faulty installation puts undue strain on the shoe and can result in a broken shoe or a distorted block. Furthermore, this prevents proper seating on the rail and can cause the derail to be dislodged from the track.

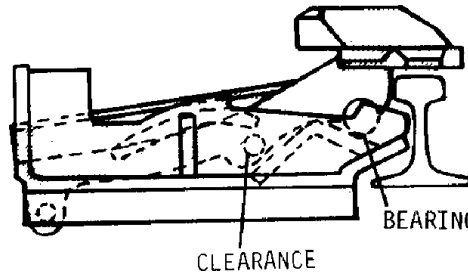


Figure 12 - HB Size 6 on 5-1/2" Rail
INCORRECT: Rail Lower Than
Size of Rail

4.3 Putting The Derail In Track.

After site, size and direction of the derail have been determined, lay the derail in place. Shove the front of the guide box against the web of the rail and fasten the guide box to the ties.

The derail block, when on the rail, must fully cover the head of the rail to insure derailing. (Note Figures 9 and 10 regarding overhang.)

If the derail has been correctly placed, the derail block will drop neatly onto the top of the rail at the end of the forward stroke. The weight of a wheel on the derail will then be carried through the derail block directly to the rail and ties.

The derail block cannot move off the rail horizontally. It cannot leave the rail except by raising above it at the same time.

If the derail block does not fit the rail head in this way, the position of the guide box with reference to the rail must be adjusted. It may be found that the surface on which the derail is secured is not the required distance below the top ot the rail; or the front of the guide box may not be against the web of the rail (Note Figure 13).

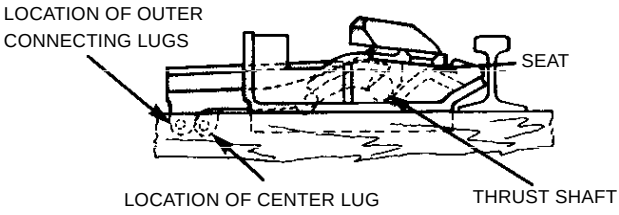


Figure 13 - Model HB
Showing Connecting Lugs

4.4 Data Concerning Adjustment of Vertical Height

Example: You have a Size 6 Derail (from nameplate). VERTICAL DISTANCE is 6-1/2". (5-3/4" high rail on a 3/4" tie plate). Derail, sitting on ties, will be 1/2" too low. You may either A) Shim up the derail 1/2" with steel shims, or B) Remove the tie plates under the rail and adz the ties 1/4" under the Derail. Either method will make the distance from the TOP OF RAIL TO TOP OF TIE (where the derail sits) the same number of inches as size number of Derail. **THIS IS A MUST.** See Figure 16.

Example: You have a Size 6 Derail (from nameplate). VERTICAL DISTANCE is 5-1/2". (5-1/2" high rail directly on ties--no tie plates.) Derail, sitting on ties, will be 1/2" too HIGH. You may either: A) Shim up the running rail 1/2" with steel shim, or B) Adz the ties 1/2" under the Derail. Either method will make the distance from TOP OF RAIL TO TOP OF TIE (where the derail sits) the same number of inches as size number of Derail. **THIS IS A MUST.** See Figure 14.

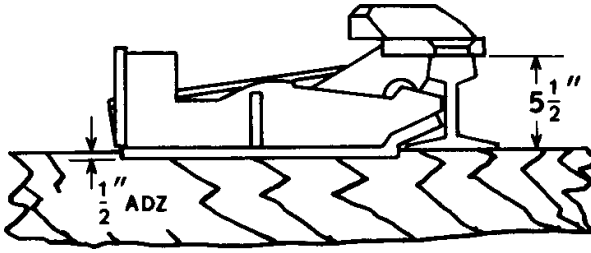


Figure 14 - Size 6 Derail Correctly
Installed on 5-1/2" Rail

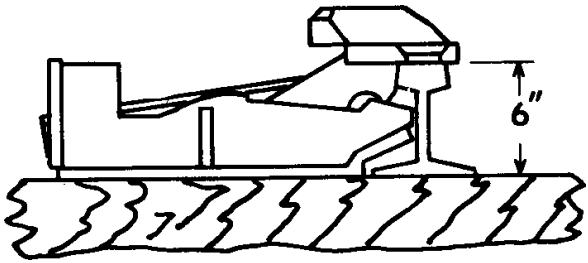


Figure 15 - Size 6 Derail Correctly
Installed on 6" Rail

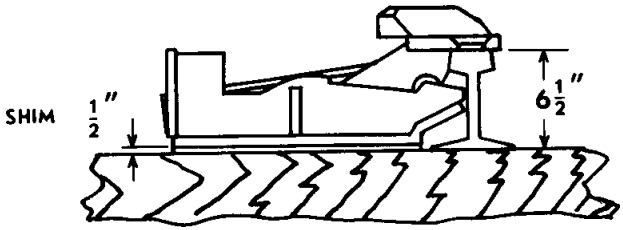


Figure 16 - Size 6 Derail Correctly
Installed on 6-1/2" Rail

4.5 Making The Derail A Fixed Part of The Track

Note: Follow the plan as shown in Figure 17. The derail guide box is provided with vertical and horizontal flanges adapted to bear against the sides and tops of the ties; these areas of the ties should be surfaced to give a good bearing for each of the flanges of the guide box.

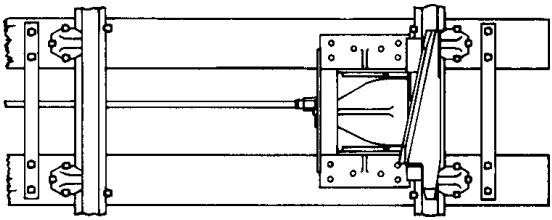


Figure 17 - Model HB Derail In Track

By placing rail braces outside both rails on the derail ties, the rails will be held to gauge and in correct position relative to the derail.

Straps spiked at the outer ends of the ties will hold the ties in correct relative position.

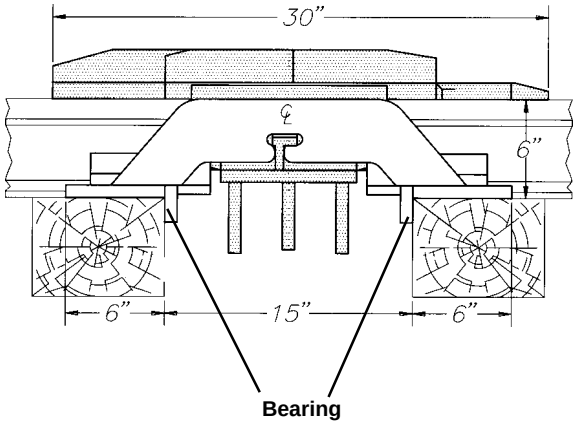


Figure 18 - Model HB

The ties should be spaced so that the derail vertical flanges will bear against them (See Figure 18).

The horizontal flanges have holes 31/32" diameter. These will accommodate 5/8" square track spikes or lag screws up to 15/16" diameter. All of these openings should be used so that the derail may be firmly afixed to the ties.

4.6 Operating or Indicating Connections to Derail

Models HB and HBX have three connecting lugs, 3/4" thick with 57/64" dia. holes, with one lug being offset. (See Figure 18) Operating and locking connections should be placed at right angles to the rail and in direct line with the movement of the derail block.

5.0 INSTALLING HINGE DERAILS
(EB SERIES)

5.1 Basic instruction for HB Derails also apply to EB Series Derails, follow the previously mentioned requirements of location, size and direction of throw.

5.2 Set the derail in track with the derailing block down flat on the rail and position so that the vertical surface under the derail block just touches the gauge side of running rail.

Ties should be in good condition and spaced (12") to bear against the vertical flanges of the derail guide box. The ties should be tamped thoroughly to provide a good bearing under the running rail. The derail should be secured to the ties with six spikes or lag screws fully driven.

The derail block should come down flat onto the top of the rail; it will do this if the derail is correctly placed. Also, the block should fully cover the head of the rail to insure derailing. The shoe is designed for a 1/2" overhang with 3" head width, smaller width heads should have correspondingly increased overhang.

6.0 INSTALLING HAYES PORTABLE DERAIL MODEL TS

Place derail with graduated teeth against tie or tie plate on gauge side of rail. Adjust set screws on field side of derail to light bearing under rail head, derail shoe to sit level, tighten jam nuts. See Figure 19.

Hand tighten screw handle to secure derail to rail head. Do not overtighten; hand tight only. See Figure 20 for correct placement. Align holes under handle for applying padlock. Position flag for warning. Note: The handle clamp is for security so derail is held in position and a lock is inserted. It is not for retarding linear movement.

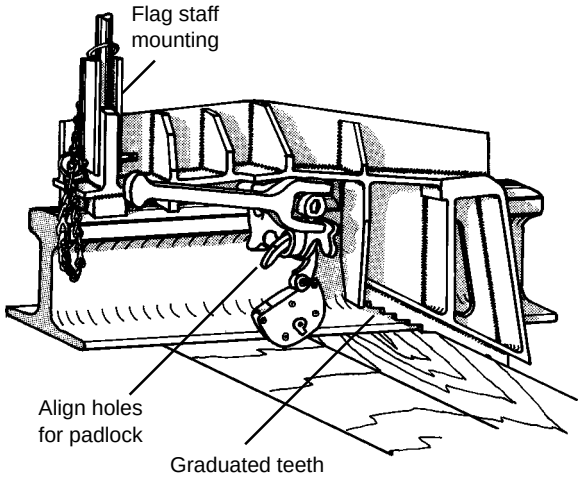


Figure 19 - TS Derail

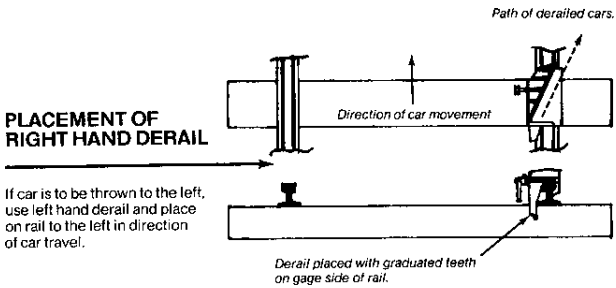


Figure 20 - Placement of TS Derail

7.0 INSTALLING HAYES FIELD SIDE DERAIL (MODEL KA)

Install according to instructions provided with the unit.

8.0 DERAIL OPERATING STANDS

8.1 Two-Tie Operating Stand & Parts Figure 21 shows the operating stand. It is made to throw any Hayes Sliding Derail. Operating stands cannot be used with Hinge Derails. All Operating Stands can be padlocked.

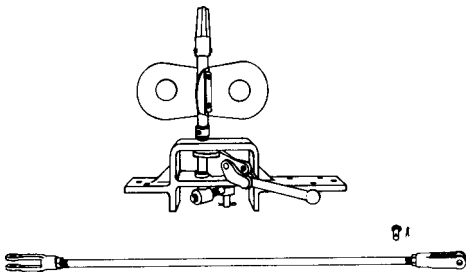


Figure 21 - Two Tie Operating Stand & Parts

The Two-Tie Operating Stand has no gears; the parts are few and everything is in sight. All parts are steel except the lamp tip which is cast iron. The eyebolt is threaded to provide adjustment for the throw of a Hayes Sliding Derail. The lever opens and closes the derail and turns the vanes through a right angle; it may be locked with the derail either on or off rail. The connecting rod has an adjustable screw jaw on each end and 7/8" turn pins.

Unless specified otherwise, our standard will use a rod length to locate the center of lamp staff 3 feet 6 inches from gauge. Lamp tip will conform to AAR standard lamp socket. Weight 90 lbs.

8.2 The One-Tie Operating Stand shown below is the same in construction and operation except that it requires only one tie as a support. Weight with connecting rod is 63 lbs.

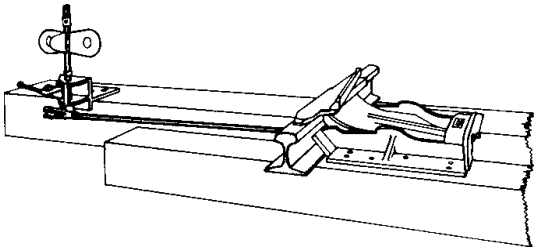


Figure 22 - One Tie Operating Stand

8.3 The Close-Coupled Operating Stand, Figure 23, is the same in construction and functions as our regular Operating Stand except long ties are not required. The staff is cut off 1/2" above base forging, vanes and lamp tip are not used due to closeness of stand to rail to provide standard clearance. Connecting rod is 37" long. Weight with connecting rod is 76 lbs.

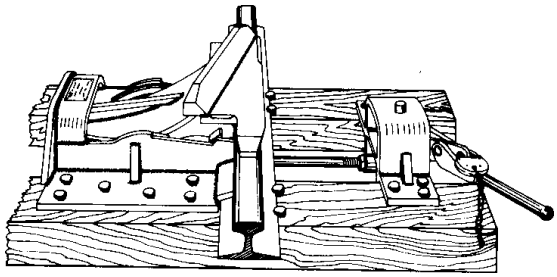


Figure 23 - Operating Stand Close Coupled to Model HB

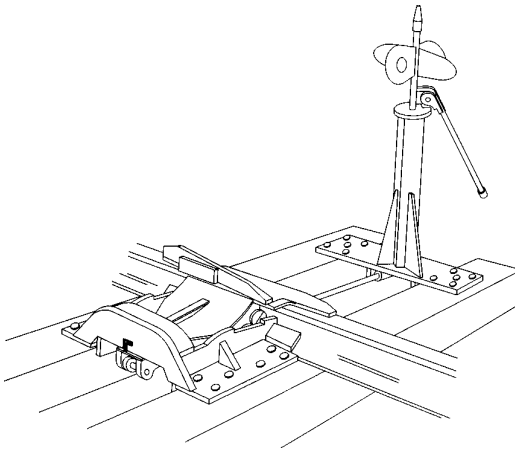


Figure 24 - HB Sliding Derail with
High Rise Operating Stand

8.4 HIGH RISE OPERATING STAND

Ergonomic design allows movement of sliding derail with out bending or stooping. The handle is 34 inches above the top of tie and the stroke adjusts for any sliding derail. The stand can be padlocked in both on and off rail position. Target vanes are red and white (unless other colors are specified)14 gauge steel.

8.5 Installing An Operating Stand With
Hayes Sliding Derails

Install the derail according to instructions. Pin the connecting rod to the stand eyebolt and to the center derail lug. With the lever in the left notch facing the rail and the derail block on the rail, fasten the stand to the ties. Adjust the eyebolt to give the correct stroke. Adjust the screw jaws for length of the connecting rod. Rod length does not affect the stroke. Eyebolt length changes stroke of derail.

9.0 DERAIL TARGET STAND

9.1 The Target Stand, See Figure 25, may be used with any Hayes Sliding or Hinged Derail to indicate whether the derail is on or off the rail, but it cannot be used to operate the derail.

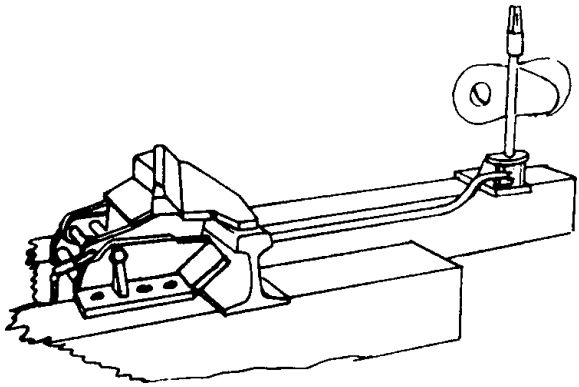


Figure 25 - EB Hinged Derail With
Target Stand

9.2 Operation

The movement of the derail block on and off the rail is transmitted through the connecting rod and turns the lamp staff through a right angle; the standard connecting rod places the center of lamp staff 3 feet 6 inches from gauge. The complete stand with connecting rod weighs 35 lbs. Unless otherwise specified banners will be provided red to denote on-rail and white to denote off-rail. Lamp tip will conform to AAR standard lamp socket.

9.3 Installing A Target Stand With Hayes Sliding or Hinge Derail

Install the derail according to instructions and insert the connecting rod in the lug of the derail nearest the tie on which the Target Stand will be mounted. Insert the end of the connecting rod in the crank. Holding the Target Stand on the tie, throw the derail block back and forth and adjust the eyebolt to turn the vanes through a right angle; then fasten the stand to the tie. Be certain when looking down the track only one color is visible when derail is fully on or off rail.

10.0 WESTERN-CULLEN-HAYES WHEEL CROWDER (Patented)

The Wheel Crowder is a device designed to assist the functioning of derails under unusual conditions such as location on inside rail of curves and on descending grades. It is designed for use with our Model HB and EB Derails. When used with Model HB the derail and Wheel Crowder may be moved into or out of the working position by a hand operated stand or Delectric derail operator subject to remote or local control. When used with Model EB Hinge Derail, the Wheel Crowder is moved into or out of the working position when the derail block is thrown over in a vertical semi-circle on or off the rail by hand.

A Wheel Crowder consists of two pieces; a complete Crowder and one rod which attaches to the derail. Before installing, read nameplate on Crowder to be sure Crowder is correct for derail being used. A crowder for hinge derails will not work with sliding derails and a Crowder for sliding derails will not work with hinge derails.

Nameplate also indicates size and right or left hand. Size must correspond to size of derail being used. Also, a right hand Wheel Crowder must be used with a right hand derail; conversely with the left. The Wheel Crowder cannot be used with A double-end derail (two-way). Regarding size, use same instructions as to determining size given with the derail.

10.1 PUTTING THE WHEEL CROWDER IN TRACK WHEN USED WITH MODEL EB HINGE DERAIL

1. Place Crowder against gauge side of rail opposite derail. Be certain ties are at right angles to rail.

2. The vertical flanges on base of Wheel Crowder are same as derail, maintaining straight, parallel ties for correct installation.

3. Two bolt holes are provided, one at each end of Crowder, drill holes in rail to accommodate the bolts and tighten Crowder to web of rail. Use set screws at web to maintain proper point contact with rail. Use spikes or lag screws to securely hold the crowder in position.

4. With the derail and Crowder secured in place, attach connecting rod in the left hand lug of the derail, insert and spread cotter key.

5. Fit the connecting rod to the Crowder, adjust the turnbuckle to fit snug when derail is in the on-rail position and the crowder point is snug against gauge side. Insert pin and spread the cotter key.

6. Test your installation by positioning the derail to the off-rail position with very little physical effort. The Crowder should be in the non-derailing position.

7. Do not install a Wheel Crowder with a double-end derail (EBX, EBXF); use only a right or left hand derail. A Crowder accepts a wheel from one direction only, angles of deflection do not correspond with double-end derailers.

8. All moving parts should be well lubricated to insure ease of movement. Graphite should be used on sliding surfaces.

10.2 PUTTING THE WHEEL CROWDER IN TRACK WHEN USED WITH MODEL HB SLIDING DERAIL

1. Place the Wheel Crowder against gage side of rail opposite to which derail is located. Be certain ties are at right angles to rail.

2. The vertical flanges on base of Wheel Crowder are same as derail, maintaining straight, parallel ties for correct installation.

3. Two bolt holes are provided, one at each end of Crowder. Drill holes in rail to accommodate the bolts and tighten Crowder to web of rail. Use set screws at web to maintain proper point contact with rail. Use spikes or lag screws to securely hold the Crowder in position.

4. With derail and Crowder secured in place, first attach the connecting rod to the left lug on the derail, then connect the opposite end of the connecting rod with the turn-buckle into the reversing crank mechanism on the base of the Crowder.

5. Attach the connecting rod from the manual or electric operating mechanism that places Derail and Crowder in the on-rail or off-rail position to the turn-buckle on the operating stand, and the opposite end into the right hand lug on the Derail. Insert and spread all cotter keys in the connecting rods.

6. Do not install Wheel Crowder with double-end derail (HBX), use only right or left hand derails. A Crowder accepts a wheel from one direction only, angles of deflection do not correspond.

7. All moving parts should be well lubricated to insure ease of movement. Graphite should be used on all sliding surfaces.

10.3 ILLUSTRATIONS OF CORRECT AND INCORRECT INSTALLATIONS OF MODEL HB, AND MODEL EB DERAILS WITH WHEEL CROWDER

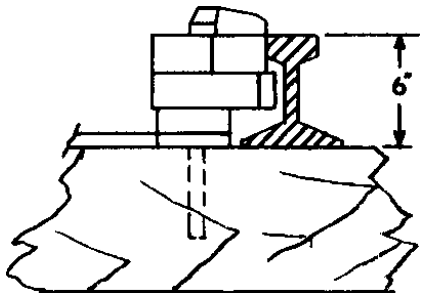


Figure 26 - CORRECT FIT

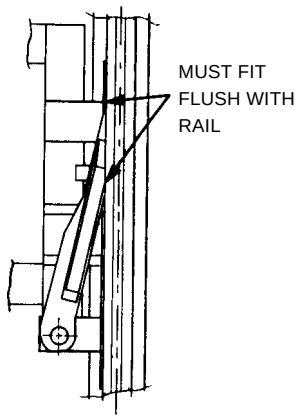


Figure 27 - CORRECT FIT- Must Fit Flush With Rail

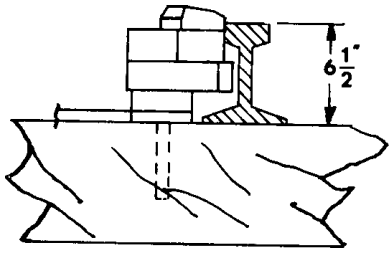


Figure 28 - INCORRECT - Wheel Crowder Put In Track Wrong, Wheel Crowder Size 6 on 6-1/2" Rail. Too Low For Rail. Wheel Can Damage Crowder.

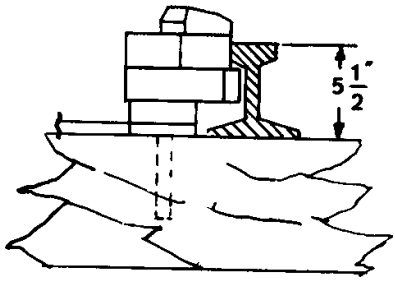


Figure 29 - INCORRECT - Wheel Crowder Size 6 on 5-1/2" Rail. Too High For Rail. Crowder Function Impaired.

11.0 INSPECTION AND MAINTENANCE OF PERMANENTLY INSTALLED DERAILS MODEL HB AND EB SERIES

11.1 Inspection Data Required

Derails should be given the same inspection and maintenance that other track and signal devices receive.

When anything happens at a derail which seems to reflect on the efficiency of the installation, the conditions at the derail should be examined and a record made by writing down the answers to the following questions:

1. Model and size of derail.
2. Actual height of rail, actual width of head of rail.
3. Is the derail on the outside rail or inside rail of a curve? About what degree is the curve? Is it on straight track?
4. What is the condition of the ties?
5. What is gauge of track at derail?
6. How far is the guide box away from the web of the rail?
7. What is the vertical distance from the top of the rail to the surface on which the derail is secured?
8. Are the ties and operating connections at right angles to the rail?
9. How is the derail fastened to the ties and are all holes in the horizontal tie flanges of the guide box used?
10. How many rail braces and tie plates are used on the derail ties?
11. Is the rail held firmly to the ties at the derail?
12. Are the ties well tamped up to a firm bearing?

13. Are the derail ties strapped together?

14. Do the bottom vertical flanges of the derail guide box bear against the sides of the ties?

15. Does the derail block at the heel end fully cover the head of the rail?

16. Has the derail been damaged in any way and if so, what result will it have on the function of the derail?

17. How is the derail operated? Is it well lubricated?

18. Give any other essential facts bearing on the location or condition of the derail.

If the analysis of an inspection as outlined above does not straighten out the matter, please send the record to us and we will be glad to assist you.

11.2 Explanation of Inspection Questions

A better understanding of the inspections can be gained if you read the explanation of each item listed here:

1. The model symbol and size number of the HB and EB Series Derails will be found on the nameplate. On derails installed previous to 1948, this will be found on the castings. The size number indicates the distance in inches down from the top of the rail to the surface on which the derail must be secured.

2. All derails shipped since 1949 (Models HB, HBP, HBX, HBXP and EB, EBX, and EBF, EBXF are suitable for rail up to 3" wide, but many models shipped previous to 1949 are for rail heads not more than 2-1/2" wide. These are cast derails Model A, AP, G, GP and D and in the interest of safe operations these models should be confined to light rail or they should be replaced with derails of the HB and EB series.

3. We do not recommend that a derail be placed on the inside rail of a curve. If local conditions force the use of a derail on the inside rail of a curve, we recommend the use of a WCH Wheel Crowder with a derail.

4. The two ties on which the derail is placed should be sound to insure holding the derail in position when a wheel encounters it.

5. If the gauge is wide, the flange of a wheel encountering the derail block may not enter the flange groove as it should. Proper widening on a curve is allowable if the derail is placed as shown, Figure 7, Point 4.1.

6. This refers to derails of the sliding type where the front of the guide box should be against the web of the rail. The exception would be with a rail head unusually wide compared with the thickness of the web; here it may be necessary to keep the guide box slightly away from the web of the rail so as to permit the derail block to come down flat onto the rail. This includes old style cast derails previous to 1948, Models G, J, H, HP, HX, HXP and the current all-steel derails Model HB, HBP, HBX, and HBXP. The derail block will then be held in place by its bearing against the rail and the seats in the guide box. The vertical front surface of the derail block in the hinge derail should be against the gauge of the rail; this includes cast hinge derails old style Models E, and EX and current Models EB, EBX and EBF.

7. The vertical distance from the top of the rail to the surface on which the derail is secured should be four inches with a size 4 derail, it should be five inches with a size 5 derail, it should be six inches with a size 6 derail, it should be seven inches with a size 7 derail. THIS IS AN ESSENTIAL REQUIREMENT.

If the derail is high the block will be held above the rail and the weight of a wheel striking it will not be carried direct to the rail and the derail may be damaged. If the derail is low the block will not lie flat on the rail and against the locking seats of the guide box. Place a straight edge across both rails and measure down at all four corners of the horizontal tie flanges of the guide box, measure to the under side of the tie flange which is the surface on which the derail is secured.

8. The ties should be at right angles to the rail to hold the derail in correct position. The operating connections should be at right angles to the rail so as to be in line with the movement of the derail block.

9. The guide box should be securely fastened to the ties by means of bolts, lag screws or spikes with the proper number inserted in bolt holes whether it is a derail of the HB or EB Series. The derail will then be held to its work.

10. The use of four rail braces or shoulder tie plates on the derail ties insures holding the rails in correct position, See Figure 9, Point 4.2.

11. The rail should be held firmly to the ties at the derail. This is just as essential as making the derail a fixed part of the track.

12. The ties should be tamped up to a firm bearing to hold the derail in correct position relative to the rail.

13. Strapping the derail ties together increases the stability of the installation.

14. The sides of the ties should bear against the vertical flanges on the guide box to take the thrust when a wheel strikes the derail.

15. It is essential that the derail block at the heel end fully covers the head of the rail and is held in that position by the seats in the guide box. If it does not, the position of the guide box relative to the rail should be examined. Or there may be insufficient stroke in the operating mechanism. If the derail block at its heel end does not fully cover the head of the rail, a wheel flange may catch on top of the rail after sliding off the derail block.

16. Long experience proves that a Hayes Derail, if properly installed, will take care of repeated derailments without being damaged unless it is struck when partly thrown or otherwise misused. A description of any wheel marks on the derail should be given.

17. A derail should be lubricated the same as other track and signal devices. See Figure 30, Sliding Derail Lubrication.

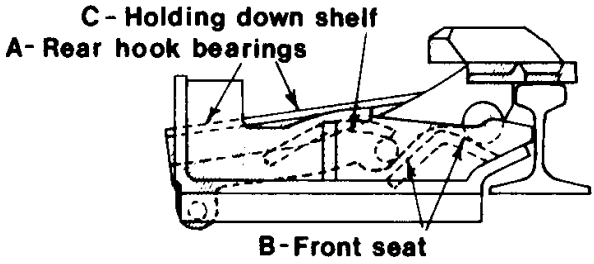


Figure 30 - Lubrication of Sliding Derail

A Sliding Derail should be lubricated with grease at the following locations:

A. Rear hook bearings; top, bottom and sides.
B. Front seat-top.
C. Holding down shelf-bottom.

18. If the inspection is made as the result of any particular occurrence at the derail, a full description should be given.

12.0 IN CONCLUSION

Changes brought about by laying heavy rail in place of light rail without upgrading the derail creates an unsafe condition. Derails not suitable for use on heavy rail are old-style Models A, G, GP, J and D. These are cast type derails and were made to cover rail heads not more than 2-1/2" wide. Current derails of the HB and EB series provide a 1/2" overhang of the derailing shoe beyond a 3" wide rail head.

Please ask us for any assistance you may need with your derails. We make it our business to help you get the best results from every Hayes Derail you have in track.

HAYES PLANT (Factory)
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P. O. Box 756
Richmond, Indiana 47374
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Chicago, Illinois 60632
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NOTES

WESTERN-CULLEN-HAYES, INC.
120 N. 3rd. Street • Richmond, Indiana 47374
(765) 962-0526 • Fax (765) 966-5374
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Installation Instructions for Western-Cullen-Hayes Sliding Derails

1.) **Site Selection:** When selecting a location for the installation of a Hayes Derail several factors should be taken into consideration. Derails should never be installed in paved areas or on the bottom or inside rail of a curve. Special attention should be given to the surrounding area as well. Rolling equipment should not be derailed towards buildings, fences or other structures. Derails should be placed far enough ahead of any area being protected to ensure that the derailed equip ment is safely stopped. The derail site should be well drained to prevent the accumulation of water around the equipment.

Fig. 1-1) Correct Location of Derail on a Curve

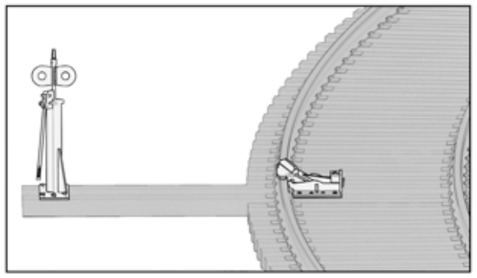
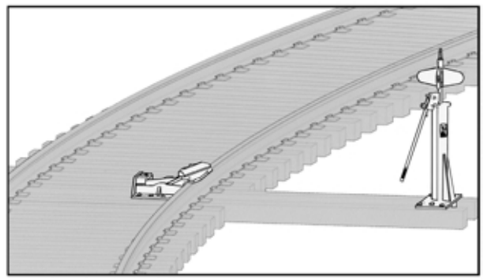


Fig. 1-2) Incorrect Location of Derail on a Curve



2.) **Derail Size:** Western-Cullen-Hayes Derails are manufactured in five sizes (4 through 8 except Model HBXS which are 6,7,8) to ensure proper fit to a variety of rail sections. Each size derail corresponds to the height in inches from the top of the mounting surface, including tie plate, if used, to the top of the rail. For example a size 7 derail fits a 7 inch application. Our derails can accommodate rail height of not more than 1/2 inch greater or less than their size number by means of shimming the derail up or adzing the tie surface down. It is very important that derails fit the rail properly in order for them to function as designed.

Fig. 2)

Deail Size	Distance from Top of Rail to Tie Surface (Inches)
4	3-1/2" to 4-1/2"
5	4-1/2" to 5-1/2"
6	5-1/2" to 6-1/2"
7	6-1/2" to 7-1/2"
8	7-1/2" to 8-1/2"

3.) **Derail Direction:** Derails come in left hand, right hand or bi-directional “X” models. To determine the required hand of a derail, stand between the rails looking in the direction of the area to be protected. Then decide if the rolling equipment should be derailed to the left or right. Keep in mind that a right hand derail is mounted on the right side of the track and will derail to the right and conversely for a left.

Fig. 3-1) Side Selection - Derailing Intruding Equipment.

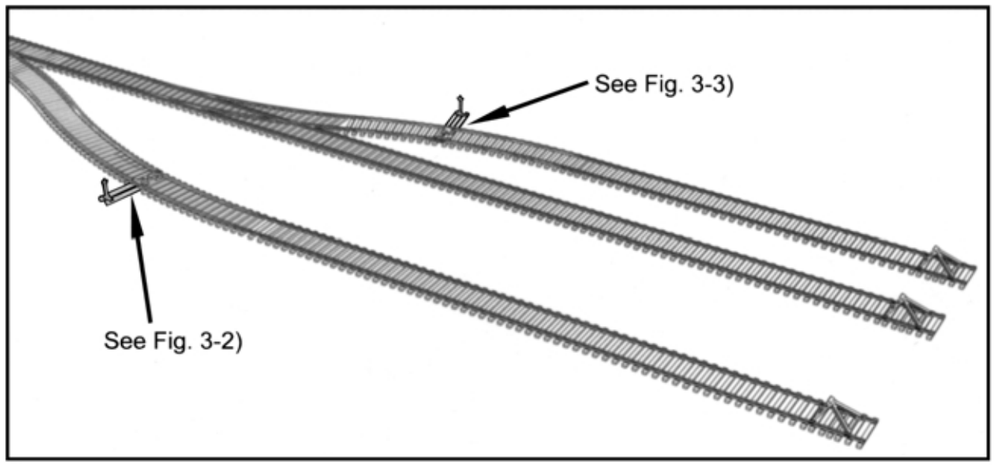


Fig. 3-2) HB Right Hand Derail with Crowder and Hi-Rise Operating Stand

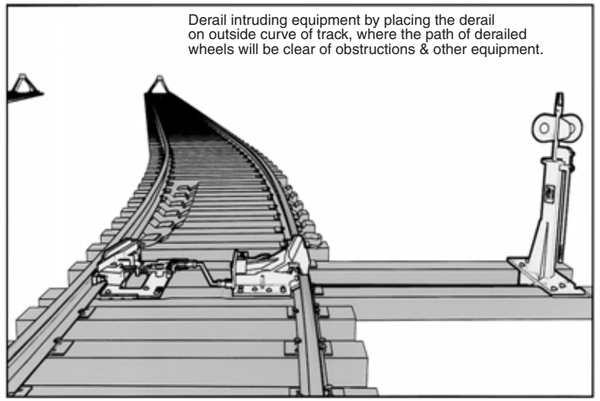
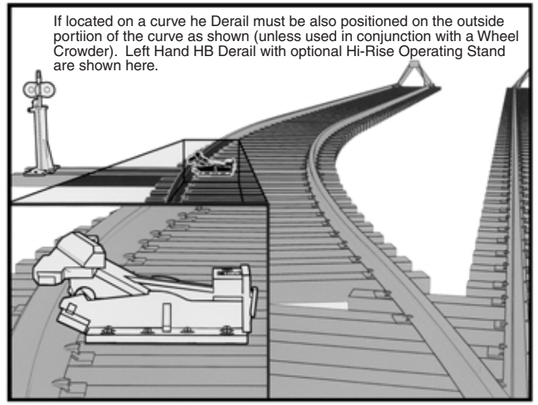


Fig. 3-3) Derailling Intruding Equipment to the left.



This is important when placing the Operating Stand as well. Ample clearance must be provided between adjacent tracks and other possible equipment or structures. Care should be taken to avoid derailing toward buildings, ditches, paved areas or other tracks where derailed equipment could obstruct movement on that track. Bi-directional “X” derails should only be used when it is absolutely necessary to derail equipment entering and exiting a specific area, such as a locomotive shop.

4.) **Installation:** Once the location, size and direction of the derail have been determined the final installation takes just a few minutes. The two crossties under the derail should be new, grade 5 ties at least 14 feet long. The ties should be parallel and level and well ballasted.

Fig. 4-1) Plan View of Installed Derail.

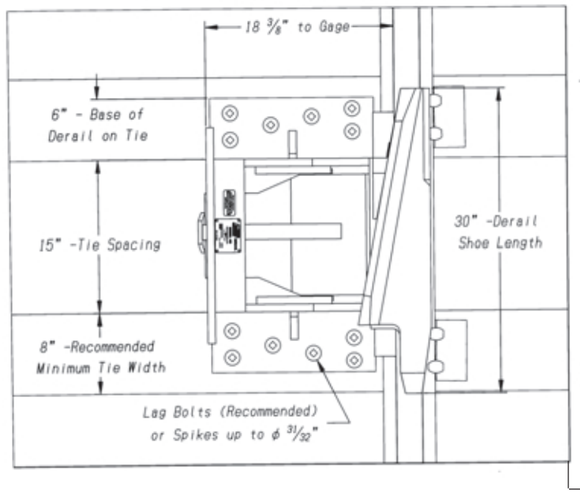
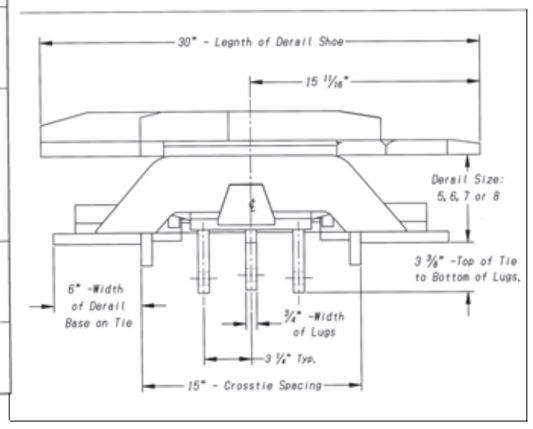
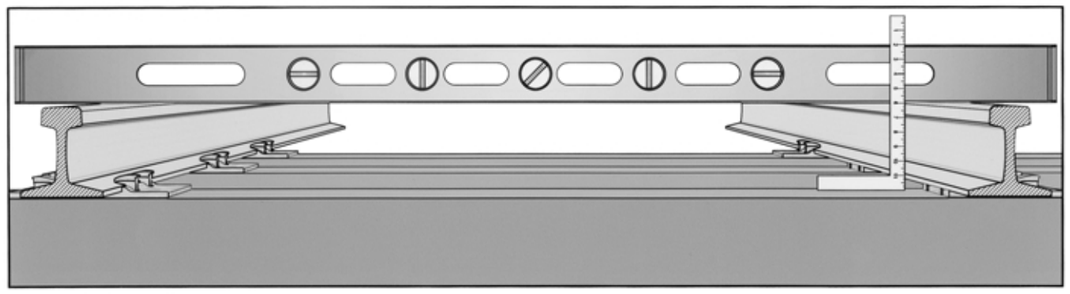


Fig. 4-2) Rear View of Derail showing connecting lugs and dimensions.



If tie plates are used, they must be cropped even with the base of the rail on the gauge side of the rail. Particular attention must be paid to the height of the rail and tie plates, either shim the derail or adz the ties as required. Remember, the total height of the derail must equal the total height of the rail and tie plate combination. For example, a rail and tie plate 7-1/2 inches high should have a number 7 derail with a 1/2 inch shim under it so they equal 7-1/2 inches as well.

Fig. 5) Measure from the top of ties to the top of rail, cropping tie plates first (as shown).

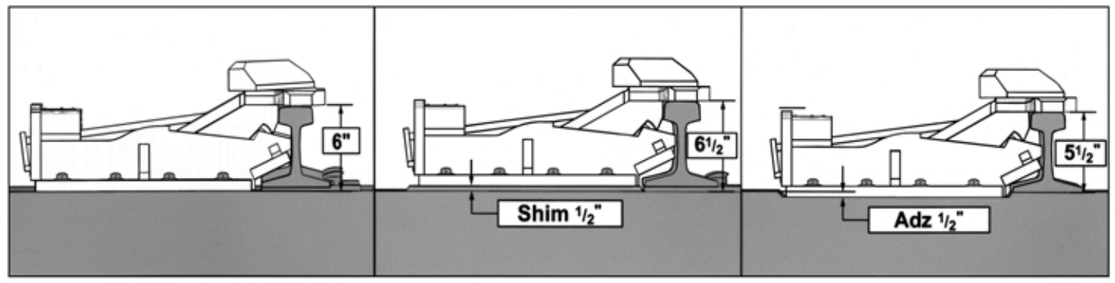


Place the derail between the rails and shove the front of the guide box to within 1/2 inch of the web of the rail. Remove the two wire ties that secure the derail block to the box for shipping purposes. Next, slide the derail block up and onto the railhead as far as it will go. It should overhang the rail head by a minimum 1/2 inch to the field side. Now, push the derail box toward the web of the rail until just before the derail block starts to lift up. At this point, the thrust shafts and seats have made contact. When properly installed there should be no gap between the top of the rail and the underside of the derail block and no gap between the thrust shafts and the seats in the derail guide box. Make sure the vertical flanges of the guide box are flush against the crossties. The derail block should be level on the top of the rail and the vertical stops under the derail block will be against the gauge of the rail head. Next lag bolt the derail to the crossties using all the available holes in the horizontal flanges. These holes are 31/32 inch in diameter and will accommodate bolts up to 15/16 inch. When in the derailing position, the derail block should cover the head of the rail completely and over hang the rail 1/2 inch minimum, to the field side.

Fig. 6)
Size 6 Derail on a 6" application.

Fig. 7)
Size 6 Derail on a 6-1/2" application.

Fig. 8)
Size 6 Derail on a 5-1/2" application.

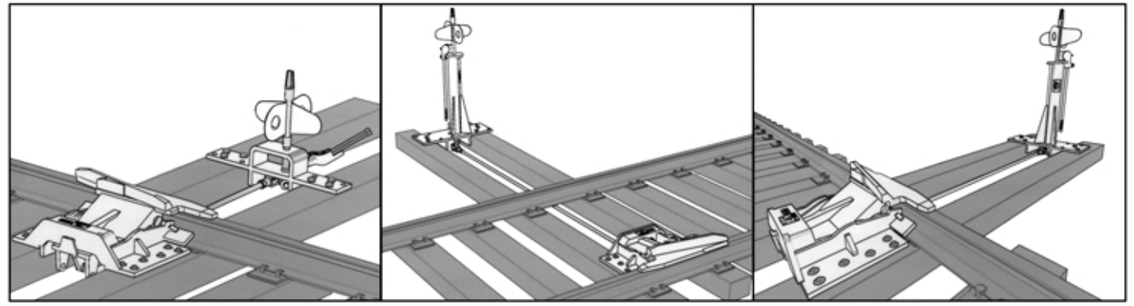


5.) **Operating Stands:** Western-Cullen-Hayes manufactures four types of manual operating stands for our sliding derails, a high rise stand, standard two tie stand, a one tie stand and low profile two tie stand. The standard connecting rod for the high-rise stand is 8'-2" long. The one and two tie stand rod is 5'-2", the rod for the close coupled stand is 3'-1", other rod lengths are available. If using a manual switch stand or power switch machine to operate a Hayes Sliding Derail, a Short Stroke Derail must be specified.

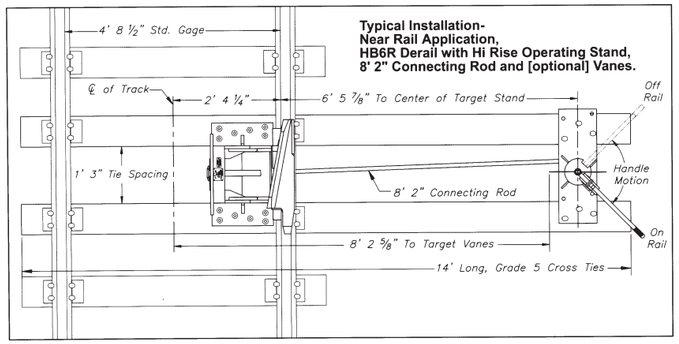
Fig. 9) HB R.H. Derail with
Two Tie Operating Stand,
Near rail application.

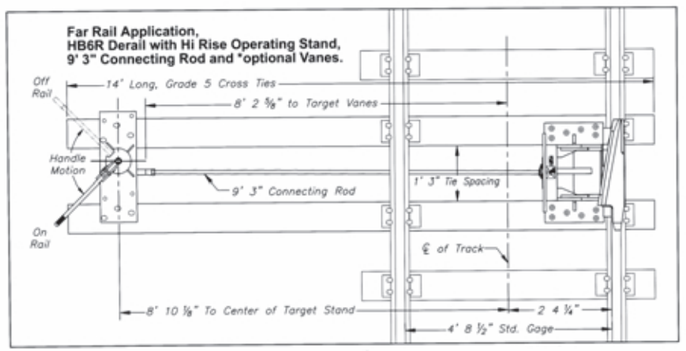
Fig. 10) HB R.H. Derail with
Hi-Rise Operating Stand,
Far rail application,

Fig. 11) HB R.H. Derail with
Hi-Rise Operating Stand,
Near rail application.



6.) Place the operating stand on the field side of the track closest to the derail. With the derail in the "on rail" position and the operating stand in the "on rail" position the eye bolt angled away from the derail. Attach the connecting rod screw jaw to the center lug of the derail and to the eye bolt of the operating stand. The connecting rod should be parallel to the ties. The connecting rods have screw jaws on both ends to permit minor adjustment of the rod length. The stroke of the operating stand is adjusted by means of the eyebolt to which the connecting rod is attached. The working stroke of a standard derail is 6-1/4 inches. There is a special 5-1/4 inch short stroke derail identified by a "SS" on its nameplate. Make sure the connecting rod is parallel to the ties. Secure the operating stand to the cross ties using just two lag bolts.

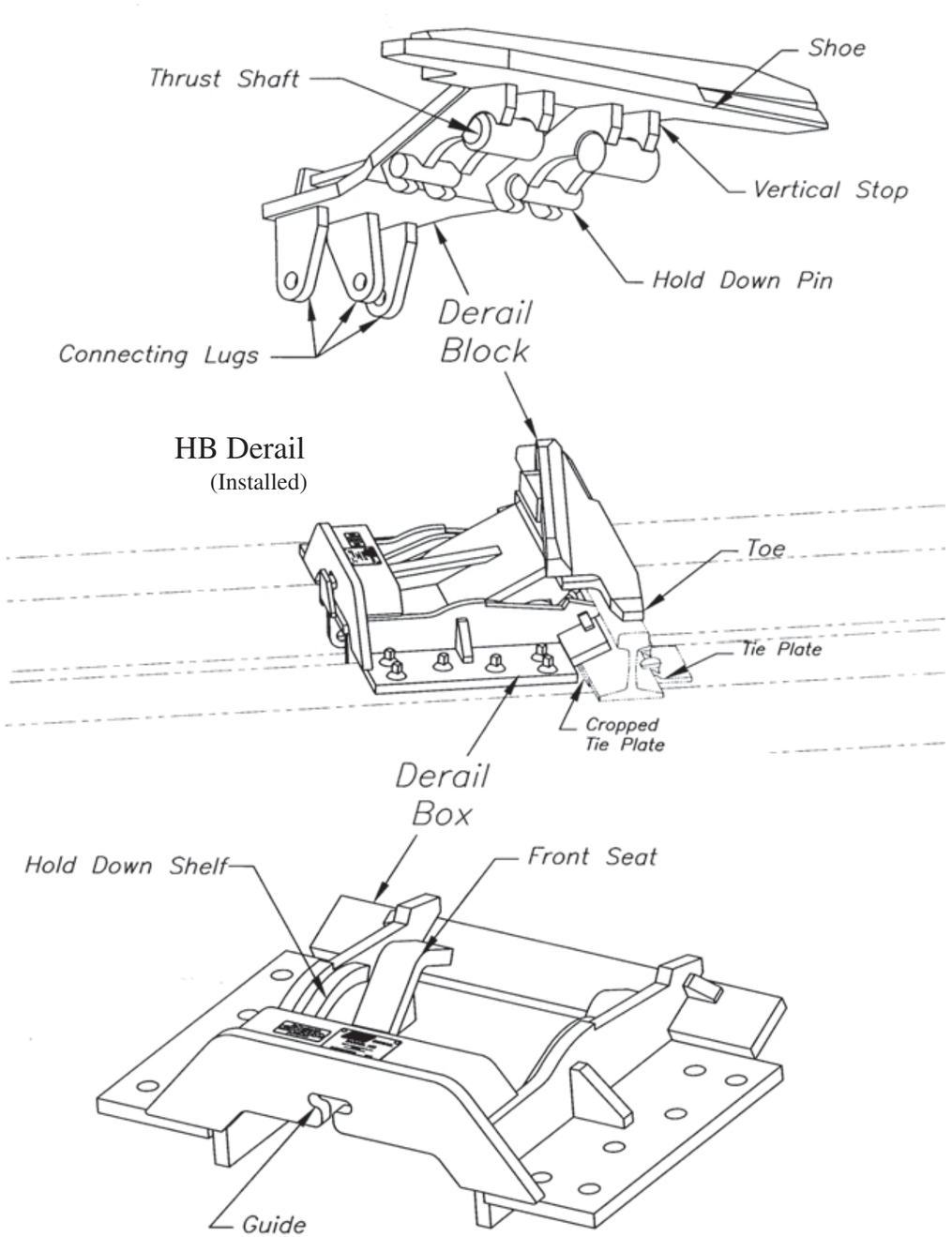




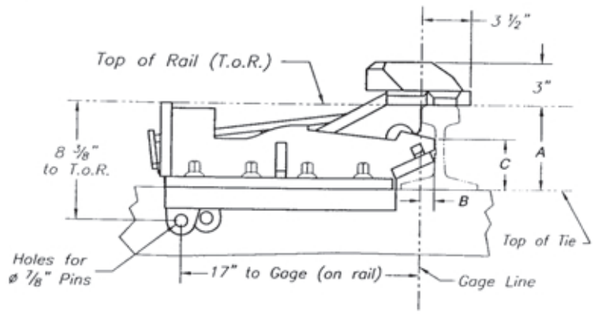
7.) Now, check the operation of the derail and operating stand combination, simply rotate the operating stand handle and observe the motion of the derail. If the derail and stand are installed correctly, the derail block will lift up and drop neatly back into the derail guide box, and the handle will fall into the lockable position on the stand. If the derail does not sit completely down on top of the box side plates the eyebolt will need to be adjusted. If the operating stand handle locks before the derail is down completely, unfasten the connecting rod and lengthen the eyebolt by turning it counterclockwise. If the derail sets down completely before the operating handle reaches the lockable position, shorten the eyebolt by turning it clockwise. Now, adjust the connecting rod and reinstall. Operate the derail to the “on rail” position, it should rise about 1 inch above the head of the rail and then fall firmly on top of the rail with no clearance between the underside of the derail block and the top of the rail. This allows the weight of the wheel to be transferred through the derail block directly to the rail, ties and ballast.

After confirming the correct installation and operation of the derail install lag bolts in remaining holes provided, make sure all rod connections are secure. The derail is now ready for service.

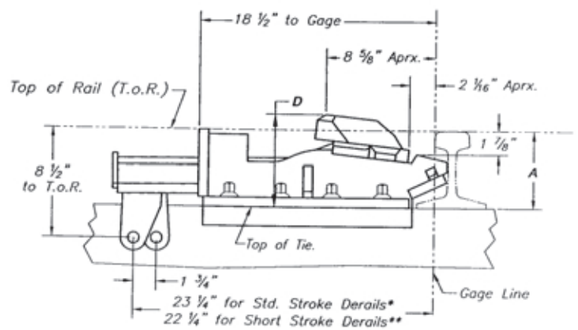
Nomenclature - HB Derail



HB Derail Dimension Diagram



Model HB side view on-rail



	Dimension Table			
DERAIL SIZE	A	B	C	D
5	5"	1-1/8"	2-9/16"	6-3/8"
6	6"	31/32"	3-9/16"	7-3/8"
7	7"	1-1/8"	4-9/16"	8-3/8"
8	8"	1-1/8"	5-9/16"	9-3/8"

Model HB closed (off rail) showing ample flangeway clearance.

Std. HB Right Hand Derail Size 6 (HB6R) Shown.
Left hand Derail is Opposite (HB6L not shown).
Drawing is Not To Scale.

Two-way, Bi-directional Derails are also available:
Model HBX Derails when installed properly derail both intruding and exting equipment.
Model HBXS features a longer shoe with less acute deflection angle.
All Model HB Derails may be ordered as Std. or Short Stroke.*

* Std. Stroke Derails have 6-1/4” Stroke.
** Short Stroke (S.S.) Derails have 5-1/4” Stroke.

GWCI SWITCH STAND POLICY

EI – 1.008: Switch Stand Policy

Effective Janurary 1, 2017

PURPOSE: To provide uniform guidelines for the installation, maintenance and purchase of manual switch stands.

SAFETY: Observe all applicable safety rules, operating rules, Road Way Worker Rules, and regulations.

LOCATION: This policy has been adopted by all North American subsidiaries of Genesee & Wyoming, Inc.

I. DISCUSSION:

A. A switch stand is the device that is used to throw and lock the points of a switch.

B. There are many different switch stands for various railroad service requirements. This document will detail the appropriate switch stand selection for installation of new turnouts, installation of new switch stands; and the inspection and maintenance of new and existing switch stands.

C. The Regional V.P. - Engineering and the Corporate V.P. - Engineering must approve (in writing) any exceptions to this policy.

II. PROCEDURE:

A. Selection of a new manual switch stand is based on whether the switch is on a main track, a siding or on other than main track or siding. The following guidelines are used for the selection of a new manual switch stands:

1. The approved switch stand that is located on non-signaled controlled track such as main tracks or sidings for new turnouts or new replacement switch stands is the Racor 36-EH high stand equipped with a “tri-handle”. The Racor 36-E low stand equipped with a “tri-handle” may be used on the main track in yard limits. Other high switch stands may be used for mainline installations to be uniform with the switch stands in the area with the approval of the Regional V.P. – Engineering. **“Trailable” switch stands are not to be purchased for new or replacement installations on G&W railroads.**
2. The approved switch stand that is located in yard and sidetracks, and other non-controlled tracks is the Racor 36-E low stand equipped with a “tri-handle”. Other stands may be used for other than mainline installations to be uniform with the switch stands in the area with the approval of the Regional V.P. – Engineering.
3. Switch targets:
    a. Main Track Switches and all derails: Red for diverging movements (derailing position of derails) and green for normal movements.
    b. Other than main track switches: yellow for diverging and green for normal movements.

B. Installation of New Stands

1. Always follow the manufacturer’s instructions for installing switch stands. Unless otherwise stated in those instructions, all switch stands and latches in main track use are to be secured to the head block ties by use of a combination of new spikes and double ended threaded studs with nuts. A flat washer and a lock washer are to be used at the top and bottom of the studs. Each switch stand should be secured with two spikes and four studs. Each latch should be secured with two spikes and two studs. If possible switch stands with separate latches should be avoided. For switch stands, a 3/4” x 11” stud is to be used; for latches, a 5/8” x 10” stud is be used as

shown in figure 1. Each stud fastening kit contains the appropriate stud, 2 flat washers, 2 split washers, and 2 nuts.

2. To prevent dragging equipment from throwing a switch, the throw lever must point toward the frog when the switch is lined for the main track.
3. Switch stands should be installed such that the operating or connecting rod is pulling the point closed when in the normal position
4. The switch point opening should be set at 4-3/4" +/- 1/8". If this is not possible, it must be between 4-1/2" and 5-1/2". The design throw of a switch is 4-3/4" as measured from gage point to gage point over the number one switch rod.
5. The switch operating mechanism must maintain pressure on the closed switch point. Generally, the operating lever should come to rest 1-1/2" to 2" from latching when switch point contacts stock rail and be forced to latch. This should maintain sufficient tension.
6. Further installation instructions for Racor 36-E and 36-EH stands are located in Appendix A of this manual.

C. Maintenance of New and Existing Stands

The switch conditions must meet FRA §213.135 or TC E-54 Subpart D XII.

1. If the switch stand does not have sufficient tension and cannot be adjusted properly, the cause of the problem must be fixed.
2. Replace cotter pins, if any are found to be missing in the switch operating connections.
3. Provide for lost motion between the connecting or operating rod connection point and bolt if the switch stand is designed for lost motion.
4. If the safety plate is missing from a main line turnout it must be installed the next time the head block ties are replaced (one or both).
5. Switch stands with bow handles must have latches with extended pawl thumb to securely hold the handle down. Replace latches if they are not of this type.
6. The switch point opening should be set at 4-3/4" +/- 1/8". If this is not possible, it must be between 4-1/2" and 5-1/2".
7. If the switch lever latches are not secure on the head block ties, remove the latches, plug the spike holes with the tie plugs, and reinstall the latches with new spikes in the correct position. Note condition of stand ties on the condition report if they need replacing soon.
8. If the switch operating lever can be moved with the lock or the keeper in place, install new latches in the correct position and replace the lock if necessary.
9. When it becomes necessary to remove a switch from service in controlled or non-controlled track account of switch point damage, improper fit between switch point and stock rail, or other fastening issues not allowing proper seating/fit of switch point, comply with the following actions:
    a. Spike the switch to the proper position.
    b. Apply switch point clamp.
    c. Apply red tag and lock switch with craft specific lock.
    d. Notify dispatcher, yardmaster, or person responsible for track.
    e. Notify signal maintainer if switch is within a signal or crossing circuit.
    f. Dispatcher message or appropriate general bulletin must be applied.

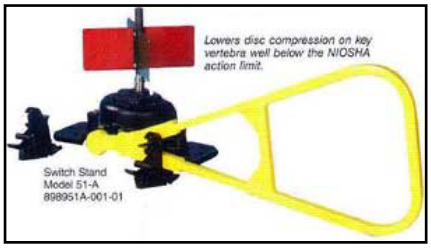


Figure 1: Type 51-A Switch Stand

D. Type 50A, 50B and 51-A switch stands:

1. To prevent the crank from falling off from model 50A, 50B, and 51A switch stands in the event the cross pin comes out, a safety plate shall be installed under the switch stand on main tracks with speed greater than 20 mph (for existing turnouts, the safety plate will be installed the next time the head block ties are replaced).
2. All Cross Pins and Rings (see figure 4) must be inspected monthly and main line cross pins and rings will be further inspected by the Roadmaster quarterly and painted red at each inspection.
3. Only use single forged cranks (see figure 3) should the original crank need to be replaced.
4. Breakable cranks (see figure 2) are not permitted in switch stands on G&W Railroads. An inventory of the breakable cranks in track and main line 50A, 50B and 51-A switch stands without safety plates must be taken during the normal monthly walking turnout inspections by the month of May 2017. Breakable cranks found on the main line must be replaced with forged cranks by July 31, 2017 and safety plates must be installed on all main line (speed greater than 20 mph) 50A, 50B and 51-A switch stands the next time the head block ties are replaced.
5. All breakable cranks must be removed by December 31, 2017. Any breakable cranks in inventory, on trucks, etc. must be properly disposed of. The purchase of new breakable cranks is not permitted.

Figure 2

Figure 3

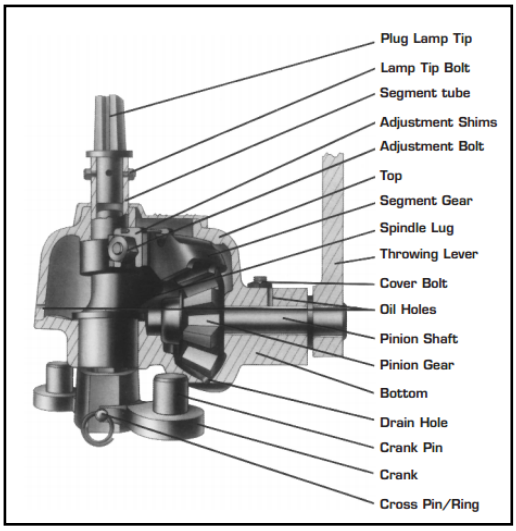


Figure 4: Exploded View

E. Trailable switch stands:

1. Trailable stands can be thrown manually or trailed through. The more often the switches are trailed through the spring inside the mechanism loses its tension which can result in switches gapping leading to derailments. **New or replacement trailable switch stands are not to be purchased for use on G&W railroads.**
2. An inventory of trailable switch stands shall be taken during the normal monthly turnout inspections by May 2017. Trailable switch stands in the main track will be replaced by Racor 36-E or 36-EH switch stands (or other stand as approved by the Regional V.P. – Engineering) as described in section II A by December 31, 2017.
3. The spring tension on trailable switch stands must be checked monthly as part of the normal walking inspection. Tension is checked by using a lining bar to replicate a trailing train movement. This is done by placing the lining bar on the field side of the closed switch point and applying pressure towards the field on the handle of the lining bar thus putting pressure on the switch point towards the gage of the track.

Appendix A – Installation Instructions for Racor 36-E and 36-EH Switch Stands

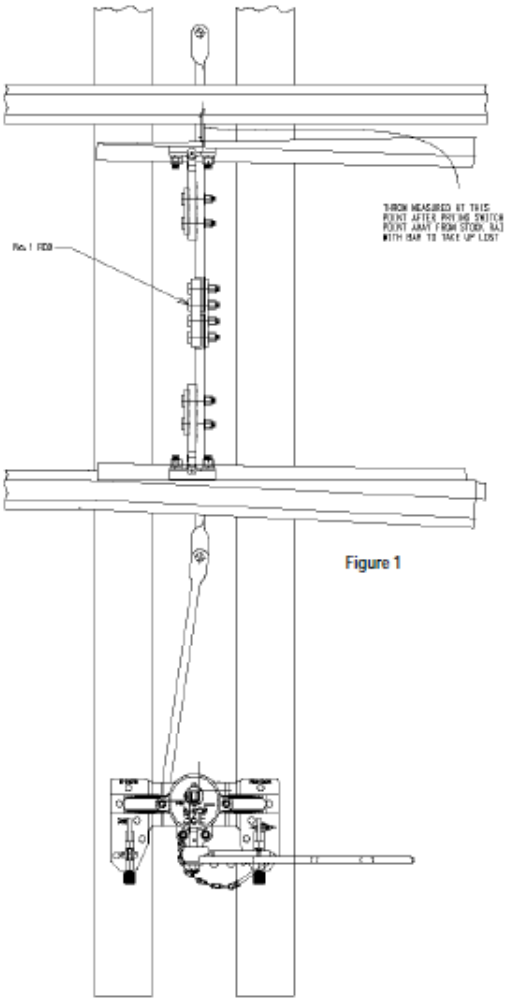
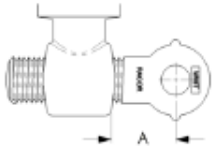


Figure 1



Crank Adjustment of Racor Switch Stands with Symmetrical Spindle

Throw of Switch	"A"	Throw of Switch	"A"
4-1/2"	2-1/16"	5"	2-7/16"
4-5/8"	2-3/16"	5-1/8"	2-1/2"
4-3/4"	2-1/4"	5-1/4"	2-5/8"
4-7/8"	2-5/16"	5-3/8"	2-11/16"
5"	2-7/16"	5-1/2"	2-13/16"

*Do not set crank less than 2-1/16" to avoid interference between clevis and spindle.

Figure 2

Installation Instructions

Switch stand is designed for hand throw only. Careful observance of these instructions will ensure best operation.

1. Measure throw of switch or opening between switch point and stock rail at No.1 rod (see figure 1).
2. Set crankeye at distance "A" in table for measured throw. (See figure2).
3. Adjust points to equal distance between both points and stock rail.
4. Temporarily bolt connecting rod to stand and head rod (clevis end of rod to crankeye), lift handle of stand to center position, ensure connecting rod is straight. Install stand firmly to ties using lag screw (see figure 3).
5. Hand throw switch to both positions several times observing position of hand lever when points contact stock rail. Hand lever should not be more than 1-1/2" to 2" above final position on top of foot latch rest for both positions (see figure 4).
6. When near point fits properly and far point is too tight, shorten crankeye setting and shorten connecting rod clevis.
7. When near point fits properly and far point is too loose, lengthen crankeye setting and lengthen connecting rod clevis.
8. When far point fits properly and near point is too tight, shorten crankeye setting and lengthen connecting rod clevis.
9. When far point fits properly and near point is too loose, lengthen crankeye setting and shorten connecting rod clevis.
10. When both points are too tight, shorten crankeye setting. Do not change connecting rod clevis.
11. When both points are too loose, lengthen crankeye setting. Do not change connecting rod clevis.
12. After completing steps 5 thru 11, tighten connecting rod bolts (Refer to step 4).

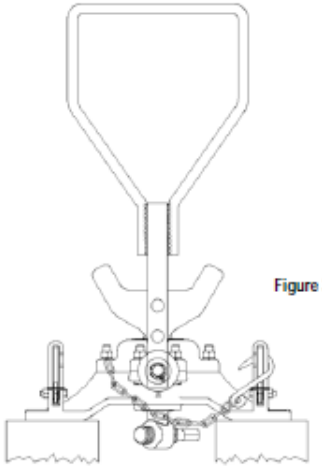


Figure 3

1. Push handle down firmly to ensure yoke is engaged in foot latch.
2. When the switch is not being operated, hook & chain assembly (Part # B99-70355) or equivalent keeper device must be inserted in the foot latch hole to secure switch points.

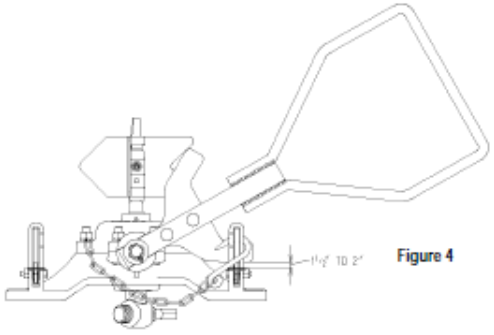
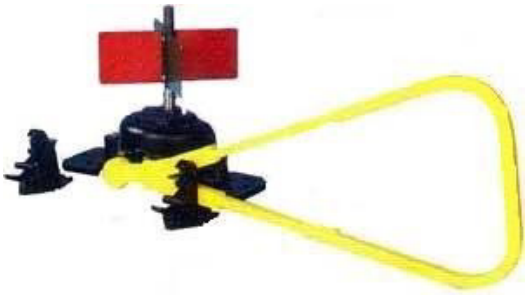


Figure 4

Appendix B – Common Switch Stand Types

New Century 50A Stand with Safety Pan



New Century 50A or 51A Stand with Bow Handle

G&B 12RT Trailable Stand with Bow Handle

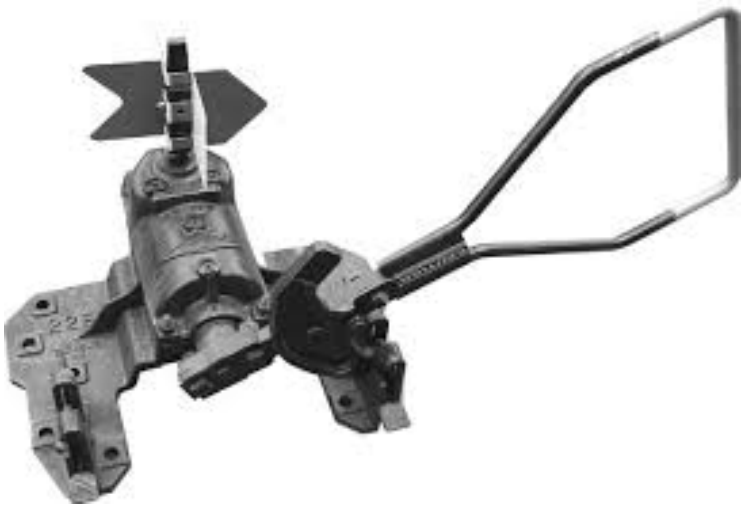
Not Permitted

National 1002RG Trailable Stand

Not Permitted

Page **5** of **6**

Racor 36-EH Stand with Tri-handle



Racor 36-E Stand with Tri-handle

Racor 22-EH Trailable Stand with Tri-Handle

Not Permitted

Racor 22-E Trailable Stand with Tri-Handle

Not Permitted

Racor 31-B/ 112-E or 112-G Stand

GWCI TIMBERING POLICY

EI – 1.009: Timbering Policy

Effective January 1, 2017

PURPOSE: To set instructions governing tie installation projects.

SAFETY: Observe all applicable safety and operating rules and environmental regulations, and any FRA requirements.

LOCATION: All North American Railroads.

I. DISCUSSION:

A. The goal of this timbering policy is to ensure that the work , whether performed "in house" or contracted, meets all G&W Standards as well as Engineering Department goals for safety, quality, and cost effectiveness. Ties are replaced in a wide variety of conditions, these instructions will define the process by which agreed upon results can be obtained. The success of this process will require a coordinated effort from a team consisting of Railroad Engineering Services (RES), Regional and Railroad Managers including Transportation, Maintenance of Way, and C&S.

B. The tie program will be established by request from the Regional Vice President – Engineering through the G&W capital budgeting process. Any changes after the program is finalized must be submitted through the capital change process and have the approval of the Sr. Vice President – Engineering. Tie replacement density should average a 550 per mile minimum for main lines and yard tracks that will be worked by the large production tie team. Lower tie replacement projects with ties per mile averaging in the 150-300 densities may be used for lighter tonnage lines that do not justify out-of-face timbering and will be assigned to the smaller tie teams. Out-of-face tie programs in yard or other tracks (industrial leads, etc.) will be assigned to the smaller tie teams as well.

C. The RES Manager Regional Coordination will ensure that any revisions to the program or schedule are distributed.

D. Tie Markings – Tie marking must be completed prior to the start of the tie distribution. Ties will be marked on the tie plate or web of the right hand rail, in the direction of travel, on the gage side with **highly visible** paint. **Signal wires** and appliances shall be marked with **light blue spray paint** to help minimize damage during the timbering and surfacing process.

E. The Regional Vice President Engineering and the Corporate Vice President Engineering must approve (in writing) any exceptions to this policy.

EI – 1.009: Timbering Policy

Effective January 1, 2017

II. PROCEDURE:

A. Crosstie Selection Policy – The selection of crossties to be installed during the capital project should be made on a basis of tonnage, curvature, geographic location (weather conditions and wood decay zones), type and frequency of train service and rail and other conditions. The crossties selected should provide safe, cost-effective service for the current level of service and for the level of service to be required in the near future. The crosstie selection options fall into the following categories:

1. 7" X 9" Main line crossties (grade mixed Hardwoods or 20% mixed IG, selectively end plated, subject to availability) – for use on main tracks on railroads that carry a minimum of 25,000 annual car loads and designated passing sidings on main service corridors on both tangent and curved track.
2. 7" X 9" Main line crossties (softwood) – on the west coast (AZ, CA, OR, WA) for use on main tracks and designated passing sidings in tangent track and light curvature. Areas of higher degree curvature (3 degrees and greater), hardwoods should be used.
3. 7" x 9" I. G. Hardwood - for main line track, passing riding, yard track on railroads that carry between 10,000 and 25,000 annual car loads or with rail size above 112 pound and above and heavy switching yard (subject to availability).
4. 6" X 8" (mixed hardwoods) – For use on lines (less than 10,000 car loads per year) main tracks, yard tracks, industrial leads, shop tracks, etc.
5. Switch ties (all grade ties).
6. Steel ties and relay ties may be used if approved in advance by SVP Engineering / VP Region

Note: Variations to the above must be approved by the Regional VP of Engineering and reviewed and authorized by the SVP of Engineering.

B. Capital Project Request

1. Railroad name, subdivision name and project track and mile post limits
2. Number and type of crossties to be installed.
3. Number of track-feet to be gaged.
4. Number of rail anchors to be installed (legacy pattern to be re-established at a minimum per ES 8050.1).
5. Number of switch ties to be installed
6. Number of (and track-feet of crossing) road crossings to be worked and type of crossing material to be installed.
7. Number of bridge approach ties needed (10, 10'switch ties at each end of bridges as determined in project planning trip).

EI – 1.009: Timbering Policy

Effective January 1, 2017

C. Planning

1. An RES Manager designated by the Vice President - Production will arrange a meeting with Regional personnel one to three months prior to the scheduled installation date of new ties to inspect the work site, detail the scope and to plan the work activity.
2. This group will hi-rail the proposed project location to determine:
   a) Scope of work
   b) Responsibilities for various activities
3. If there are any item(s) on which agreement cannot be reached during the inspection, the Region and RES representatives will jointly discuss the item(s) with the Vice President - Production and the Regional Vice President - Engineering for a decision.
4. Following the inspection, each individual will sign the Project scope of work. The Manager Regional Coordination will attach the pre-trip packet mentioned below to the notes and forward copies to each individual making the inspection, and to the Vice President - Production.
5. The Region and the Railroad (Regional Vice President – Engineering, Director of Maintenance of Way, Roadmaster and Manager Bridges) will prepare a pre-trip packet of the project. Items to be in the packet include, but are not limited to the following:
   a) Straight line sketch of project area (example attached as Appendix A).
   b) Starting and ending locations.
   c) Staging areas for material to be installed.
   d) Equipment unloading, clearing, tie up and loading points.
   e) Road Crossings:
      1) Give locations, lengths, rail section, and surface material to be used.
      2) Local supervisor will be responsible for coordinating road closures and detours.
      3) Plan for disabling active warning devices at road crossings so as to not create false activation failures of those devices.
      4) Plan for sufficient Signal resources to perform required operational tests and to return crossing warning devices to service at the end of the day.
   f) Ballast requirements and unloading responsibility.
   g) Turnouts (switch ties to install or turnouts to retire):
      1) Milepost location or name of switch. Identify switch ties to be replaced and responsibility for installation.
   h) Wayside equipment defect detectors and other equipment: a plan must be developed

EI – 1.009: Timbering Policy

Effective January 1, 2017

to protect all signal wires and equipment. **Defect detectors must not be skipped in the timbering and surfacing process.**

i) Locations at which the anchor pattern or spiking pattern is to be changed during timbering and amount of material needed.

j) Locations where special tie plates or positive restraint fasteners exist and if these plates and fasteners will be re-worked during timbering.

k) Check for tie plate damage or wear and rail anchor condition to assist in ordering tie plates and anchors.

l) Locations where head-free rail exists must also be marked on the ballast section with highly visible paint with the letters "HF" and an arrow where the rail section starts and ends.

m) Locations where tight clearances exist (such as rock cuts or similar immoveable objects) and plan for addressing ties in these areas.

n) Bridges

1) Any work required to be performed in advance of the project including removing and replacing ballast curbs or bridge hand-rails.

2) Location and responsibility for approach tie spacing (adjustments or new installation).

3) Fall protection requirements if any.

4) Tunnel locations and lengths and the ventilation and lighting plan if required.

D. Preliminary Work

1. Manager Regional Coordination and the Region/Railroad will be responsible for coordinating activities prior to the arrival of the team. This includes but is not limited to:

a) Region/Railroad will ensure that material is ordered and monitor its delivery.

b) Region/Railroad and the Production Manager are jointly responsible for the unloading ties, switch ties, and other track material (see E. 1. Below).

c) Coordinating with the Purchasing Department to ensure that materials arrive on time.

d) Distributing track material as stated in this instruction when it is received.

e) Arranging for dumpsters at pre-determined locations for the disposal of any waste material such as pallets, spike kegs, etc.

f) Discussing the proposed work and curfews with Transportation Managers to obtain

EI – 1.009: Timbering Policy

Effective January 1, 2017

the maximum possible track time.

g) Region/Railroad will coordinate the closure of road crossings with state and local authorities.

h) Region/Railroad will arrange for the saw cutting at road crossings that are to be rebuilt as part of the project.

i) Preparing and furnishing to the team, upon its arrival, a local Emergency and Environmental Response Plan (See page appendix B) including telephone numbers and highway directions to the nearest hospital or medical facility, police, and fire departments, and rescue service.

j) Doing any track work specified on the inspection notes

k) Monitoring the progress of the preliminary work listed on the inspection notes.

2. The Manager - Bridges will be responsible for:

a) Altering ballast retention curbs or bridge hand-rails to permit tie replacement and subsequent ballast retention.

b) Assist in any special needs for fall protection equipment or bridge specific systems on bridges requiring the use of fall protection.

c) Arranging for tunnel ventilation and/or lighting as needed.

E. Material Distribution by Roadmaster Prior to Arrival of the Team

1. It may be necessary for the Region/Railroad to unload the crossties depending on the schedule of the production team equipment and how far in advance the ties are arriving at the project site.
2. Material unloading locations should be selected to prevent items from falling into ditches or rolling down steep banks.
3. At specific locations within the project area.

a) At designated tie up locations ensure team fuel tank and supply trailer are spotted so that the material handling truck other mechanized system may access supplies, such as spikes, screw spikes, anchors, fuel, and plugging material, to be replenished on each machine daily.

b) At turnout locations: Appropriate length timbers. Quantities depend on the work planned.

c) At road crossings: Crossing material and hardware will be provided. Stockpile approved ballast that is sufficient to fill the track per the crossing design. If the plan calls for installation by another force, the material should be distributed at this time to take advantage of the curfew and the work train. If perforated pipe is required to

EI – 1.009: Timbering Policy

Effective January 1, 2017

facilitate drainage at the crossing it will be staged in order to be on hand when the crossing is worked.

F. Material Released

1. Spent crossties and track material released from the project will be stacked at the pre-determined staging areas to facilitate removal. Walkways and ditches must be kept clear and stacks must not impede sight distance at road crossings. Material shall not be placed beneath overhead wire lines or in sensitive environmental and human impact sites such as wetlands or parks.
2. Spent crossties shall be handled and disposed of in compliance with G&W Environmental Procedure GWE513 (attached as Appendix C).
3. RES will report spent crosstie staging locations to the Purchasing Department including location details and number of spent ties at each location. Purchasing will award contract and coordinate the removal process with the Director of Maintenance of Way.
4. Director of Maintenance of Way will ensure proper removal of ties coordinating with the Purchasing Department any issues with the assigned contractor.
5. Asphalt and other crossing materials removed from crossings must be disposed of properly.

G. Tie Installation

1. The Ties should be placed in track with the heart wood face down so the tie sheds water.
2. Track ties will be installed square to the rails.
3. At field welds, new ties will be spaced so that the weld does not fall on a tie.
4. Tie plates will be installed on all newly installed ties. Broken, damaged, or excessively worn plates must be replaced on ties being replaced.
5. Ties will be spiked to existing track gage unless gage is greater than 57 inches on Class 1 through 4 tracks. Consideration to out of face gaging should be given for track that is more than ½" out of gage. The Regional VP of Engineering and VP of Production must mutually agree on a plan to perform any out of face gaging.
6. The standard track spiking patterns are detailed in the current revision of Engineering Standard Drawing ES8050.1. Newly installed ties are to be spiked to standard spiking pattern at the time of installation.
7. The standard rail anchor patterns are detailed in the current revision of Engineering Standard Drawing ES8050.1. Per this standard, all timbered track is to be anchored per the legacy pattern at a minimum. Additional anchors may be added as required. Anchors in excess

EI – 1.009: Timbering Policy

Effective January 1, 2017

of present standard, except within road crossings, need not be removed. Site specific areas, approved by the Regional Vice President - Engineering, where anchors in excess of standard are required to restrain rail movement are to be maintained.

8. In CWR the application of temporary slow orders will be governed by the G&W Procedures for the Installation, Adjustment, Maintenance and Inspection of CWR, FRA and local instructions.
9. The Region/Railroad E.I.C./213.7(c) qualified person will complete the *Track Disturbance Report* on a daily basis.
10. Road Crossings:
    a) Crossings that are worked should be raised so that at least one future surfacing cycle can be completed into the crossing without placing it in a hole. The runoff must not begin within 50 feet of the pavement.
    b) Crossing must be graded so as to facilitate drainage away from the track (see Engineering Standard drawing ES8052-1). Care must be taken to not place excess ballast in the corners of the road crossing.
    c) Where crossings are removed and are not put back, a standard roadbed section will be provided. Road approaches will be cut down and ditches re-established. Additionally, all crossing signs must be removed and taken to a designated Engineering material storage yard and the F.R.A. crossing database updated as required.
11. Prior to releasing track to run trains:
    a) The Manager of the Team or his designated Qualified Foreman and the Region/Railroad E.I.C./213.7 qualified person shall inspect the entire limits of the work performed.
    b) The region/railroad E.I.C./213.7 qualified person is responsible for coordinating with the manager of the team or designated qualified Foreman to ensure:
        1) All switches and derails are restored to the proper position (following proper SPAF and switch tag procedures).
        2) All temporary speed restrictions have been put in place at the proper locations with the proper signs displayed per the operating rules.
        3) Any conditions that would prohibit the safe passage of trains at timetable speed are properly protected or corrected.

H. Quality Control

1. All Foreman and Assistant Foreman will ensure that all work is done in a quality manner within their area of responsibility.
2. The Production Team Manager or Foreman will spot check individual ties installed during the

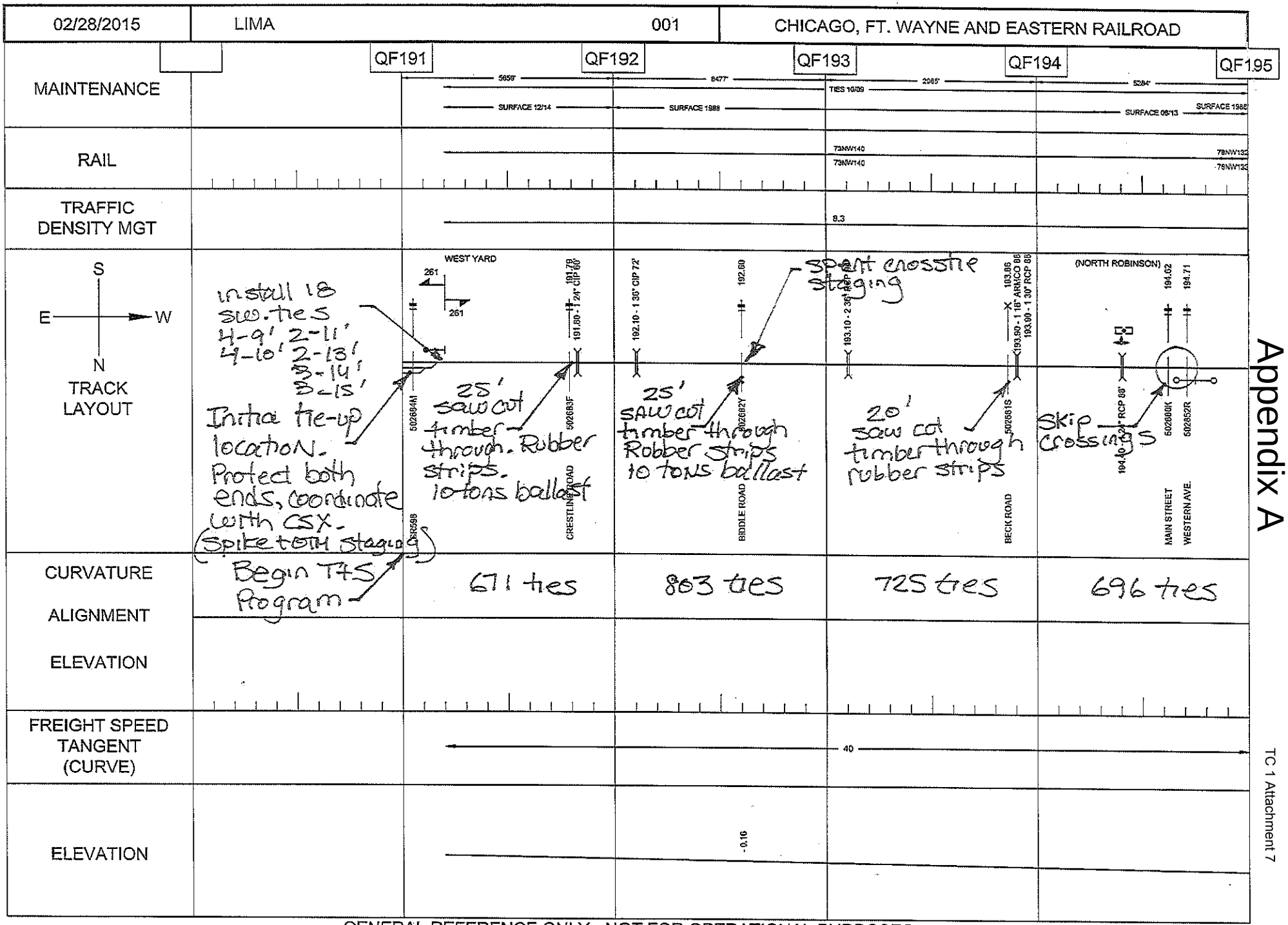
EI – 1.009: Timbering Policy

Effective January 1, 2017

day to verify the quality of the work. The Manager or Foreman will inspect the track behind the team daily.

3. The E.I.C./213.7 qualified employee and the Production Team Manager or Foreman will jointly hi-rail behind the team daily to inspect all work performed and ensure the track is safe for the movement of trains. Roadmasters will hi-rail weekly with the Production Team Manager or Foreman, covering the entire area worked since the previous trip or for short stretches, upon completion of the job, to verify the quality of the work and to confirm that the plan is being followed, and to complete the Production Quality Review Form (see EI-1.013 Capital Product Work Quality Assurance Policy).

02/28/2015	LIMA	001	CHICAGO, FT. WAYNE AND EASTERN RAILROAD

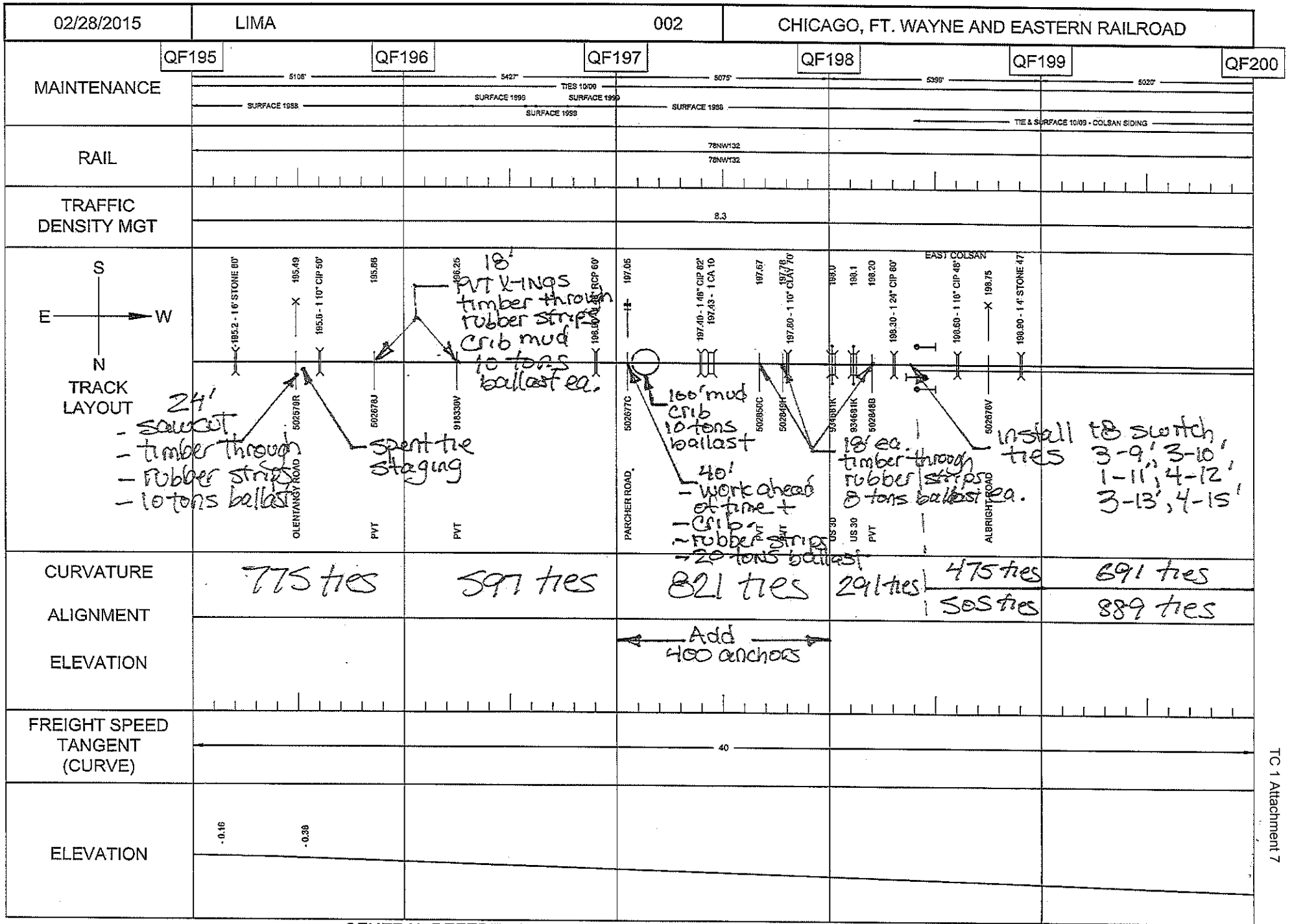


GENERAL REFERENCE ONLY - NOT FOR OPERATIONAL PURPOSES

Appendix A

TC 1 Attachment 7

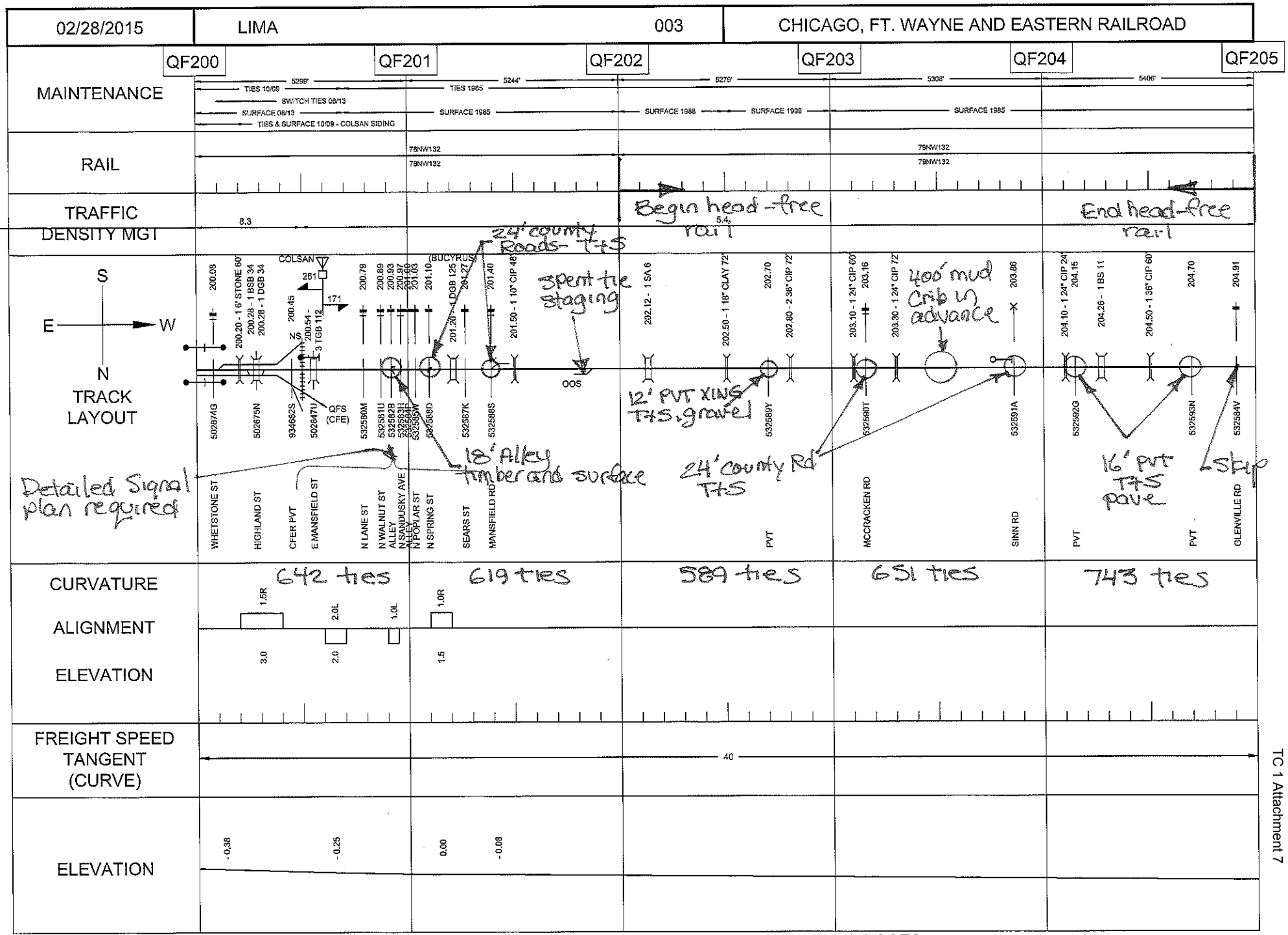
02/28/2015	LIMA	002	CHICAGO, FT. WAYNE AND EASTERN RAILROAD



GENERAL REFERENCE ONLY - NOT FOR OPERATIONAL PURPOSES

TC 1 Attachment 7

02/28/2015	LIMA	003	CHICAGO, FT. WAYNE AND EASTERN RAILROAD



GENERAL REFERENCE ONLY - NOT FOR OPERATIONAL PURPOSES

TC 1 Attachment 7

13901 Sutton Park Dr S
Suite 345
Jacksonville, FL 32224
Tel. (904) 999-3992
Fax (904) 520-4137
www.gwrr.com

Appendix B

Emergency Response Form

RAILROAD: _____

SUBDIVISION: _____ MILEPOST: _____

WORK LOCATION: _____

_____

GPS LOCATION: LATTITUDE: _____ LONGITUDE: _____

RADIO CHANNEL: _____

DISPATCHER EMERGENCY ACCESS: _____

MOBILE TELEPHONE ACCESS #: _____

DIRECTIONS FROM CLOSEST CITY TO JOB SITE (OR NEAREST CROSSING IF JOB SITE IS INACCESSIBLE FROM ROADWAY):

_____

_____

_____

_____

DIRECTIONS FROM SITE (OR NEAREST CROSSING IF JOBSITE IS INACCESSIBLE FROM ROADWAY) TO CLOSEST HOSPITAL:

_____

_____

_____

_____

NEAREST EMERGENCY SERVICES:

HOSPITAL: _____

AMBULANCE: _____

FIRE: _____

POLICE: _____

RADIO SUPERVISOR:

NAME: _____

HOME: _____

OFFICE: _____

CELLULAR: _____

PAGER: _____

IF UNAVAILABLE CONTACT:

NAME: Jason Daily PHONE: 412-925-4753

NAME: _____ PHONE: _____

NAME: _____ PHONE: _____

ENVIRONMENTAL RESPONSE CONTACT INFORMATION

ENVIRONMENTAL AGENCY CONTACT PHONE NUMBER: _____

LOCAL REGION ENVIRONMENTAL E-TEAM MEMBER CONTACT: _____

Genesee & Wyoming Environmental Policy **CONFIDENTIAL**	Generation, Staging and Disposal of Spent Cross Ties	Revision: Initial Distribution Date Created: 04/19/2013 Department: Environmental

Intent of Procedure: To manage Spent Cross Ties (term defined below)generated from track maintenance so that they are promptly removed, staged and disposed.

Citation:
40 CFR 261.1 *et seq*. (EPA regulations applicable to solid and hazardous wastes)

Although it may be more convenient and less expensive to permit track maintenance contractors, landscaping companies or even individuals willing to take Spent Cross Ties at low or no cost, the potential risks of improper use or exposure to third party claims supports this policy that the preferred method of Spent Cross Tie disposal is ensuring their delivery to certified disposal facilities for cogeneration for energy recovery. To such end, Spent Cross Tie disposal programs exist that will chip cross ties and sell them as fuel to facilities with the air permits required to burn creosote materials. If no Spent Cross Tie disposal program or other certified recycling opportunity is available, Spent Cross Ties should be disposed of in state permitted sanitary or construction and debris landfills. Spent Cross Ties should not be stored on rights-of-way or other property except for limited time periods while disposal is being arranged (see procedure below). Notwithstanding the foregoing, this policy does not require the immediate removal of Spent Cross Ties being stored as of its effective date, but consideration should be given to remove and properly dispose of any Spent Cross Tie.

State Regulations to Note:
California treats Spent Cross Ties (a/k/a “treated wood waste”) as a California hazardous waste and not hazardous waste as defined under the federal Resource Conservation and Recovery Act (RCRA). Consequently, while shipments of Spent Cross Ties in California do not need to be tracked, railroads there are obligated to notify California’s Department of Toxic Substances Control (DTSC) online at dtsc.ca.gov by January 30th each year if they ship more than 10,000 pounds of Spent Cross Ties in the prior calendar year.

Definitions:
Spent Cross Tie – a spent timber used for track or bridge construction that is treated to make it resistant to rot and infestation. Spent Cross Ties are currently treated with creosote, which contains Polynuclear Organic Material (POM), a substance subject to EPA air emission rules. Historically, cross ties were treated with other chemicals such as arsenic and pentachlorophenol. Spent Cross Ties may also contain residue from herbicide application along rights-of-way or other materials released from the equipment

Genesee & Wyoming Environmental Policy **CONFIDENTIAL**	Generation, Staging and Disposal of Spent Cross Ties	Revision: Initial Distribution Date Created: 04/19/2013 Department: Environmental

traveling over them.

Procedure:

1. Any contracted service involving the replacement or removal of Spent Cross Ties shall include a provision consistent with this policy for the disposal of Spent Cross Ties in a written contract. Contractors shall also provide disposal tickets or an invoice indicating the number of Spent Cross Ties handled, method of disposal, and the address and contact information for the Certified Disposal Facility (see #6 below for requirements of a Certified Disposal Facility).
2. Employees who remove or replace Spent Cross Ties shall stage Spent Cross Ties in a temporary staging area.
3. Spent Cross Ties shall not be discarded off the sides of any mainline track, buried or burned.
4. Temporary Spent Cross Tie staging areas must be located away from sensitive environmental and human receptors (e.g.; streams, swamps, ponds, or areas readily accessible to the public).
5. Spent Cross Tie staging areas shall be kept neat and orderly. Spent Cross Ties shall not be stacked to the extent they pose a fall hazard to employees or the public, obstruct sight lines near crossings, or may otherwise impede or disrupt rail traffic, or at a location that creates a clearance hazard near tracks or roadways.
6. Spent Cross Ties should be removed for disposal within 180 days of generation.
7. Spent Cross Ties may only be disposed of in a “Certified Disposal Facility”, which means in either a certified construction and demolition debris landfills, or via incineration at a state or locally certified facility.
8. Invoices or bill of lading indicating Spent Cross Tie disposal will be maintained by the railroads in concert with GWI’s record retention policy.
9. Spent Cross Ties shall not be sold, donated, or given away to anyone except to either a Certified Disposal Facility or another railroad that intends on using the Spent Cross Ties for its operations.
10. No other waste or other materials should be commingled with the Spent Cross Ties.

For further assistance, please contact:

Director Environmental Compliance

GWCI PROCEDURES FOR THE INSTALLATION, ADJUSTMENT, MAINTENANCE AND INSPECTION OF CWR

Procedures for the Installation, Adjustment, Maintenance and Inspection of CWR

Note: FRA Track Safety Standards §213.119 (k) requires that a copy of these procedures is available at every jobsite where personnel are assigned to install, inspect or maintain Continuous Welded Rail.

These procedures have been adopted by all United States subsidiaries of Genesee & Wyoming, Inc.

THESE RULES AND PROCEDURES SUPERSEDE

ALL PREVIOUS INSTRUCTIONS COVERING PROCEDURES FOR THE INSTALLATION, ADJUSTMENT, MAINTENANCE AND INSPECTION OF CWR

Genesee & Wyoming Engineering – Issued 10/29/2013
Latest Revision 07/01/2018

TABLE OF CONTENTS

DEFINITIONS

AMBIENT TEMPERATURE	Atmospheric or "air" temperature.
BUCKLED TRACK	A major irregularity in track alignment that is caused by excessive compression of the rails. The formation of a lateral misalignment sufficient in magnitude to constitute a deviation. Normally occurs when rail temperatures are relatively high and are caused by high longitudinal compressive forces. This condition is usually unsafe for train passage. Also known as heat kinks, sun kinks and tight track.
CLOSURE RAIL	A rail used to complete the repair of CWR defect (defective rail, pull-apart, track buckle etc.) Closure rails may be temporary or permanent. Closure rails must be a minimum of 16 feet long in tangent track and 19'-6" long in curves.
CORRECTIVE ACTION	Repair or other actions required to bring CWR within compliance with this Genesee & Wyoming CWR Standard
CWR	Continuous Welded Rail – welded in lengths longer than 400'. Rail installed as CWR remains CWR, regardless of whether a joint or plug is installed into the rail at a later time.
DRITR	Desired Rail Installation Temperature Range - A range of temperatures within which it is permissible to anchor CWR without having to make an adjustment.
NEUTRAL TEMPERATURE	A temperature where the rail is neither in tension or compression
PRLT	Preferred Rail Laying Temperature - The temperature at which CWR is to be anchored to ensure the rail can withstand stresses at maximum high and low temperatures
PULL-APART	A failure in a joint of either broken bolts, broken splice bars or both which causes the rails to pull apart
RAIL TEMPERATURE	The temperature of the rail taken with an approved rail thermometer.
REMEDIAL ACTION	Repair or other actions required to bring track within compliance with CFR Title 49 Track Safety Standards Part 213
WORKING ZONE	A temperature range 50°F below and 30°F above the PRLT for which it is permissible to undertake maintenance work in CWR.

A. INSTALLATION OF CWR

1. RAIL

(a) Continuous welded rail must be installed at a temperature to minimize track buckling in the summer due to high compressive forces in the rail and rail pull-aparts in the winter when the rail is in tension. The rail, at the time rail anchors are applied, must be in neither compression nor tension and is referred to as being in a stress-free state and at a temperature referred to as the Preferred Rail Laying Temperature (PRLT, see chart in Appendix 2). Anchoring must be no more than 100' behind the rail heater.

(b) Continuous welded rail should be installed within a range of 5° below the PRLT, to a maximum of 15°F above the PRLT. This range is referred to as the "Desired Rail Installation Temperature Range" (DRITR). The "Record of Rail Laying Temperature" form will need to be completed to verify compliance.

NOTE: (1) The Regional Vice President of Engineering or designee will determine if rail can be laid at a temperature higher than 15°F above the PRLT without further adjustment, but rail should not be installed and anchored more than 5° below the PRLT without being identified for adjustment at a later date.
NOTE: (2) The Regional Vice President of Engineering or designee will determine the Rail Laying Temperature Range for tunnels.

(c) Should it become necessary to install and anchor rail at a temperature below the DRITR, and rail heaters, hydraulic expanders or equivalent are not available, a "Record of Rail Laying Temperatures" (Appendix 5) must be completed and made available to the Track Supervisor or Roadmaster indicating the location of the installed rail and the installation temperature. Rail temperature adjustment at these locations must be completed before the rail temperature reaches the lower limit of the DRITR. Corrective actions must be recorded on the forms and the files retained for a minimum of 2 years. Note, the "Record of Rail Laying Temperatures must be completed whenever CWR is installed.

(d) Rail temperature will be measured with a rail thermometers placed on the web, or base of the rail near the web, away from the wind and out of the direct rays of the sun and away from all sources of artificial heat or cold. Rail thermometers must be checked on a regular basis by comparing against one or more other rail thermometers. If the readings vary by more than five degrees, a third thermometer must be used to determine which of the two is accurate. Inaccurate rail thermometers must be replaced. Contact style thermometers are preferred; however, the use of Infra-red thermometers is acceptable providing the temperature is taken in the same manner as conventional thermometers (web or base of rail, away from direct sunlight, or sources of artificial heat).

(e) At the completion of rail installation, with all rail fasteners in place, the date, rail installation temperature, method of adjustment and Foreman's initials will be marked with paint on the web of both sides of the rail at the end of each string of CWR.

(f) CWR should not end on an open deck bridge, or less than 300' from the back wall. The Vice President of Structures shall be consulted before installing CWR on any bridge built on a curve in excess of 6°, or on any open deck bridge on a curve in excess of 3°.

(g) As long as the only ballast disturbed is that removed by a cribber, the rail has been installed, spiked and anchored within the DRITR, one train will be operated over the newly installed CWR at 10 mph. Then, after inspection, the track may be operated at authorized track speed.

2.0 ANCHORS, FASTENERS and BALLAST

(a) Anchoring

(i) On new construction or rail relay, every 2nd tie will be box anchored. Additional anchors will be applied as outlined in Table 1. When an anchor is applied to the rail, there must be an anchor applied to the opposite rail with bearing on the same side of the tie. At locations where the existing anchor pattern is not in compliance with this anchoring policy, the track will be brought up to standard during the next rail laying operation, curve patch, bridge timbering operation or turnout or road crossing replacement project. During timbering operations, missing anchors will be replaced to match the pattern currently in the track. When bolted joints in CWR experience a service failure, remedial actions must be taken as specified in Table 2. See ES8050.1 in Appendix 11 for further anchor pattern details **(always use the current version of ES8050.1 or any other standard. They are available on the Engineering SharePoint site)**.

Table 1

At These Locations	Turnouts*, Highway Grade Crossings over 50 feet in length, Track Crossings at Grade (Diamonds), Open Deck Bridges*, Moveable Bridges & CWR Adjoining Jointed Rail =>	Box anchor every tie for 200 feet in both directions from where CWR adjoins these locations.
Any times a new joint is introduced into existing CWR	If NOT intended to be welded; or Only 4 bolts are installed =>	Box anchor every tie for 200 feet in both directions within 60 days
	If welded, or six bolts are installed within 60 days =>	Existing Anchor Pattern
Existing bolted joint locations	If no excessive longitudinal rail movement =>	Existing anchor pattern
	If excessive longitudinal rail movement is evident (bent bolts) =>	Box anchor every tie for 200 feet in both directions from joint

Turnouts* - 200 feet ahead of the switch points; 200 feet from the long ties behind the frog on both tracks. Plus all ties in turnout where anchors can be applied and not interfere with switch operation. This pattern is to be applied to both welded and bolted turnouts.

Anchor Pattern on Open Deck Bridges* - Box anchors are to be applied only to ties that are hook bolted to the span (generally every second tie). Spacing may be extended to every third tie if required to match hook bolt spacing. Ballast deck bridges are to be anchored to the same pattern as the track leading up to the bridge.

Table 2

Bolted joint in CWR experiencing service failure (stripped joint/pull-apart) or failed bars with gap* present. * Gap present if it cannot be closed with a drift pin.	• Weld joint; **or** • Repair joint as per section C-5 and weld within 30 days; **or** • Replace bars (if required) and install six new bolts and adjust anchors in both directions for 200 ft.; **or** • Box anchor every tie for 200 ft. in both directions; **or** • Add rail

(b) Spiking Patterns – See ES8050.1 attached in Appendix 11 **(always use the current version of ES8050.1)**.

(c) Bolts

All joints in CWR must contain at least 2 bolts per rail end. Temporary closure rails in new CWR installations, may be bolted with four bolts per joint in the two outer holes on each rail with a 6-hole splice bar, if welded within 60 days from the date of installation. If not welded within 60 days, all joints must meet the requirements of Table 1 or 2 in this section. Grade 8 bolts are required for CWR.

(d) Ballast

A ballast section of sufficient quantity and quality to restrain the track laterally under the loads imposed by railroad equipment and thermal stress is required where continuous welded rail is to be installed. Where the ballast section is inadequate to provide the lateral restraint, and there is evidence of excessive lateral movement of the track, an appropriate slow order as determined by an individual qualified in these procedures must be placed until the ballast section is restored.

B. ADJUSTING NEUTRAL TEMPERATURE

1. TRACK CONDITIONS REQUIRING ADJUSTMENT

(a) Where CWR has been installed at a temperature lower than the Desired Rail Installation Temperature Range, the Engineering Manager should have been provided a "Record of Rail Laying Temperatures for CWR" report and the rail scheduled for neutral temperature adjustment. It is important to complete any rail adjustments before the onset of warmer weather (before rail temperature reaches the lower limit of the DRITR). Any rail not installed and anchored within the Desired Rail Installation Temperature Range (DRITR) should be scheduled for adjustment.

(b) Rail movement can also occur in areas where trains routinely apply brakes. These areas include signal locations, descending grades, permanent speed restrictions, approaching yards, or similar locations on the railroad. At some locations, such as road crossings and turnouts, rail is more resistant to longitudinal creep than in open track. Rail with high longitudinal forces is often found at these locations.

(c) When surfacing in cooler weather, rail may contract and pull toward the inside of a curve. This is more pronounced where there is insufficient ballast on the low side of the curve. If this occurs, the curve will have a lower neutral temperature and therefore will develop high compressive forces when the rail temperature increases. Note: Refer to Item C. 3(a)

(d) Many maintenance activities also affect the neutral temperature of the rail. Any work that significantly disturbs the ballast, such as surfacing, tie renewal, and undercutting, can allow the track to shift in response to traffic and temperature changes until the ballast section is again stabilized. A "Track Disturbance & Rail Addition Record" (Appendix 6) must be completed for any work which disturbs the track or adds rail in CWR. Any follow-up actions must be recorded on the form.

2. PROCEDURES FOR ADJUSTING NEUTRAL TEMPERATURE

(a) Estimate the amount of rail to de-stress by considering what initially created the over-stressed rail condition as follows:

- Inspect the track for evidence of rail movement. Consider grades, curvature, track fixtures and traffic conditions to estimate the limits of rail with a low neutral temperature. NOTE: If the rail is tight as a result of a cold weather emergency rail repair, the limits of the rail adjustment should be determined using information from the CWR Failure Report.

- If de-stressing as a follow-up to recent rail installation outside of the DRITR, obtain the "Record of Rail Laying Temperatures for CWR" report to determine the limits of rail adjustment.

- Determine how many track feet of rail to de-stress at one time by considering the size of the work force, available track time, rail temperature and track characteristics such as curvature. NOTE: If Hydraulic Expanders or Rail Heaters are available, de-stressing should be planned when the rail temperature is likely to be below the PRLT

(b) Rail should not be cut more often than absolutely necessary. However, de-stressing significant lengths reduce the chances that reasonably uniform neutral temperature will be achieved. Rail cannot be easily adjusted on track that is overfilled with ballast and track that is uneven in surface or alignment, and attempting to de-stress rail under these conditions should be avoided. On curved track, shorter limits of de-stressing may be required to achieve the desired movement.

(c) The length of rail to be adjusted should be no less than 400 feet (200' each direction), or more than 1600 feet (800 feet in each direction from the adjusting point).

Obtain the Following Information:

- The Preferred Rail Laying Temperature (PRLT)
- The present rail temperature
- The length of CWR to be de-stressed (must not exceed 800' each side of adjusting point)

Preparatory Work:

1. Determine and mark locations where rail is to be cut or separated.
2. Measure the length of rail to be de-stressed.
3. Adjust rail anchors 200 feet each side of where the rail is to be cut or separated to ensure rail does not jump when the rail is cut or the joint bars are removed.
4. Adjust all rail anchors or install additional anchors for at least 200 feet beyond the de-stressing limits.

De-stressing Steps:

1. Make match marks on the base of the rail and the tie plate at the adjustment location and in 25% intervals (Quartering) throughout the entire length of the rail to be distressed.
2. Take rail temperature reading away from the cut.
3. Use Appendix 2 and Appendix 3 to compare the rail temperature with the designated Preferred Rail Laying temperature (PRLT) for the territory. This is known as the temperature differential.
4. Cut the rail or dismantle the joint on the closure rail.
5. Position the rail to permit the ends to bypass (if necessary).
6. Remove rail anchors.
7. Tap or vibrate rail by striking the tie plates with sledgehammers to ensure rail is free to move. (Use only brass or other soft material hammers to strike the rail itself - never strike the rail with spike mauls or sledge hammers)
8. If existing gap is less than adjustment required, cut the rail end so the gap is equal to the required expansion adjustment (plus one inch for each field weld if applicable). If the gap exceeds the amount of adjustment required, install a closure rail not less than 16ft. in length leaving a gap for the required adjustment (plus one inch for each field weld if applicable)
9. Using a hydraulic rail expander or rail heater, de-stress the rail by stretching it the required expansion adjustment to close the gap.
    - Ensure bolt holes are drilled prior to installing the rail expander

- If welding a closure rail, allow sufficient time for the weld(s) to cool (700°F) before stretching the rail.

10. Check match marks to ensure that the required movement has been achieved throughout the entire length of the rail to be de-stressed (use Appendix 3)
    - If the required movement has not been achieved at all of the match marks, vibrate the rail as per instructions in item 4 until the required movement is achieved.
11. Re-apply rail anchors beginning at the end farthest from, and working toward the adjusting point.
12. Join rail ends with splice bars or field welds.
13. Remove rail expander.
14. Remove any additional anchors that were installed earlier.
15. Obliterate any previous rail laying temperature and "Paint" new de-stressed to temperature and date on the rail (New temperature should be in DRITR).
16. Slot joints that will not be welded in the near future.
17. Bond joints on track circuit territory.
18. Complete Track Disturbance & Rail Addition form (Appendix 6) and forward to all concerned.

C. MAINTENANCE

1. TRACK MAINTENANCE GENERAL

(a) For the purposes of this CWR maintenance policy, the range of rail temperatures not more than 30°F above, or more than 50°F below the Preferred Rail Laying Temperature is known as the "Working Zone"

(b) Except in cases of emergency or major programs, no surfacing, lining, tie renewal, rail change out, transposing, gaging or ballast shoulder cleaning will be carried out in CWR territory when the rail temperature is outside the working Zone.

(c) Necessary gaging, transposing, shimming and rail change out may be carried out at lower temperatures. Extreme care must be taken when gaging curves at low temperatures as the rail may "string line". Minor spot surfacing and crosstie replacement may also be carried out at lower temperatures, but care must be taken on curves to disturb the ballast as little as possible.

(d) A “Track Disturbance & Rail Addition Record” (Appendix 6) must be completed for any work which disturbs the track or adds rail in CWR. Any follow-up actions must be recorded on the form.

(e) Work on major programs may be undertaken outside the working zone, but only when satisfactory measures have been taken to ensure safety. The following Track Maintenance guidelines should be referred to and utilized for all track maintenance in CWR territory.

2. TIE RENEWAL

Take the following precautions when renewing ties in locations with continuous welded rail:

(a) Do not remove more ballast from the cribs and tie ends than is absolutely necessary to carry out renewals.

(b) Disturb the surface and track alignment as little as possible.

(c) Not more than three consecutive ties may be renewed at one time. When necessary to remove up to three consecutive ties, at least three out of four adjacent ties on either side of the ties to be renewed must be fully spiked and anchored.

(d) Where heavier tie renewals are required and the above requirements cannot be met, complete the renewals in 2 or more passes.

(e) These guidelines also apply to the installation of switch ties for new turnouts, turnout panels, track panels, road crossings, etc. Anchor switch ties in the same manner as track ties until the turnout is installed.

(f) Until track is restored to standard (fully plated, spiked, anchored, newly installed ties tamped, ballast cribs and shoulders restored) track speed shall be limited to 10 m.p.h. Once the track has been restored to standard and the track surface and line meet F.R.A. class 2 requirements, the track speed may be increased to 25 m.p.h. Before track speed is raised above 25 m.p.h., the track must be fully surfaced, lined, dressed and the track stabilized by meeting the tonnage requirements or by a combination of mechanical stabilization and tonnage as outlined in the chart below.

SLOW ORDER REQUIREMENT - More than 25% tie renewal in 100 feet of track.

TRACK CONDITION	SPEED
1) Until track is restored to standard. (fully plated, spiked, anchored, newly installed ties tamped, ballast cribs and shoulders restored).	**10 MPH**
2) Track restored to standard and track surface and line meet minimum class 2 requirements.	**25 MPH**
3) Track fully surfaced, lined and dressed and track stabilized with Mechanical Stabilizer and the passage of 15,000 tons of traffic has passed over the track to consolidate the ballast.	**AUTHORIZED TRACK SPEED (ABOVE 25 MPH)**
4) Track fully surfaced, lined and dressed and 50,000 tons of traffic has passed over track to consolidate the ballast. (Approx. 400 Carloads)	**AUTHORIZED TRACK SPEED (ABOVE 25 MPH)**

Slow orders for spot work or less than 25% tie renewals must include step 1 above, then 25 mph as required by the Regional V.P. - Engineering.

3. OUT-OF-FACE SURFACING & SHOULDER CLEANING

(a) When track is to be surfaced - and ambient temperature is currently, or forecasted to be (within the next 24 hours) more than 50°F below the PRLT, a qualified employee shall set reference stakes on curves 3 degrees or higher before track surfacing begins. Stakes will be placed as specified on the "Curve Alignment Reference Form" (Appendix 8). If the curve is shorter than 500', place three stakes evenly spaced around the curve.

The position of the curve will be monitored after surfacing is completed. Measurements must be recorded on the "Curve Alignment Reference Form" (Appendix 8) periodically for up to 15 days after the work was completed. If inward movement of the curve is in excess of 3", the curve must be lined out, or rail adjustments made, prior to the rail temperature reaching the lower limit of the DRITR. Note: Stakes must be placed where they would not present a tripping hazard to railroad personnel.

(b) Track surfacing disturbs the ballast around the tie and reduces the track's lateral resistance. A temporary speed restriction not to exceed 25 mph must be placed on all surfaced CWR track with a track speed greater than 25 mph, regardless of temperature. The slow order should begin at least 0.2 mile either side of the disturbed track. This will prevent train braking in the immediate vicinity of the disturbed track.

(c) When work is performed at night or during a cool period of the day at the time of year when it is known the rail temperature is expected to exceed the working zone, track that has been disturbed must be protected by slow order until a sufficient amount of traffic has been operated over the track to consolidate the ballast.

(d) Out-of-face surfacing must be done with mechanical tampers. When surfacing, track must not be allowed to get out of line and joints at the ends of CWR should be given special attention.

(e) Track in CWR territory must not be surfaced unless sufficient ballast is available.

(f) If insufficient ballast exists on the surfaced track, the Roadmaster or Track Supervisor must be notified and speed restriction shall remain in place until the ballast section has been restored.

(g) Speed restrictions should not be removed during the heat of the day (12:00 to 20:00)

SLOW ORDER REQUIREMENT - SURFACING

TRACK CONDITION	SPEED
1) Insufficient Ballast or not regulated to standard	**10 MPH**
2) Track restored to normal, surfaced and regulated to standard	**25 MPH**
3) Track fully surfaced, lined and dressed and track stabilized with Mechanical Stabilizer and the passage of 15,000 tons of traffic has passed over the track to consolidate the ballast.	**AUTHORIZED TRACK SPEED (ABOVE 25 MPH)**
4) Track fully surfaced, lined and dressed and 50,000 tons of traffic has passed over track to consolidate the ballast. (Approx. 400 Carloads)	**AUTHORIZED TRACK SPEED (ABOVE 25 MPH)**

Slow orders for spot work must include step 1 above, then 25 mph as required by the Regional V.P. - Engineering.

4. REPLACING DEFECTIVE RAIL

(a) If a rail break occurs, or a rail defect requiring replacement is detected in CWR, a closure rail of not less than 16 feet in tangent track and 19'-6" in curves must be cut in.
NOTE: Longer rails may be required in curves for alignment purposes.

1. If welds cannot be made at the time of repair, a closure rail the same length as that cut out must be installed, leaving minimum joint gap. Installation of bolts and anchors must meet the requirements set out in Section A.2 – Table 1

(b) When cutting in the replacement rail care must be taken to avoid adding rail. Use the reference mark procedure outlined in Appendix 4 to accurately monitor whether or not rail has been added. If rail has been added it must be properly documented on a CWR Failure Report or Track Disturbance Record.

(c) When thermite welds are used in making a permanent closure, a gap of 1" must be cut out to compensate for each weld. Thermite welding procedures are detailed in Appendix 9.

(d) Permanent closures must be of the same metallurgy and approximate wear as the rail in which installed.

(e) When closure rails, either temporary or permanent, are bolted into rail within a Track Circuit, arrangements must be made with the Signals department to have rail bonds applied at the joints.

(f) The CWR Failure Report must be completed for service failures in CWR. The Track Disturbance Record should be used for rail changed in maintenance or behind an ultrasonic test vehicle.

5. PULL-APARTS (Stripped Joint)

(a) A pull-apart (stripped joint) is a failure at a rail joint of either the bolts or the splice bars or both, allowing the rail ends to separate and not able to be closed with a drift pin. If a failure occurs, the joint must be fastened and anchored as per the requirements set out in Section A.2 – Table 2.

(i) If the rail pull-apart at a joint is less than 3 inches, heat may be applied to both rails for a sufficient distance on each side to close the gap. Use a source of heat, or hydraulic rail-puller to obtain closure leaving no joint gap. Remove rail anchors before heating but re-apply them immediately after obtaining closure. **IMPORTANT:** Do not use burn ropes on open deck bridges.

(ii) If a pull-apart occurs and the rail ends separate more than three inches and de-stressing cannot be completed at the time, a temporary repair should be made by installing a closure rail of at least 16 feet in tangent track and 19'-6" in curves, leaving no joint gap.

(b) CWR Failure Report (Appendix 1) must be completed, recording the joint gap, method of repair and rail added (if any) to ensure all information is available should further rail adjustment be required.

6. MAINTAINING DESIRED NEUTRAL TEMPERATURE RANGE

(a) If rail is added for any reason when repairing a pull-apart, changing a rail defect, making emergency repairs, etc., measure and record the amount of rail added and record it on the CWR Failure Report so that adjustments can be made later, if necessary.

(b) Rail that has pulled apart, broken, or been cut for defect removal must be readjusted to within the PRLT minus 20 degrees (PRLT-20) safe range. In order to determine "Existing Rail Neutral Temperature" at the time of repair, refer to Tables 1 through 4 in Appendix 10. For pull-aparts or broken rails, record the Existing Rail Neutral Temperature on the CWR Failure Report in the appropriate box.

Sample of Report

Part 2 - Pull Apart or Rail Break					
General:	Rail Break (type)		Pull-Apart	Gap at break or pull-apart (inches)	
Anchor Pattern		Rail Base Width		Rail Neutral Temp. (from appropriate table)	
If Pull-apart - State the apparent cause					

(c) If "Existing Rail Neutral Temperature" reported on the CWR Failure Report is more than 20°F below the PRLT for the area, adjustment of the rail will be required prior to the rail temperature reaching the values in Table 3B below.

(d) If the existing neutral temperature is determined to be above the DRITR and there has been a history of pull-aparts or broken rails in the area, consideration should be given to adding rail to bring the neutral temperature within the DRITR. The Roadmaster must be consulted prior to the addition of rail to review the conditions and verify the course of action.

(e) If rail has not been adjusted to at least PRLT - 20 degrees before rail temperatures exceed the values in Table 3B below, a speed restriction of 25 MPH will be placed, or a speed restriction of 40 MPH will be placed with a required daily inspection made during the heat of the day.

Table 3B

Rail Temperature (°F) at which rail break or cut occurred	Rail temperature (°F) at which to re-adjust or apply slow order
60	135
50	130
40	125
30	120
20	115
10	110
0	105
-10	100
-20	95
-30	90
-40	85

7. TRACK BUCKLES

(a) A track buckle is an emergency situation. When a track buckle, or imminent track buckle is discovered:

(i) Stop all traffic at that location until temporary repairs are complete or;

(ii) After a qualified track inspector has inspected the location and determines the track is safe for train operation, they may supervise the movement of each train over the location at a maximum of 10 MPH until repairs are complete.

(b) For temporary repair of a track buckle (other than a curve chorded to the inside), cut the track, leaving a minimum 1" gap in the rail and place the track in the best possible alignment where it will remain without further movement and where it will provide clearance. Trains are to be operated at a speed not to exceed 10 MPH until permanent repairs are made.

(c) For permanent repair of a track buckle (other than a curve chorded to the inside):

(i) Dismantle a joint (if available) or cut the track near the buckled track to permit release of the rail and relining.

a. Make cuts in the CWR near the buckle location and make a closure in accordance with Section C.4. When cutting CWR under these circumstances, extreme care must be taken to avoid personal injury due to movement of rail. Never cut the rail at the buckle location.

(ii) Install the closure rail and re-line the track

a. Apply new or additional anchors

b. Add ballast to shoulder and cribs

c. Replace defective ties

(iii) Place appropriate slow order at the location until the disturbed ballast has consolidated.

(d) A follow up inspection should be made before removing speed restrictions to ensure effectiveness of repairs.

(e) For track buckles, pull-aparts, and broken rails, the remedial action taken must be reported by the Foreman and the Roadmaster or Track Supervisor on the CWR Failure Report.

(f) The Roadmaster or Track Supervisor must ensure that the cause of the buckle has been determined and if necessary, rail is distressed to the preferred rail laying temperature as soon as possible.

8. OTHER TRACK MAINTENANCE

(a) Maintain good surface at all joints.

(b) Rail anchors must be inspected frequently and kept in proper adjustment to prevent or limit rail movement. When it is necessary to adjust anchors by hand, if the anchor is less than 1" from its proper position, it may be driven along the rail. Otherwise, the anchor must be removed from the rail and reapplied in proper position.

(c) Close attention must be paid to the condition of insulated joints. Replace damaged insulation as soon as possible.

D. INSPECTION

(a) Normally, there are several things that occur in track structure that warn of a tight rail condition and/or a potential buckling problem. If track inspection is done in a conscientious and careful manner, the early signs of a potential problem can be discovered and steps taken to prevent a track buckle. The following are warning signs a track buckle could occur:

- wavy rail
- new alignment problems, such as short flat spots in a curve, or kinks in tangent track
- gaps or voids in ballast at end of ties
- rail base not properly seated in the plates
- rail (running through anchors) that requires de-stressing, additional anchors and/or the re-setting of anchors
- churning of ballast caused by tie movement, resulting in gage and line kinks
- longitudinal movement of a switch point in relation to a stock rail, resulting in improper switch adjustment

(b) All warning signs must be dealt with immediately. When a tight rail condition is located, take immediate steps to protect train traffic. This involves stopping traffic, cutting the track (or other adjustment procedures such as lining a curve to the outside) and placing a slow order of 10 mph until the problem is permanently repaired. If a slow order is placed it should begin at least 0.2 miles on each side of the tight rail location to prevent train braking in the immediate vicinity.

(c) When inspecting CWR track, special attention must be given to areas where rail is likely to have moved. These areas can occur at the bottom of sags, where train braking is likely to occur, or adjacent to locations where the track movement is restricted, such as turnouts and grade crossings. Close attention must also be given to bridge approaches and high degree curved track, especially where track work that disturbed the ballast was completed during colder weather.

(d) The inspector should be aware of any track maintenance work that has been recently performed, such as tie replacement, track surfacing, or rail replacement, and make close inspections of those areas to make sure that repairs were properly performed and the track is protected by slow order until the ballast is consolidated.

(e) Continuous welded rail that shows signs of not being stress free within the desired rail

installation temperature range (DRITR) should be de-stressed as soon as possible.

(f) When the ambient temperature is at or below the seasonal average, and there is any evidence of unusual lateral or vertical movement of the rail, a slow order 25 mph or less must be placed and the Roadmaster informed promptly.

(g) A special inspection of continuous welded rail (CWR) territory will be performed between the hours of 12:00 and 20:00 when the ambient temperature has reached or is forecast to reach the "Inspection" temperature thresholds outlined in Appendix 2 "Rail Installation, Inspection & Protection Chart".

(h) When the ambient temperature has reached or is forecast to reach the temperature thresholds outlined in Appendix 2, the appropriate "blanket" temporary slow order must be placed on CWR track between the hours of 12:00 and 20:00 or until the temperature drops below the temperature thresholds outlined in Appendix 2, whichever comes first. In addition, a track inspection of CWR shall be conducted between 12:00 and 20:00.

(i) On main tracks, cold weather inspections must be performed as directed by the Regional Vice President Engineering when the ambient temperature is forecast to drop 70°F below the preferred rail laying temperature per Appendix 2. The inspector will watch for:

- Broken rails
- Pull-aparts
- Curve movement
- Wide gap between rail ends
- Bent bolts
- Cracked or broken joint bars (conventional and insulated)
- Canted rail

NOTE 1: Temperatures listed in Appendix 2 are the maximum temperature thresholds for which inspections and temporary slow orders are to be initiated. The railroad shall post (by timetable or bulletin) more restrictive thresholds (if required) based on past experience and known sections of buckle susceptible track.

NOTE 2: Arrangements must also be made for additional track inspections when an extreme variation in temperature is expected. **This is normally defined as temperature fluctuations of 40 degrees or more that often occur in the spring. The Regional V.P. – Engineering may specify different criteria where appropriate for specific locations.**

NOTE 3: Supplemental requirements set forth by the Regional V.P. – Engineering as described in this document must be issued in writing and made part of this document on the territories affected by those instructions.

E. Joint Bar Inspection in CWR (FRA 213.119(h))

All CWR joints within the following classes must be inspected on foot:

- Class 2 on which passenger trains operate, and
- Class 3 and higher

(a) Minimum Joint Bar Inspection Frequencies:

(i) Visual "on foot" inspection of all joints in CWR shall be performed by an individual qualified under FRA 213.7 as per the following table and documented on a Walking Joint Bar Inspection Report or in Digital Track Notebook (Appendix 7):

Minimum Number of Inspections Per Calendar Year[2]					
	Freight Trains operating over track with an annual tonnage of :			Passenger Trains operating over track with an annual tonnage of :	
	Less than 40 MGT	Between 40 and 60 MGT	More than 60 MGT	Less than 20 MGT	More than or equal to 20 MGT
Class 5 & above	2x	3x [1]	4x [1]	3x [1]	3x [1]
Class 4	2x	3x [1]	4x [1]	2x	3x [1]
Class 3	1x	2x	2x	2x	2x
Class 2	0	0	0	1x	1x

4x = Four times per calendar year, with one inspection in each of the following periods: January to March, April to June, July to September, and October to December; and with consecutive inspections separated by at least 60 calendar days.

3x = Three times per calendar year, with one inspection in each of the following periods: January to April, May to August, and September to December; and with consecutive inspections separated by at least 90 calendar days.

2x = Twice per calendar year, with one inspection in each of the following periods: January to June and July to December; and with consecutive inspections separated by at least 120 calendar days.

1x = Once per calendar year, with consecutive inspections separated by at least 180 calendar days.

[1] Where extreme weather conditions prevent a track owner from conducting an inspection of a particular territory within the required interval, the track owner may extend the interval by up to 30 calendar days from the last day that the extreme weather condition prevented the required inspection.

[2] Where a track owner operates both freight and passenger trains over a given segment of track, and there are two different possible inspection interval requirements, the more frequent inspection interval applies.

Note: Alternate procedures may be used to accomplish the required joint bar inspections with prior approval in writing from the Federal Railroad Administration. Contact the office of the G&W Vice President of Engineering for details on this process.

Exceptions: Passenger train detours and tourist, scenic, historic or excursion operations shall be handled in compliance with Title 49, Part 213, D, 119(g), 6.

(b) Rail Joint Conditions

(i) The primary consideration for the rail joint inspection is to detect, report and take remedial action for cracked or broken joint bars.

- Joint bars that show visible cracks shall be handled in accordance with FRA 213.121 (b) & (c).

(ii) Conditions that can lead to the development of joint bar cracks must also be noted during the inspection, entered on a Walking Joint Bar Inspection Report or in Digital Track Notebook (Appendix 7) and corrective action(s) undertaken.
These conditions include, but are not limited, to the following:

- Loose, bent, or missing bolts
- Rail end batter
- Mismatched Joints (Note: Immediate remedial action shall be taken for rail ends that are mismatched in excess of the table in FRA 213.115)
- Excessive longitudinal rail movement in or near the joint as evidenced by; wide rail gap, defective bolts, disturbed ballast, surface deviations or displaced and missing rail anchors.
- Potential failure of any component of the joint such as rails, bolts, supporting crossties and fasteners.
- The track on both sides adjacent to the joint for signs of rail movement, including the effectiveness of rail anchors.

(iii) Certain joints, as a result of their condition, location or other circumstances may require a follow up inspection. Rail joints in areas of chronic subgrade problems, heavier traffic areas or locations where rail is subjected to wide variations in temperature should be inspected more frequently as determined by the Roadmaster or other qualified personnel.

(c) CWR Rail Joint Identification

(i) Rail joints in CWR that require remedial or corrective action will be marked with a durable crayon or other marker, or with highly visible surveying tape. The marking shall be made on the gage side joint bar. In addition, such joints shall be identified on the inspection report as to location by specifying the subdivision, milepost, track number and rail (north, south, etc.).

(ii) Track inspectors or other personnel dispatching maintenance crews to perform repairs on a CWR joint must provide the joint identification to ensure the maintenance crew can clearly identify the location where work is to be performed.

(d) Recording and Reporting

(i) Each rail joint in CWR that has been inspected as per the required inspection intervals stated in (a)(i), and requires remedial or corrective action as outlined in (e) "Remedial/Corrective Action Table", will be recorded on the "Walking Joint Bar Inspection Report" (Appendix 7). The CWR joint shall be identified on the report by Subdivision & Mileage. Joints that are inspected, but do not require corrective action are not required to be recorded on the inspection report.

(ii) The "Walking Joint Bar Inspection Report" will contain at minimum, the following information:

- The date of the inspection
- The Railroad, Subdivision and mileage limits of the inspection
- Any condition that could lead to the development of a joint bar crack per section (b) (ii).
- Corrective action for conditions not in compliance with Genesee & Wyoming CWR Procedures.
- Corrective action for conditions that could lead to the development of a joint bar crack (See Remedial/Corrective Action Table).
- Name of Inspector

(iii) "Walking Joint Bar Inspection" Reports shall be kept on file at a designated location for a period of one year.

(iv) Follow-up Inspections:
Where Corrective action is required for a reported condition and a follow-up inspection is also required (as indicated by ** in the "Corrective Action" table), the follow-up inspection is to be conducted every 45 days until the condition has been corrected. Conditions noted on the follow-up inspection must be recorded on a "Walking Joint Bar Inspection Report".

(e) Remedial/Corrective Action Table

Condition Reported	**Remedial Action (§FRA 213)**	**Corrective Action (**Follow-up Inspection Required)**
Loose Bolts		**Tighten or Replace
Missing Bolt(s)	Replace immediately if joint contains less than 2 bolts per rail end.	**Replace bolt(s)
Bent Bolts		If causing wide rail gap, replace and determine cause of bent bolt condition.
Rail End Batter (More than 3/8" in depth and 6" in length as measured with a 24" straight-edge)		**Replace Rail or **Build up by Welding
Mismatched Joint	Replace rail or repair joint if exceeding limits of §213.115	If mismatch is a result of loose joint, tighten joint bars **If mismatch is a result of difference in rail head thickness, replace or grind rail.
Wide Rail Gap (in excess of 1-1/2 inch)		Determine cause of wide gap condition If gap is result of improper drilling, replace rail. **If gap is result of inadequate anchoring, pull together and install additional anchors
Wide Rail Gap Disturbed Ballast Missing or Displaced Anchors Excess Longitudinal Rail Movement in vicinity of Joint		Determine cause of track conditions **Add or remove rail as required and arrange for work to be completed before onset of Colder temperatures. **If movement is result of inadequate anchoring, adjust existing rail anchors and/or install additional anchors.
Surface Deviation	Check if within compliance with §213.163 Bring within compliance by repair or speed restriction	Surface Joint
Defective Tie(s) in Joint	Check if within compliance with §213.109(f) Bring within compliance by replacing tie or; protect by speed restriction	Replace defective tie(s)

* Note: For all other conditions found during inspection of Rail Joints in CWR that are not in compliance with FRA Track Safety Standards Part 213 - Subpart A to F, further remedial action as per the requirements of that part must be initiated and reported on a regular Track Inspection Report or in electronic track inspection records.

(f) Turnouts within CWR

(i) All joints from and including the insulated joints at the signals governing movement entering and leaving the control point or interlocking or if there are no signals at the switch location, include as a minimum all joints from the point of switch to the heel of the frog will be inspected in conjunction with the Monthly Turnout Inspection.

(ii) Joints within 40 feet in either direction from a lift rail assembly or other transition device on moveable bridges adjacent to CWR will be inspected on foot once per month in conjunction with the required monthly inspection of these appliances.

(iii) At track crossings at grade adjacent to CWR, joints within 80 feet in each direction on Genesee & Wyoming maintained track will be inspected once per month in conjunction with the required monthly inspection of the track crossing.

(iv) Joints within the limits described above need not be reported on the "Walking Joint Bar Inspection Report", However defects and remedial action must be recorded on the appropriate Track Inspection report or in electronic track inspection records per the requirements of FRA §213.241.

(g) CWR Joints Imbedded in Crossings or Platforms

(i) CWR joints imbedded in Asphalt, Concrete, Rubber or Rubber flange crossings or platforms shall be inspected as thoroughly as possible without removing any permanent material and providing it can be done in a manner that is safe for the inspector. Signs of lateral movement in the crossing or platform and longitudinal movement of the rail in the vicinity of the crossing or platform must be taken into consideration when inspecting embedded joints.

(ii) CWR joints imbedded or buried in removable material such as ballast, road gravel or dirt shall be inspected by removing as much material as possible, provided it can be done in a manner safe to the inspector and vehicular traffic using the crossing. Joints buried in material outside of crossings must be exposed by removing the material to the extent possible to adequately inspect the joint.

F. QUALIFICATIONS & TRAINING

(a) Each employee responsible for the installation, maintenance, inspection, or adjustment of CWR track and each supervisor directing the action of those employees (including contractors* of this railroad) shall:

1. Have current qualifications under the provisions of CFR Part Title 49 Track Safety Standards §213.7 (a) & (b)
2. Have successfully completed a comprehensive training course for the application of these CWR procedures
3. Demonstrate that he/she knows and understands the requirements of these CWR procedures
4. Demonstrate the ability to detect deviations from these procedures and prescribe the appropriate corrective or remedial action for these deviations
5. Have written authorization from the railroad to prescribe corrective or remedial action for deviations from these CWR procedures

(b) Each employee responsible for the installation, maintenance, inspection, or adjustment of CWR track and each supervisor directing the action of those employees (including contractors* of this railroad) shall receive annual re-training on these CWR procedures. The scope of this annual re-training will be determined by the railroad and may consist of a review of these CWR procedures, practical (field) exercise, written examination, or any combination thereof.

*Contractors referred to in the above are those that perform track maintenance in CWR territory on a continuous basis for the railroad. Contractors hired to <u>install</u> CWR only, shall be guided through Part A - "Installation" and Part B - "Adjusting Neutral Temperature" in a pre-construction meeting. Subsequent review can be performed during Job Briefings if necessary to ensure understanding.

G. RECORD KEEPING

(a) Continuous welded rail shall be marked on the web of both sides of the rail with paint at the time the rail is installed or adjusted to indicate the date the work was completed, the installation or adjusted rail temperature and the Foreman's initials.

(b) CWR Failure Reports (Appendix 1) will be maintained in the Roadmaster or Track Supervisor's Office. The reports will indicate the exact location of the failure, the date the report was filed, the amount of inward movement in curves, or the amount of additional rail installed. The reports must indicate when corrective action was taken and what track work was accomplished. The reports will be kept on file for one year from the initial CWR Failure.

(c) A "Record of Laying Temperatures for CWR" (see appendix 5) will be maintained at the Roadmaster or Track Supervisor's Office indicating the exact location of the rail, the date the work was completed, and the rail temperature at the time of installation. These reports will be maintained in the Roadmaster or Track Supervisor's Office. The reports will be kept on file for one year from the initial rail installation.

(d) Track Disturbance & Rail Addition Records (Appendix 6) will be maintained in the Roadmaster or Track Supervisor's Office. The reports will be kept on file for one year from the initial track disturbance.

(e) "Walking Joint Bar Inspection Report ", (Appendix 7) will be maintained in the Roadmaster or Track Supervisor's Office. The reports will be kept on file for one year from the date of inspection.

(f) The Curve Alignment Reference Form (Appendix 8) will be maintained at the Roadmaster or Track Supervisor's office. The reports will be kept on file for one year from the initial track surfacing.

(g) It is the Roadmaster or Track Supervisor's responsibility to see that all newly installed CWR or disturbed track identified in the reports has had the rail neutral temperature adjusted before the onset of warm weather and all reports are amended to indicate the date and nature of work completed.

NOTE: All forms required by this program may be completed and filed in an electronic records program such as ENSCO's Digital Track Notebook (DTN) if available.

Appendix 1 – CWR Failure Report

CWR - Failure Report

Railroad		Subd.		Mileage		Failure Date	DD	MM	YY		
Time CWR failure was discovered or reported						Time of last train Operation					
Rail Temperature at time of repair	°F	PRLT	°F	Air Temp.	°F	Rail Weight					

Part 1 - Location Information

Failure at top or bottom of grade (or none)						Was length, direction or handling of train a factor? (Y/N)			
Tangent		Curve		Deg. Of Curve		% Grade		Feet from nearest turnout, bridge, crossing	

Part 2 - Pull Apart or Rail Break

General:	Rail Break (type)		Pull-Apart		Gap at break or pull-apart (inches)				
Anchor Pattern		Rail Base Width		Rail Neutral Temp. (from appropriate table)					
If Pull-apart - State the apparent cause									

Action Taken - Rail Closure Information

Bolted Closure				Welded Closure		Rail Heated or Expanded			
Length of Rail In		4 bolts		Length of Rail In					
Length of Rail Out		6 bolts		Length of Rail Out		Rail Temperature When Repaired			
Difference				Total Welds		°F			
Gaps left in Joints				Total Rail Added		Date Repairs Completed			
Total Rail Added or Removed				or Removed		DD	MM	YY	

Part 3 - Track Buckle

General:	Was work performed in the area in the past 2 weeks		If "Yes" indicate date:		
	If "Yes" to the above - What was the work performed				
Date rail was installed or destressed (If known)			Laying or Destressed to Temp. (If known)		°F
Ballast:	Tie Cribs Full of Ballast (Yes/No)		Width of Ballast Shoulder		
	Are there signs of the ties moving in the ballast		Is ballast fouled?		
Fasteners:	Anchor Pattern		Spikes per Tie	Tie Plate Type	
Are there several anchors loose or missing in vicinity?			Are there signs of rail moving through anchors?		
Ties/Surface:	Number of Defective Ties at buckle location		General Surface (good, fair, poor)		
Is there irregular alignment in the area?			Was buckle at a soft grade location or in rock cut		

Action Taken - Track Alignment

Track placed in best possible alignment & Slow order		Rail Removed (If Yes, fill out "Closure information)	

Follow-up Action Required - For either Buckle or Pull Apart **(This portion to be completed by Supervisor/Roadmaster)**

Follow-up Action to be Completed by:	DD	MM	YY

Foreman (Print)		Signature		Report forwarded to Supervisor	DD MM YY

Appendix 2 – Rail Installation, Inspection and Protection Chart

Note: The Regional Vice President of Engineering will establish the PRLT for Railroads, or portions of railroads not listed in the above table.

Appendix 2 - Rail Installation, Inspection and Protection Chart

		Rail Temperature		Ambient Temperature Thresholds			Rail Temps.
RAILROAD	SUBDIVISION	PRLT °F	DRITR °F	Seasonal 1st Event Inspection Temp °F	Daily Inspection Temp °F*	TSO Temp °F (Reduce 1 Class but not below 25 mph)	Working Zone Rail Temp °F
AGR	ALL SUBDIVISIONS	100	95 - 115	85	95	100	50 - 130
AKMD	ALL SUBDIVISIONS	105	100 - 120	85	95	95	55 - 135
ALM	ALL SUBDIVISIONS	105	100 - 120	85	95	95	55 - 135
AN	ALL SUBDIVISIONS	100	95 - 115	85	95	100	50 - 130
AOR	ALL SUBDIVISIONS	95	90 - 110	80	90	95	45 - 125
ARCZ	ALL SUBDIVISIONS	115	110 - 125	100	110	115	50 - 130
ATW	ALL SUBDIVISIONS	100	95 - 115	85	95	100	50 - 130
AZER	ALL SUBDIVISIONS	115	110 - 125	100	110	115	50 - 130
BAYL	ALL SUBDIVISIONS	100	95 - 115	85	95	100	50 - 130
BPRR	ALL SUBDIVISIONS	95	90 - 110	80	90	95	45 - 125
BXN	ALL SUBDIVISIONS	105	100 - 120	85	95	95	55 - 135
CA	ALL SUBDIVISIONS	95	90 - 110	80	90	95	45 - 125
CAGY	ALL SUBDIVISIONS	100	95 - 115	85	95	100	50 - 130
CCH	ALL SUBDIVISIONS	100	95 - 115	85	95	100	50 - 130
CCKY	ALL SUBDIVISIONS	100	95 - 115	85	95	100	50 - 130
CCPN	ALL SUBDIVISIONS	100	95 - 115	85	95	100	50 - 130
CERA	ALL SUBDIVISIONS	95	90 - 110	80	90	95	45 - 125
CFE	ALL SUBDIVISIONS	95	90 - 110	80	90	95	45 - 125
CFNR	WEST VALLEY	105	100 - 120	85	100	105	55 - 135
CFNR	TRACY	105	100 - 120	85	100	110	55 - 135
CFNR	ALL OTHERS	100	95 - 115	80	95	95	50 - 130
CHAT	ALL SUBDIVISIONS	100	95 - 115	85	95	100	50 - 130
CIND	ALL SUBDIVISIONS	95	90 - 110	80	90	95	45 - 125
CIRR	ALL SUBDIVISIONS	100	95 - 115	85	95	100	50 - 130
COEH	ALL SUBDIVISIONS	100	95 - 115	85	95	100	50 - 130
CORP	ROSEBURG MP 585.2 - 644.3	95	90 - 110	80	90	95	45 - 125
CORP	ALL OTHERS	100	95 - 115	85	95	100	50 - 130
CPDR	ALL SUBDIVISIONS	100	95 - 115	85	95	100	50 - 130
CSCD	ALL SUBDIVISIONS	95	90 - 110	80	90	95	45 - 125
CSO	ALL SUBDIVISIONS	95	90 - 110	80	90	95	45 - 125
CUOH	ALL SUBDIVISIONS	95	90 - 110	80	90	95	45 - 125
CWRY	ALL SUBDIVISIONS	95	90 - 110	80	90	95	45 - 125
DGNO	ALL SUBDIVISIONS	105	100 - 120	85	95	95	55 - 135
EARY	ALL SUBDIVISIONS	100	95 - 115	85	95	100	50 - 130
ETRY	ALL SUBDIVISIONS	100	95 - 115	85	95	100	50 - 130
FCRD	ALL SUBDIVISIONS	100	95 - 115	85	95	100	50 - 130
FP	ALL SUBDIVISIONS	105	100 - 120	85	95	95	55 - 135
GC	ALL SUBDIVISIONS	100	95 - 115	85	95	100	50 - 130
GITM	ALL SUBDIVISIONS	100	95 - 115	85	95	100	50 - 130

Appendix 2 – Rail Installation, Inspection and Protection Chart (cont.)

Appendix 2 - Rail Installation, Inspection and Protection Chart

		Rail Temperature		Ambient Temperature Thresholds			Rail Temps.
RAILROAD	SUBDIVISION	PRLT °F	DRITR °F	Seasonal 1st Event Inspection Temp °F	Daily Inspection Temp °F*	TSO Temp °F (Reduce 1 Class but not below 25 mph)	Working Zone Rail Temp °F
GITW	ALL SUBDIVISIONS	100	95 - 115	85	95	100	50 - 130
GR	ALL SUBDIVISIONS	95	90 - 110	80	90	95	45 - 125
GSWR	ALL SUBDIVISIONS	100	95 - 115	85	95	100	50 - 130
GVSR	ALL SUBDIVISIONS	100	95 - 115	85	95	100	50 - 130
HAL	ALL SUBDIVISIONS	100	95 - 115	85	95	100	50 - 130
HESR	ALL SUBDIVISIONS	95	90 - 110	80	90	95	45 - 125
HOG	ALL SUBDIVISIONS	100	95 - 115	85	95	100	50 - 130
IMRR	ALL SUBDIVISIONS	95	90 - 110	80	95	95	55 - 135
IORY	ALL SUBDIVISIONS	95	90 - 110	80	90	95	45 - 125
ISRR	ALL SUBDIVISIONS	95	90 - 110	80	90	95	45 - 125
KRR	ALL SUBDIVISIONS	105	100 - 120	80	95	95	55 - 135
KWT	ALL SUBDIVISIONS	100	95 - 115	85	95	100	50 - 130
KYLE	ALL SUBDIVISIONS	100	95 - 115	80	90	95	50 - 130
LDRR	ALL SUBDIVISIONS	100	95 - 115	85	95	100	50 - 130
LRWN	ALL SUBDIVISIONS	105	100 - 120	85	95	95	55 - 135
LXVR	ALL SUBDIVISIONS	100	95 - 115	85	95	100	50 - 130
MMID	ALL SUBDIVISIONS	95	90 - 110	80	90	95	45 - 125
MMRR	ALL SUBDIVISIONS	95	90 - 110	80	90	95	45 - 125
MNA	ALL SUBDIVISIONS	100	95 - 115	80	90	95	50 - 130
MNBR	ALL SUBDIVISIONS	100	95 - 115	85	95	100	50 - 130
MQT	ALL SUBDIVISIONS	95	90 - 110	80	90	95	45 - 125
MSR	ALL SUBDIVISIONS	95	90 - 110	80	90	95	45 - 125
MSTR	ALL SUBDIVISIONS	95	90 - 110	80	90	95	45 - 125
MVRY	ALL SUBDIVISIONS	95	90 - 110	80	90	95	45 - 125
NCVA	ALL SUBDIVISIONS	100	95 - 115	85	95	100	50 - 130
NECR	ALL SUBDIVISIONS	95	90 - 110	80	90	95	45 - 125
OHCR	ALL SUBDIVISIONS	95	90 - 110	80	90	95	45 - 125
OSRR	ALL SUBDIVISIONS	95	90 - 110	80	90	95	45 - 125
OTVR	ALL SUBDIVISIONS	90	85 - 105	75	85	90	40 - 120
PCN	ALL SUBDIVISIONS	100	95 - 115	85	95	100	50 - 130
PNWR	ALL SUBDIVISIONS	95	90 - 110	80	90	95	45 - 125
POHC	ALL SUBDIVISIONS	95	90 - 110	80	90	95	45 - 125
PSAP	ALL SUBDIVISIONS	95	90 - 110	80	90	95	45 - 125
PW	ALL SUBDIVISIONS	95	90 - 110	80	90	95	45 - 125
RCPE	BLACKHILLS	105	100 - 120	80	90	95	55 - 135
RCPE	HURON	105	100 - 120	85	95	105	55 - 135
RCPE	MANSFIELD	105	100 - 120	85	90	105	55 - 135
RCPE	ONIDA	105	100 - 120	85	95	105	55 - 135
RCPE	PIERRE	105	100 - 120	85	95	105	55 - 135
RCPE	PRC	105	100 - 120	80	90	105	55 - 135

Appendix 2 – Rail Installation, Inspection and Protection Chart (cont.)

Appendix 2 - Rail Installation, Inspection and Protection Chart

		Rail Temperature		Ambient Temperature Thresholds			Rail Temps.
RAILROAD	SUBDIVISION	PRLT °F	DRITR °F	Seasonal 1st Event Inspection Temp °F	Daily Inspection Temp °F*	TSO Temp °F (Reduce 1 Class but not below 25 mph)	Working Zone Rail Temp °F
RCPE	YALE	105	100 - 120	85	90	105	55 - 135
RSOR	ALL SUBDIVISIONS	100	95 - 115	85	95	100	50 - 130
RSR	ALL SUBDIVISIONS	95	90 - 110	80	90	95	45 - 125
RSS	ALL SUBDIVISIONS	100	95 - 115	85	95	100	50 - 130
SAPT	ALL SUBDIVISIONS	100	95 - 115	85	95	100	50 - 130
SCRF	ALL SUBDIVISIONS	100	95 - 115	85	95	100	50 - 130
SDIY	ALL SUBDIVISIONS	105	100 - 120	90	100	105	55 - 135
SJVR	ALL SUBDIVISIONS	105	100 - 120	90	100	105	55 - 135
SL	ALL SUBDIVISIONS	105	100 - 120	80	95	95	55 - 135
SLR	ALL SUBDIVISIONS	90	85 - 105	75	85	90	40 - 120
TNER	ALL SUBDIVISIONS	105	100 - 120	85	95	95	55 - 135
TNHR	ALL SUBDIVISIONS	100	95 - 115	85	95	100	50 - 130
TPW	ALL SUBDIVISIONS	95	90 - 110	80	90	95	45 - 125
TR	ALL SUBDIVISIONS	90	85 - 105	75	85	90	40 - 120
TZPR	ALL SUBDIVISIONS	95	90 - 110	80	90	95	45 - 125
UTAH	ALL SUBDIVISIONS	105	100 - 120	80	95	95	55 - 135
VCRR	ALL SUBDIVISIONS	105	100 - 120	80	95	95	55 - 135
VR	ALL SUBDIVISIONS	100	95 - 115	85	95	100	50 - 130
WCOR	ALL SUBDIVISIONS	95	90 - 110	80	90	95	45 - 125
WGCR	ALL SUBDIVISIONS	100	95 - 115	85	95	100	50 - 130
WPRR	ALL SUBDIVISIONS	95	90 - 110	80	90	95	45 - 125
WTRM	ALL SUBDIVISIONS	95	90 - 110	80	90	95	45 - 125
WTRY	ALL SUBDIVISIONS	100	95 - 115	85	95	100	50 - 130
YARR	ALL SUBDIVISIONS	95	90 - 110	80	90	95	45 - 125
YB	ALL SUBDIVISIONS	95	90 - 110	80	90	95	45 - 125
YRC	ALL SUBDIVISIONS	95	90 - 110	80	90	95	45 - 125

* Special heat inspections must be performed daily when the temperature meets (or is forecast to) or exceeds the inspection threshold or before next train in situations where trains are not operating.

Appendix 3 – Change in Rail Length Due to Change in Temperature

ENGINEERING DEPARTMENT

CHANGE IN RAIL LENGTH DUE TO CHANGE IN TEMPERATURE

LENGTH OF RAIL - FEET	CHANGE IN TEMPERATURE IN DEGREES FAHRENHEIT															
	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
100	0	0-1/8	0-1/8	0-1/8	0-1/4	0-1/4	0-1/4	0-3/8	0-3/8	0-3/8	0-3/8	0-1/2	0-1/2	0-1/2	0-5/8	0-5/8
200	0-1/8	0-1/8	0-1/4	0-3/8	0-1/2	0-1/2	0-1/2	0-5/8	0-3/4	0-3/4	0-7/8	0-7/8	1	1-1/8	1-1/8	1-1/4
300	0-1/8	0-1/4	0-3/8	0-1/2	0-5/8	0-3/4	0-7/8	1	1	1-1/8	1-1/4	1-3/8	1-1/2	1-5/8	1-3/4	1-7/8
400	0-1/8	0-3/8	0-1/2	0-5/8	0-3/4	1	1-1/8	1-1/4	1-3/8	1-1/2	1-3/4	1-7/8	2	2-1/8	2-3/8	2-1/2
500	0-1/4	0-3/8	0-5/8	0-3/4	1	1-1/8	1-3/8	1-1/2	1-3/4	2	2-1/8	2-3/8	2-1/2	2-3/4	2-7/8	3-1/8
600	0-1/4	0-1/2	0-3/4	0-7/8	1-1/8	1-3/8	1-5/8	1-7/8	2-1/8	2-3/8	2-5/8	2-3/4	3	3-1/4	3-1/2	3-3/4
700	0-1/4	0-1/2	0-7/8	1-1/8	1-3/8	1-5/8	1-7/8	2-1/8	2-1/2	2-3/4	3	3-1/4	3-1/2	3-7/8	4-1/8	4-3/8
800	0-3/8	0-5/8	1	1-1/4	1-1/2	1-7/8	2-1/8	2-1/2	2-3/4	3-1/8	3-3/8	3-3/4	4	4-3/8	4-5/8	5
900	0-3/8	0-3/4	1	1-3/8	1-3/4	2-1/8	2-1/2	2-3/4	3-1/8	3-1/2	3-7/8	4-1/4	4-5/8	4-7/8	5-1/4	5-5/8
1000	0-3/8	0-3/4	1-1/8	1-1/2	2	2-3/8	2-3/4	3-1/8	3-1/2	3-7/8	4-1/4	4-5/8	5-1/8	5-1/2	5-7/8	6-1/4
1100	0-3/8	0-7/8	1-1/4	1-3/4	2-1/8	2-5/8	3	3-3/8	3-7/8	4-1/4	4-3/4	5-1/8	5-5/8	6	6-3/8	6-7/8
1200	0-1/2	0-7/8	1-3/8	1-7/8	2-3/8	2-3/4	3-1/4	3-3/4	4-1/4	4-5/8	5-1/8	5-5/8	6-1/8	6-1/2	7	7-1/2
1300	0-1/2	1	1-1/2	2	2-1/2	3	3-1/2	4	4-5/8	5-1/8	5-5/8	6-1/8	6-5/8	7-1/8	7-5/8	8-1/8
1400	0-1/2	1-1/8	1-5/8	2-1/8	2-3/4	3-1/4	3-7/8	4-3/8	4-7/8	5-1/2	6	6-1/2	7-1/8	7-5/8	8-1/4	8-3/4
1440	0-1/2	1-1/8	1-5/8	2-1/4	2-3/4	3-3/8	3-7/8	4-1/2	5	5-5/8	6-1/8	6-3/4	7-1/4	7-7/8	8-3/8	9
1500	0-5/8	1-1/8	1-3/4	2-3/8	2-7/8	3-1/2	4-1/8	4-5/8	5-1/4	5-7/8	6-3/8	7	7-5/8	8-1/4	8-3/4	9-3/8
1600	0-5/8	1-1/4	1-7/8	2-1/2	3-1/8	3-3/4	4-3/8	5	5-5/8	6-1/4	6-7/8	7-1/2	8-1/8	8-3/4	9-3/8	10
1700	0-5/8	1-3/8	2	2-5/8	3-3/8	4	4-5/8	5-3/8	6	6-5/8	7-1/4	8	8-5/8	9-1/4	10	10-5/8
1800	0-3/4	1-3/8	2-1/8	2-3/4	3-1/2	4-1/4	4-7/8	5-5/8	6-3/8	7	7-3/4	8-3/8	9-1/8	9-7/8	10-1/2	11-1/4

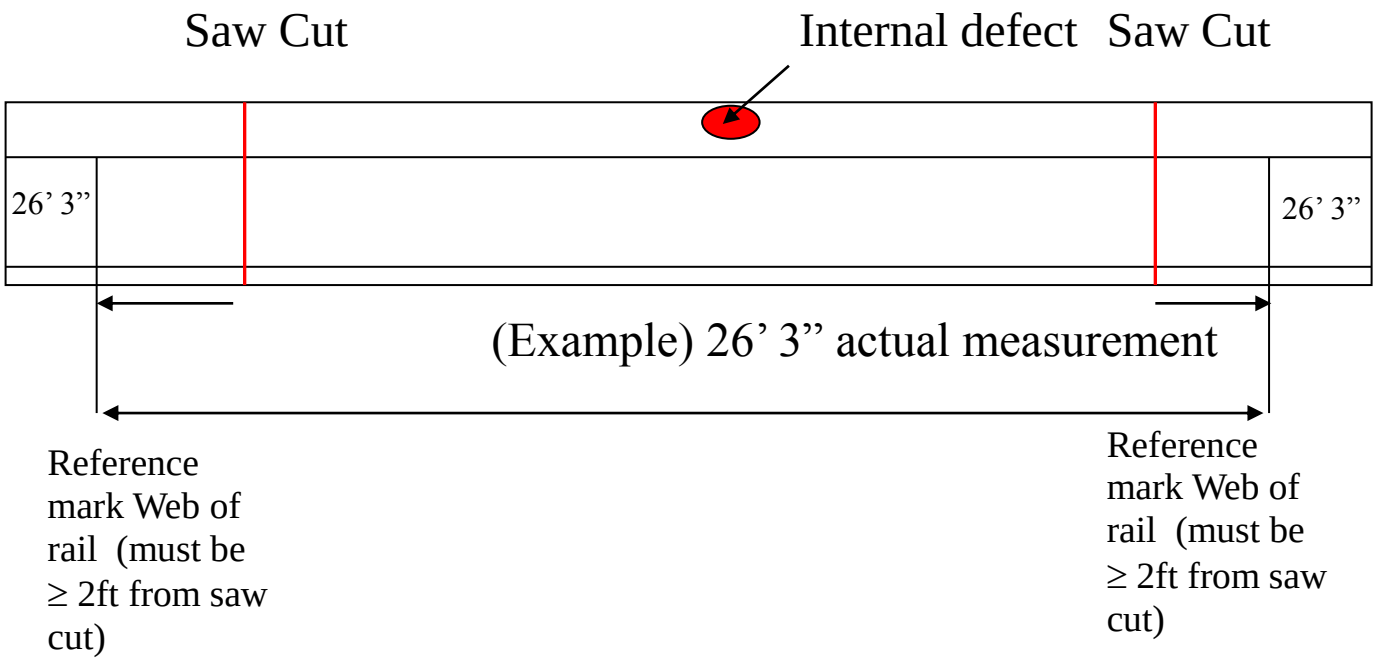
MINIMUM ADJUSTED RAIL LAYING TEMPERATURES:
SEE APPENDIX 2

C = 12 x 0.0000065LT
C = CHANGE IN LENGTH IN INCHES
L = LENGTH OF RAIL IN FEET
T = CHANGE IN TEMPERATURE IN DEGREES

NOTE: AT LOCATIONS, SUCH AS EXPANSION JOINTS, WHERE THERE IS A "FREE END" CONDITION, USE 1/2 THE AMOUNT SHOWN ABOVE.

Appendix 4 – Placing Reference Marks

Placing Reference Marks



Process Steps:

- Determine saw cut locations to remove defect or broken rail
- Prior to cutting make reference marks vertically on web of rail at least 2 feet outside cut locations (purpose is to ensure reference marks are outside the limits of the joint bars)
- Measure the distance between the reference marks, record the measurement on each end just beyond the reference marks.
- Make saw cuts taking note of rail movement
- Install plug making sure not to add rail (heat or rail expander)
- After installing plug, measure between reference marks to determine if rail was added.
- If rail was added and future adjustment is required, the anchors on the replaced section of rail will be installed from the field side until the added rail is removed and the track properly adjusted.
- Fill out rail addition track disturbance form indicating amount in inches added or 0 if none.
- When returning to adjust track, measure between reference marks

Appendix 5 – Record of Laying Temperatures for CWR

RECORD OF LAYING TEMPERATURES FOR CONTINUOUS WELDED RAIL

ENGINEERING DEPARTMENT

TEAM FILING REPORT _____

REGION _____ RAILROAD/BRANCH _____

RAIL SECTION _____ TRACK NO. _____ NEAREST STATION _____

DATE	RAIL N.E. S.W.	STRING NUMBER	MILEPOST		RAIL LENGTH IN FEET	RAIL TEMPERATURE IN DEGREES			REQUIRED EXPANSION IN INCHES	ACTUAL EXPANSION OBTAINED IN INCHES	LIST CHANGE IN TEMPERATURE FROM CHART IN APPENDIX	ADJUSTED LAYING TEMPERATURE
			FROM	TO		DESIGNED LAYING TEMPERATURE	COLD RAIL TEMPERATURE	DIFFERENCE IN TEMPERATURE				
					A	B	C	D	E	F	G	C + G

ADJUSTMENT SUPERVISOR _____ ROADMASTER _____

Appendix 6 – Track Disturbance & Rail Addition Record

ENGINEERING DEPARTMENT

TRACK DISTURBANCE & RAIL ADDITION RECORD

DISTURBANCE DATE _____

LOCATION

REGION _____ RAILROAD/BRANCH _____

MILEPOST: BEGIN _____ END _____ TRACK _____

ALIGNMENT (T/C) _____ DEGREE OF CURVE _____ SIDE (L,R,B) _____

TEMPERATURE

AMBIENT TEMP _____ RAIL TEMP _____ PREF. RAIL NEUTRAL TEMP. _____

INCHES OF RAIL ADDED

INSTALL PLUG RAIL _____ INSTALL CWR LESS THAN DESIRED TEMP* _____

FIELD WELD _____ INSTALL PANELS AND TURNOUTS* _____

OTHER DISTURBANCES

INSTALL TIES _____ SURFACING _____ SHOULDER BALLAST CLEANING _____

CRIBBING _____

FOLLOW-UP ACTIONS

RAIL ADJUSTMENT DATE _____ INCHES OF RAIL REMOVED _____

ALIGNMENT RESTORED DATE _____ CURVE STAKES MONITORED DATE _____

SPEED RESTRICTED DATE _____ SPEED RESTORED DATE _____

*COMPUTE FROM CHANGE IN RAIL LENGTH DUE TO CHANGE IN TEMPERATURE TABLE

FOREMAN _____

ROADMASTER _____ DATE _____

Appendix 7 – Walking CWR Joint Inspection Report

WALKING JOINT BAR INSPECTION REPORT

ENGINEERING DEPARTMENT REGION _____ RAILROAD/BRANCH _____

Territories Inspected

Date Inspected	Track	MP Limits		Inspector's Name	Total Joints Inspected
		From	To		

Joint Bar Conditions Noted					**Action Taken**				
Date Found	Track	MP Location	Rail N, S, E, W	Condition Code	Date Repaired	Slow Order	Speed	213.9b Date Applied	213.9b Removed

Rail Joint Condition Codes

01 - Visible cracks in joint bar
02 - Loose bolts
03 - Bent Bolts
04 - Missing Bolts
05 - Tie(s) not effectively supporting joint
06 - Broken or missing tie plates(s)
07 - Deteriorated insulated joints
08 - Rail end batter > 3/8 inch in depth and > 6 inches in length measured with a 24 inch straight edge
09 - Rail end mismatch reaches limits specified by 49 CFR 213.115
10 - Longitudinal rail movement > 2 inches
11 - Wide rail gap > 1-1/2 inches
12 - Joint vertical movement
13 - Fouled ballast in conjunction with joint vertical movement (profile)
14 - Joint lateral movement (in curve or spiral) ≥ 3/4 inch

Appendix 8 – Curve Alignment Reference Form

CURVE ALIGNMENT REFERENCE FORM

ENGINEERING DEPARTMENT

REGION _____ RAILROAD/BRANCH _____

MILEPOST: BEGIN _____ END _____ TRACK _____

WORK DIRECTION: (LOW TO HIGH MP) (HIGH TO LOW MP)

TYPE OF FASTENERS: (RAIL ANCHORS) (PANDROL PLATES) (OTHER _____)

TEAM NAME _____ DEGREE CURVE _____

DATE				
RAIL TEMPERATURE				
RECORDER				

No.	DESCRIPTION	MEASUREMENT 1 BEFORE WORK	MEASUREMENT 2 AFTER WORK	MEASUREMENT 3 FOLLOW UP	MEASUREMENT 4 FOLLOW UP

NOTES:

References should be marked fixed objects or wood stakes if practicable.

Number reference points in sequence in the direction of work.

In "Description", note TS, SC, CS, ST, and identify reference.

Measure from the field side of the near rail to the face of fixed object or stake.

References should be spaced no more than:

- 100 feet on curves 9 degrees and above
- 200 feet on 9 degree to 4 degree curves
- 400 feet on 4 degree to 2 degree curves
- 800 feet on 2 degree to 1 degree curves

Reference stakes must be clear of maintenance activities, walking areas, and tie ends.

Appendix 9 – Thermite Welding Procedures

- In addition to the following Genesee & Wyoming requirements, Thermite weld kits must be used as per the Manufacturer's Instructions.
- Prior to welding, rail must be visually examined for physical defects.
- Welding kits must be compatible with the type of rail being welded. For any weld involving a chrome alloy rail, only a chrome welding procedure shall be used.
- Thermite or field flash butt welds shall be located as close as possible to the center of tie cribs.
  a. The weld should not be closer than 4" (100 mm) to the edge of the tie and in no case may a field weld be situated over a tie plate.
  b. Thermite welds must be at least 4 feet from existing thermite or flash butt welds.
- Welding gaps for thermite welds shall be 1" ±1/8" (25 mm ±3 mm) except where approved wide gap welds are used. A full inch of rail must be cut out when installing a thermite weld. If the gap is then larger than one inch, a rail puller must be used to close the gap to the required one inch.
- All rail ends must be saw cut. The cut must be square and perpendicular and all burrs must be removed.
- In case of emergency, torch cutting of the rail is allowable provided:
  a. The torch cut is relatively smooth; and
  b. Within 30 minutes of torch cutting, the rail is trimmed with a rail saw and thermite welded. Note: Wait at least 2 minutes from time of torch cut before saw cutting the rail.
  c. If the rail is allowed to cool more than 30 minutes following a torch cut or if a train has been allowed to pass over the torch cut rail prior to welding, a minimum of 4" of rail must be removed.
- Overflow on rails shall be ground off for 2" (50 mm) beyond the mold area.
- The distance from the end of rail to the nearest edge of any hole drilled in the rail shall not be less than 4" (100 mm) except in yard tracks and other class 1 tracks (other than main lines).
- Welds must be made a minimum of 2" (50mm) from welded bond wires.
- Vertical rail end alignment shall be made along the running surface of the rails, such that a flat running surface will result on cool down. Any difference in height of rails shall be in the vertical base offset.
- Horizontal rail end alignment shall be made along both sides of the head, web and base edges of the rail.
- The Month, Year, Welder ID, and weld number if applicable of each weld shall be identified with a tag or written with marker on the gage side of the web 6" away from the weld.
- See G&W welding specs for more details

Appendix 10 – Existing Rail Neutral Temperature Tables

Table 1 - 5½" Base Rail
Every other tie anchored

	Rail Gap																	
Rail Break Temp	0.5	1	1.5	2	2.5	3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5	9
60	86	97	106	113	119	125	130	135	139	144	148	152	155					
55	81	92	101	108	114	120	125	130	134	139	143	147	150	154				
50	76	87	96	103	109	115	120	125	129	134	138	142	145	149	153			
45	71	82	91	98	104	110	115	120	124	129	133	137	140	144	148	151		
40	66	77	86	93	99	105	110	115	119	124	128	132	135	139	143	146	149	152
35	61	72	81	88	94	100	105	110	114	119	123	127	130	134	138	141	144	147
30	56	67	76	83	89	95	100	105	109	114	118	122	125	129	133	136	139	142
25	51	62	71	78	84	90	95	100	104	109	113	117	120	124	128	131	134	137
20	46	57	66	73	79	85	90	95	99	104	108	112	115	119	123	126	129	132
15	41	52	61	68	74	80	85	90	94	99	103	107	110	114	118	121	124	127
10	36	47	56	63	69	75	80	85	89	94	98	102	105	109	113	116	119	122
5	31	42	51	58	64	70	75	80	84	89	93	97	100	104	108	111	114	117
0	26	37	46	53	59	65	70	75	79	84	88	92	95	99	103	106	109	112
-5	21	32	41	48	54	60	65	70	74	79	83	87	90	94	98	101	104	107
-10	16	27	36	43	49	55	60	65	69	74	78	82	85	89	93	96	99	102
-15	11	22	31	38	44	50	55	60	64	69	73	77	80	84	88	91	94	97
-20	6	17	26	33	39	45	50	55	59	64	68	72	75	79	83	86	89	92
-25	1	12	21	28	34	40	45	50	54	59	63	67	70	74	78	81	84	87
-30	-4	7	16	23	29	35	40	45	49	54	58	62	65	69	73	76	79	82
-35	-9	2	11	18	24	30	35	40	44	49	53	57	60	64	68	71	74	77
-40	-14	-3	6	13	19	25	30	35	39	44	48	52	55	59	63	66	69	72
-45	-19	-8	1	8	14	20	25	30	34	39	43	47	50	54	58	61	64	67

Table 2 - 5½" Base Rail
Every tie anchored

	Rail Gap																	
Rail Break Temp	0.5	1	1.5	2	2.5	3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5	9
60	92	106	116	125	133	139	146	152										
55	87	101	111	120	128	134	141	147	152									
50	82	96	106	115	123	129	136	142	147	153								
45	77	91	101	110	118	124	131	137	142	148	153							
40	72	86	96	105	113	119	126	132	137	143	148	152						
35	67	81	91	100	108	114	121	127	132	138	143	147	152					
30	62	76	86	95	103	109	116	122	127	133	138	142	147	151				
25	57	71	81	90	98	104	111	117	122	128	133	137	142	146	151			
20	52	66	76	85	93	99	106	112	117	123	128	132	137	141	146	150		
15	47	61	71	80	88	94	101	107	112	118	123	127	132	136	141	145	149	153
10	42	56	66	75	83	89	96	102	107	113	118	122	127	131	136	140	144	148
5	37	51	61	70	78	84	91	97	102	108	113	117	122	126	131	135	139	143
0	32	46	56	65	73	79	86	92	97	103	108	112	117	121	126	130	134	138
-5	27	41	51	60	68	74	81	87	92	98	103	107	112	116	121	125	129	133
-10	22	36	46	55	63	69	76	82	87	93	98	102	107	111	116	120	124	128
-15	17	31	41	50	58	64	71	77	82	88	93	97	102	106	111	115	119	123
-20	12	26	36	45	53	59	66	72	77	83	88	92	97	101	106	110	114	118
-25	7	21	31	40	48	54	61	67	72	78	83	87	92	96	101	105	109	113
-30	2	16	26	35	43	49	56	62	67	73	78	82	87	91	96	100	104	108
-35	-3	11	21	30	38	44	51	57	62	68	73	77	82	86	91	95	99	103
-40	-8	6	16	25	33	39	46	52	57	63	68	72	77	81	86	90	94	98
-45	-13	1	11	20	28	34	41	47	52	58	63	67	72	76	81	85	89	93

Appendix 10 – Existing Rail Neutral Temperature Tables (cont.)

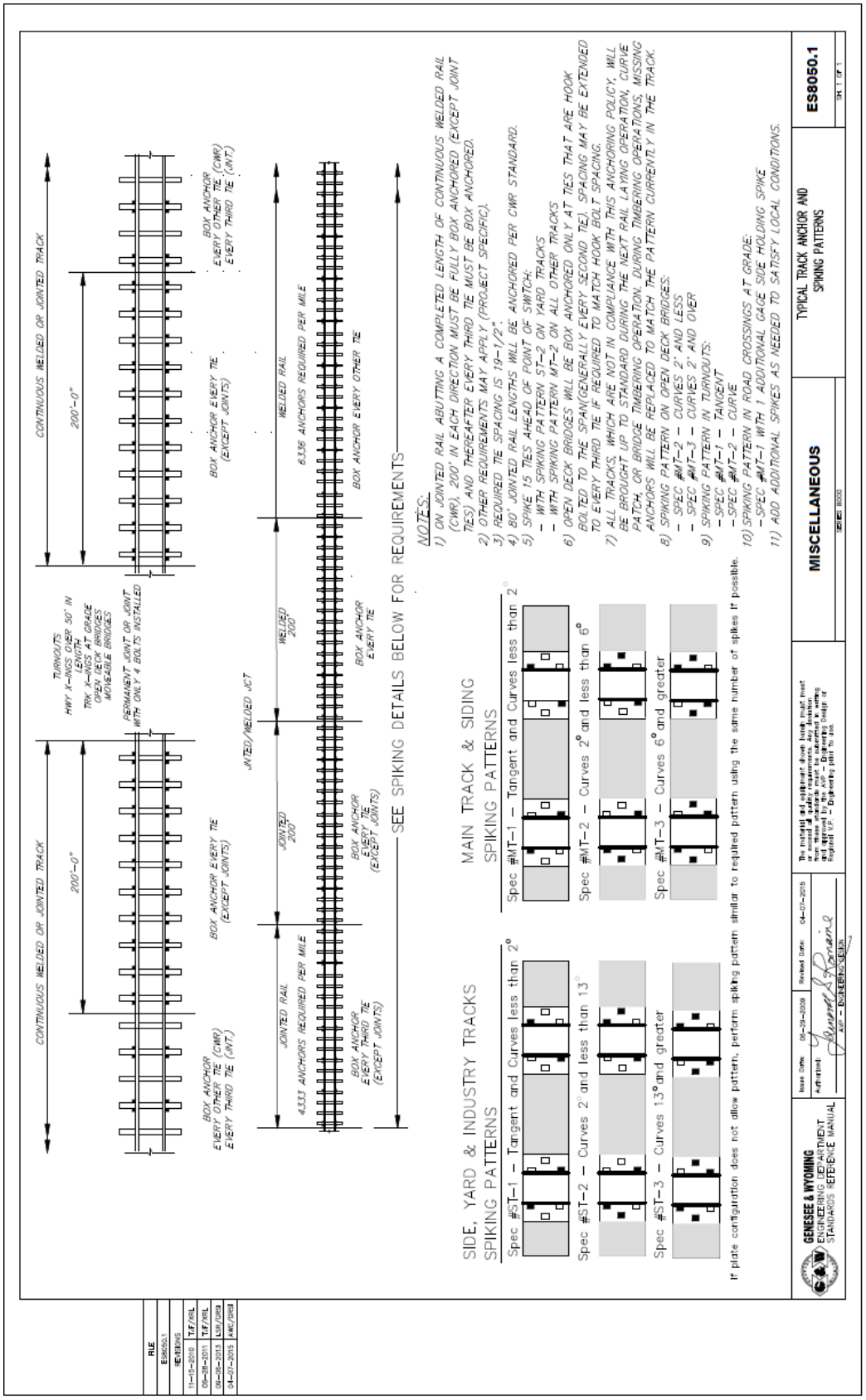
Table 3 - 6" Base Rail
Every other tie anchored

Rail Break Temp	Rail Gap																	
	0.5	1	1.5	2	2.5	3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5	9
60	84	94	102	109	114	119	124	129	133	137	140	144	147	151	154			
55	79	89	97	104	109	114	119	124	128	132	135	139	142	146	149	152		
50	74	84	92	99	104	109	114	119	123	127	130	134	137	141	144	147	150	153
45	69	79	87	94	99	104	109	114	118	122	125	129	132	136	139	142	145	148
40	64	74	82	89	94	99	104	109	113	117	120	124	127	131	134	137	140	143
35	59	69	77	84	89	94	99	104	108	112	115	119	122	126	129	132	135	138
30	54	64	72	79	84	89	94	99	103	107	110	114	117	121	124	127	130	133
25	49	59	67	74	79	84	89	94	98	102	105	109	112	116	119	122	125	128
20	44	54	62	69	74	79	84	89	93	97	100	104	107	111	114	117	120	123
15	39	49	57	64	69	74	79	84	88	92	95	99	102	106	109	112	115	118
10	34	44	52	59	64	69	74	79	83	87	90	94	97	101	104	107	110	113
5	29	39	47	54	59	64	69	74	78	82	85	89	92	96	99	102	105	108
0	24	34	42	49	54	59	64	69	73	77	80	84	87	91	94	97	100	103
-5	19	29	37	44	49	54	59	64	68	72	75	79	82	86	89	92	95	98
-10	14	24	32	39	44	49	54	59	63	67	70	74	77	81	84	87	90	93
-15	9	19	27	34	39	44	49	54	58	62	65	69	72	76	79	82	85	88
-20	4	14	22	29	34	39	44	49	53	57	60	64	67	71	74	77	80	83
-25	-1	9	17	24	29	34	39	44	48	52	55	59	62	66	69	72	75	78
-30	-6	4	12	19	24	29	34	39	43	47	50	54	57	61	64	67	70	73
-35	-11	-1	7	14	19	24	29	34	38	42	45	49	52	56	59	62	65	68
-40	-16	-6	2	9	14	19	24	29	33	37	40	44	47	51	54	57	60	63
-45	-21	-11	-3	4	9	14	19	24	28	32	35	39	42	46	49	52	55	58

Table 4 - 6" Base Rail
Every tie anchored

Rail Break Temp	Rail Gap																	
	0.5	1	1.5	2	2.5	3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5	9
60	90	102	111	119	126	133	139	144	149	154	159							
55	85	97	106	114	121	128	134	139	144	149	154	158						
50	80	92	101	109	116	123	129	134	139	144	149	153	157					
45	75	87	96	104	111	118	124	129	134	139	144	148	152	156				
40	70	82	91	99	106	113	119	124	129	134	139	143	147	151	155			
35	65	77	86	94	101	108	114	119	124	129	134	138	142	146	150	154		
30	60	72	81	89	96	103	109	114	119	124	129	133	137	141	145	149	153	
25	55	67	76	84	91	98	104	109	114	119	124	128	132	136	140	144	148	151
20	50	62	71	79	86	93	99	104	109	114	119	123	127	131	135	139	143	146
15	45	57	66	74	81	88	94	99	104	109	114	118	122	126	130	134	138	141
10	40	52	61	69	76	83	89	94	99	104	109	113	117	121	125	129	133	136
5	35	47	56	64	71	78	84	89	94	99	104	108	112	116	120	124	128	131
0	30	42	51	59	66	73	79	84	89	94	99	103	107	111	115	119	123	126
-5	25	37	46	54	61	68	74	79	84	89	94	98	102	106	110	114	118	121
-10	20	32	41	49	56	63	69	74	79	84	89	93	97	101	105	109	113	116
-15	15	27	36	44	51	58	64	69	74	79	84	88	92	96	100	104	108	111
-20	10	22	31	39	46	53	59	64	69	74	79	83	87	91	95	99	103	106
-25	5	17	26	34	41	48	54	59	64	69	74	78	82	86	90	94	98	101
-30	0	12	21	29	36	43	49	54	59	64	69	73	77	81	85	89	93	96
-35	-5	7	16	24	31	38	44	49	54	59	64	68	72	76	80	84	88	91
-40	-10	2	11	19	26	33	39	44	49	54	59	63	67	71	75	79	83	86
-45	-15	-3	6	14	21	28	34	39	44	49	54	58	62	66	70	74	78	81

Appendix 11 – ES 8050.1



RAIL SERVICE FAILURE REPORT TEMPLATE

Rail Service Failure Report

TC 1 Attachment 9

Railroad | Failure Date DD MM YY

Part 1 - Location Information

Subdivision | Left or Right Rail (looking at increasing MP)

Prefix | Milepost | Tangent | Curve | Deg. Of Curve

Track Designation

Part 2 - Rail Information

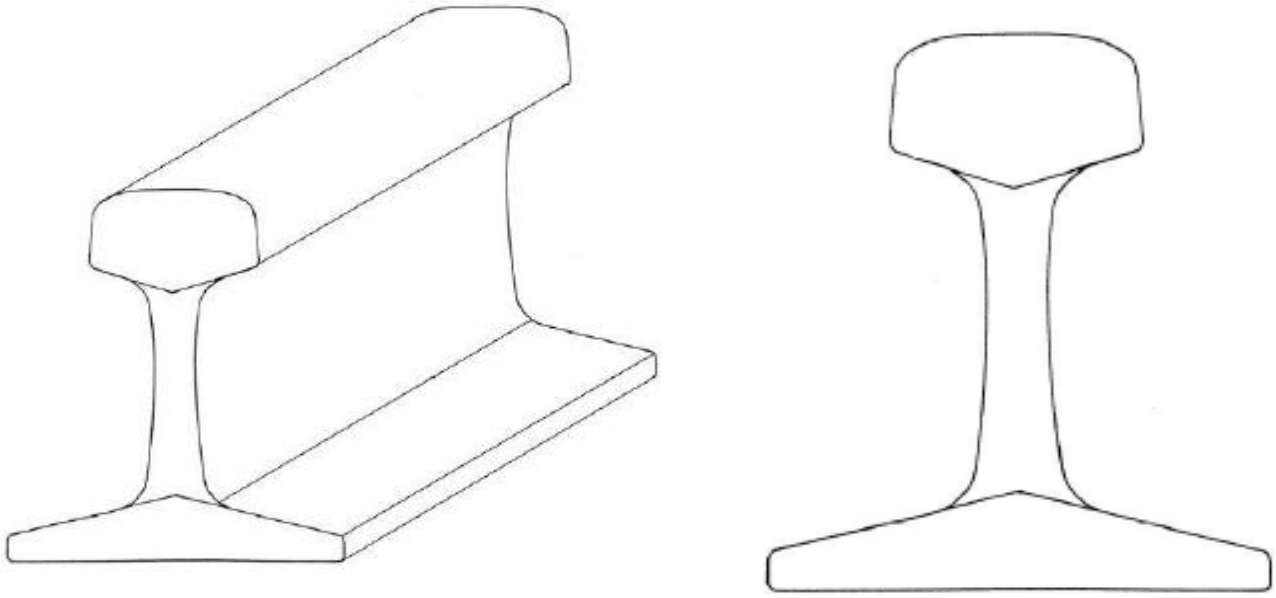
Rail Size | Section (HF, RE, RB, etc.) | Year | Mill

CWR | Jointed | Type of Defect | Size of Original Defect

Part 3 - Previous Test Information

Test Date DD MM YY | Vendor | Truck Number

Part 4 - Defect Drawing



As detailed as possible, illustrate the break and the internal defect.

Follow-up Action Required - (This portion to be completed by Supervisor/Roadmaster)

Remedial Action | Date DD MM YY

Notes

Name (print) | Signature

GWCI MOVEMENT OVER RAIL BREAKS POLICY

MOVEMENT OVER RAIL BREAKS POLICY

Table of Contents

These procedures have been adopted by all North American subsidiaries of Genesee & Wyoming, Inc.

A. General - Background Information

1. On occasion the railroad may experience a rail service failure where track forces are not immediately available, resulting in long and sometimes unnecessary delays to trains. When these failures occur within signal controlled track (CTC, ABS or Crossing Circuit), often signal maintenance personal are first called to respond.
2. The following policy has been developed as an outline for circumstances under which a trained qualified employee may authorize a train or engine to travel safely over certain types of rail breaks.
3. A copy of this policy will be available while on duty (kept in truck).
4. Employees not fully qualified as per FRA Track Safety Standards §213.7 (c), but have at least one year of maintenance of way or signal experience may pass trains over broken rails and pull-aparts provided that;

   (a) Railroad determines the person to be qualified in the aspects of this policy

   (b) Railroad provides training; Examines and re-examines the person periodically (every two years in the US and every three years in Canada) on topics related to passing trains or engines over rail breaks and pull-aparts; in particular the aspects of this document.
5. Employee qualification and record of training must be documented on form MW-032 (Appendix 1). Qualification records will be maintained at the railroad location designated for review of records by the FRA Track Inspectors.

B. Rail Breaks that do not Permit Trains to Operate

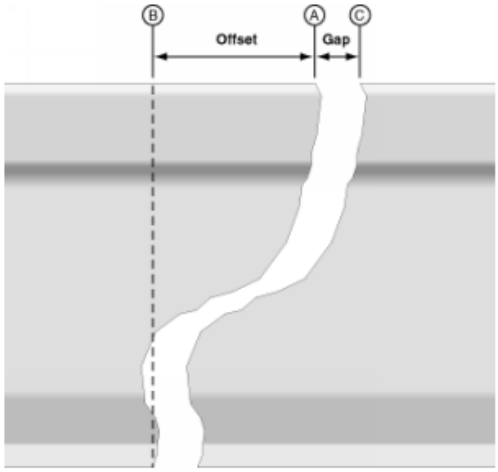
1. **"Key Trains" (Trains containing any PIH/TIH hazardous cars) are not permitted over rail breaks or pull-aparts.**
2. No train or engine may operate over a rail break:

   (a) In a tunnel

   (b) On a bridge

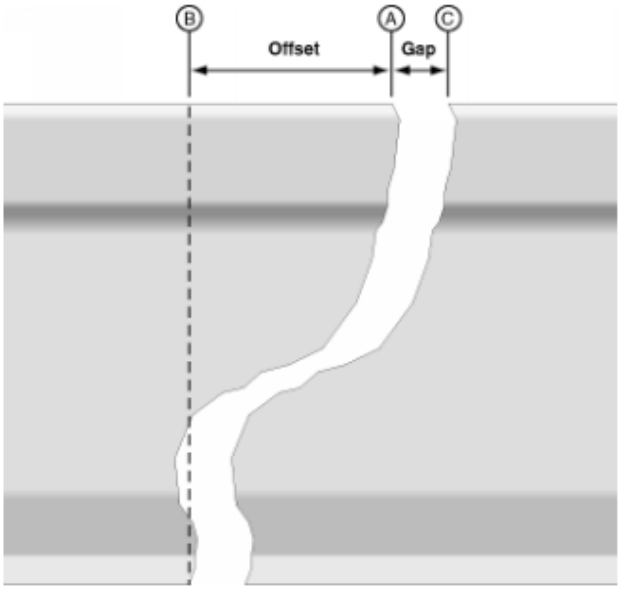
   (c) In areas where unstable grade exists (soft spots, pumping track, sinkholes)
3. No train or engine may operate over a rail break if the offset of the break (the horizontal distance from the top edge of the break on the head of the rail to the bottom edge of the break on the base of the rail) is greater than 2 inches.

Offset (A to B) greater than 2”



4. No train or engine may operate over a rail break if the break is not in a joint area, and the gap between the rail ends is greater than 2 inches.

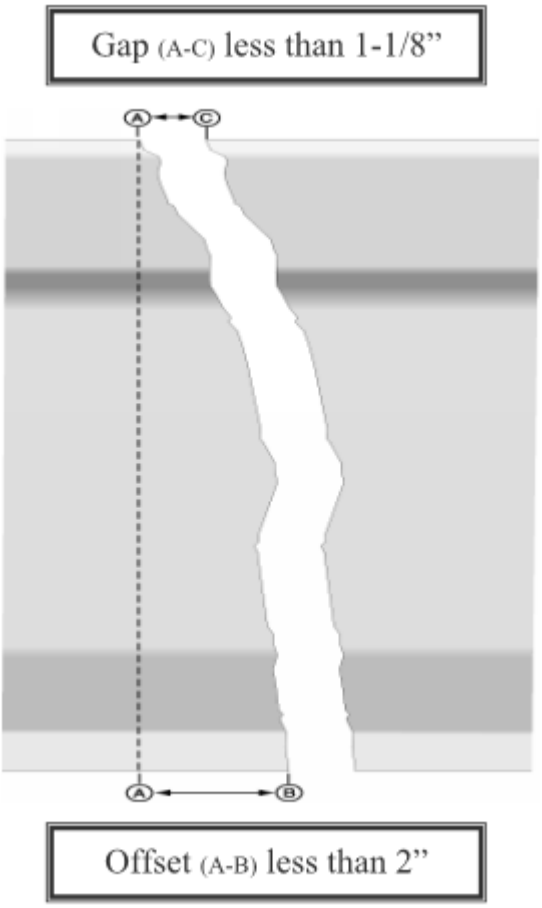
Gap (A-C) greater than 2”



5. No train or engine may operate over a rail break in a joint area if either of the following is true:
   (a) The break is beyond the limits of the bars
   (b) The gap between the rail ends is greater than 3 inches

C. Train Operation Permitted – Rail Breaks

1. Each rail break must be inspected before operating trains over the break. This ensures there are no visible defects which could cause the rail to break out under load (defects such as vertical split heads, horseshoe cracks on plant welds, etc.)
2. Rail ends at a break must be adequately supported and aligned on non-defective ties and at least every third tie must be box anchored on each side of the break. To ensure proper rail alignment, additional spikes may need to be added to the field side of the rail ends.
3. If the gap is not greater than 1-1/8 inches, a train or engine may be authorized to operate at a speed up to but not more than 10 MPH. For example, if the rail break is at the end of a tie plate and will cause a vertical mismatch of the rail ends under load, it may be necessary to operate over the break at a speed lower than 10 MPH. The person at the site will make the decision after completing an inspection of the break



4. If the gap is greater than 1-1/8 inches and joint bars:
   (a) have been applied, a train or engine may be instructed to proceed, but at a speed not greater than 10 MPH
   (b) have NOT been applied, a train or engine may be instructed to proceed, but at a speed not greater than 5 MPH
5. If the gap in a rail break in the joint area is not more than 2 inches, a train or engine may be instructed to proceed, but at a speed not greater than 10 MPH.
6. If the gap in a rail break in the joint area is between 2 inches and 3 inches, a train or engine may be instructed to proceed, but at a speed not greater than 5 MPH.

7. **The person authorizing the movement of trains or engines must be on-site, must be in constant radio communication with the locomotive engineer, and must visually supervise each movement over the broken rail.**

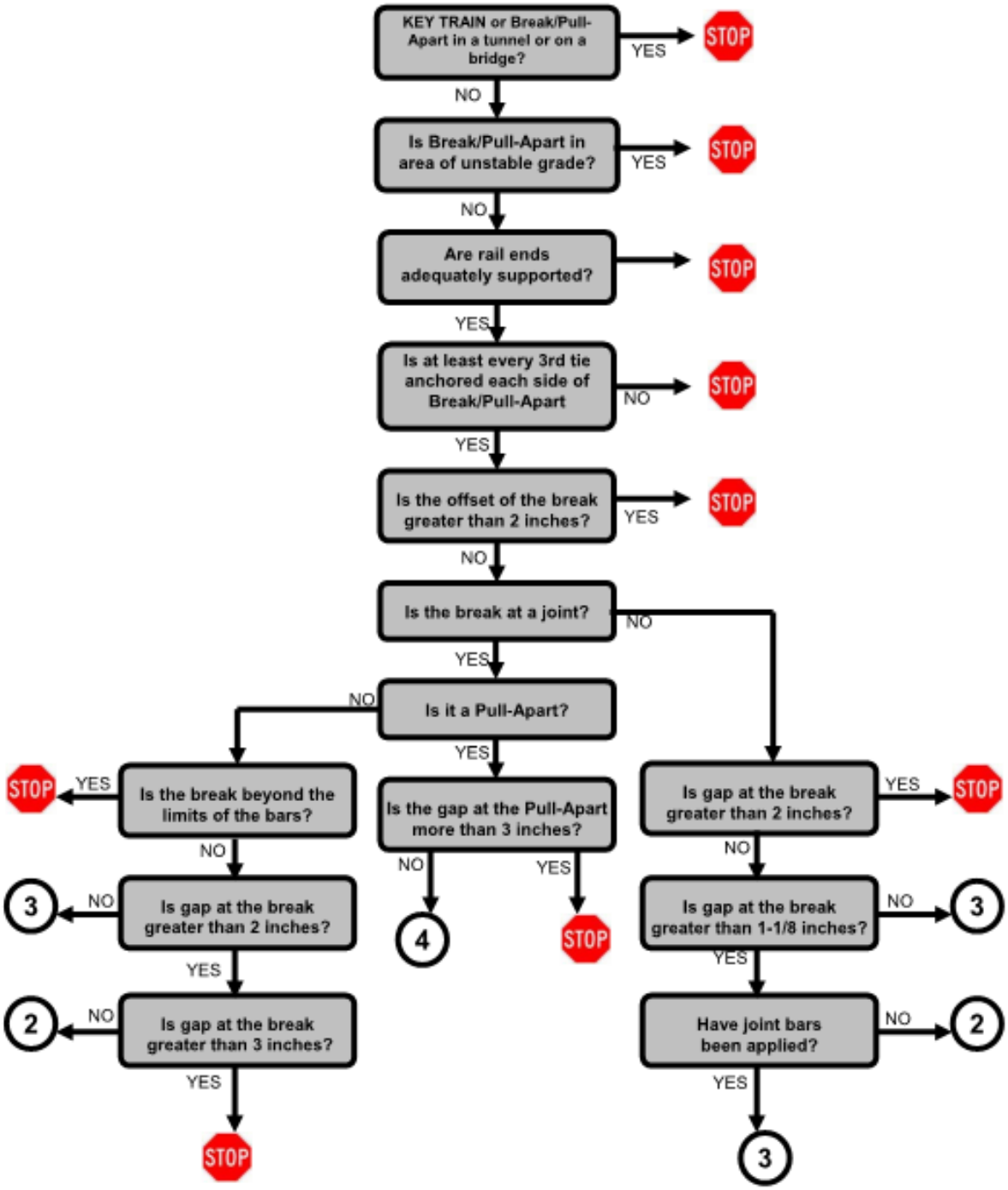
D. Train Operation Permitted – Pull-aparts (Stripped Joints)

1. Authorizing trains or engines to travel over pull-aparts is similar to handling trains over rail breaks at joints. The difference is that the gap determines whether a train or engine may operate over it.
2. Trains or engines are permitted to operate over pull-aparts with gaps up to 3 inches. Pull-aparts with gaps over 3 inches in length should be repaired before trains are allowed to operate over them.
3. Before allowing trains to operate, have pull-aparts inspected, and have the bolts on the unaffected side of the pull-apart checked and torqued. This ensures that the bars are secure, which prevents movement of the rail ends.
4. Pull-aparts, which have been inspected and secured, may be crossed by trains at a speed not greater than 10 MPH.
5. The person authorizing the movement of trains or engines must be on site, must be in constant radio communication with the locomotive engineer, and must visually inspect the pull-apart after each authorized movement over it.

Train Operations Flow Chart

NO TRAIN OR ENGINE TO BE AUTHORIZED OVER BREAK

2. 5 MPH – Visually supervise each movement over the break
3. 10 MPH - Visually supervise each movement over the break
4. 10 MPH (Tighten remaining bolts) – Visually inspect after each movement over Pull-Apart



Appendix 1

MW-032

FRA 213.7 (a) (b) (c) & (d) TRACK INSPECTOR / FOREMAN & SIGNALMAN QUALIFICATIONS

Genesee & Wyoming, Inc. and Affliated Properties

RAILROAD - _____

213.7 (a) Track Foreman qualified to supervise restorations/renewals of track under traffic conditions.
213.7 (b) Track Inspector qualified to inspect track for defects.
213.7 (c) Track Foreman/Inspector qualified to supervise the installation, adjustment and maintenance or to inspect CWR track
213.7 (d) Signal person qualified to pass trains over broken rails and pull aparts.

THIS DOCUMENT IS TO BE KEPT ON FILE AT RAILROAD HEADQUARTERS FOR FRA REVIEW

		Track Foreman 213.7 (a)					Track Inspector 213.7 (b)					CWR Qualification 213.7 (c)						
Engineering Employee Name	ID #	1 (i)	1 (ii)	2 (i)	2 (ii)	2 (iii)	1 (i)	1 (ii)	2 (i)	2 (ii)	2 (iii)	1	2	3(i)	3(ii)	3(iii)	Date Qualified	Basis for Designation

The above listed employee(s) is qualified to inspect and repair track and prescribe remedial actions to correct or safely compensate for deviations from the requirements of this part, Track Safety Standards Part 213, Subpart A to F.

213.7 (d) Re-examines every two years			Last Date	This Date	
Signal Employee Name	Railroad	Emp. I. D.	Training	Training	Basis for Designation

The above listed signal maintainer(s) has been trained and / or re-examined to be qualified to pass trains over broken rails or rail pullaparts.

The above listed 213.7 (a) (b) & (c) employee(s) has demonstrated that he/she is able to detect defects and safely compensate for same.

CC: Regional V.P. - Engineering Signed - _____ Title - _____

GWCI RECRUITMENT AND HIRING PLAN

As a railway company established in Quebec and in other Canadian provinces for many years, GWCI employs a proven method for the recruitment and hiring of rail employees (transport, mechanical, engineering, and administrative).

Table 4 – Recruitment and hiring plan

	Internal display	Web platforms	Social Media	Employment agency	Employees network	Job fair	Head hunter
Train conductor, locomotive engineer	✓	✓			✓	✓	
Mechanics, electricians, wagoners	✓	✓			✓	✓	
Supervisors	✓	✓			✓	✓	

Hiring

HR and the departmental manager meet the selected candidates in an interview. These interviews ensure, by the means of questions and situation-based scenarios, that the candidate meets the requirements of employment and that they will integrate well into the culture of GWI.

Mandatory medical exams and testing related to the consumption of drugs, alcohol, or illegal substances

Once the conditional offer is accepted, the candidate must submit to a medical exam. The medical exam is performed by Médisys, our primary provider for all employees of GWCI. Médisys is mandated to use the *medical guidelines related to employment in a position critical to Canadian railway safety* as published by the Railway Association of Canada (RAC) in order to ensure that the employee possesses the requisite physical characteristics. All future employees who occupy a position identified as critical to railway safety will submit to a screening test for psychoactive substances.

Pre-hiring background checks

Concurrent with the medical exam, HR uses an external firm to check criminal records, validity of driver's licenses, and education and employment references.

Verification of credentials, statements, qualifications, and accreditation – Employees assigned to train operation

In the case where GWCI hires an employee with rail experience, the employee must provide their certificates confirming that they have received the requisite training for the position of conductor or locomotive engineer. The employee must follow the same GWCI practical and knowledge training as an employee without experience.

Verification of credentials, statements, qualifications, and accreditation – Employees assigned to rolling stock maintenance

On hiring, employees possessing credentials, statements, qualifications, and accreditation must provide the relevant certificates and licenses and they have to follow the GWCI's designated training.

Methods and procedures – Complete and valid certification

Certification

All train crew personnel must have complete and valid certification at all times to confirm that they have received the training required by GWCI and regulatory authorities. Each employee must have qualification cards and medical certificates indicating the date of completion of each one. Employees must have these cards on them at all times when on duty.

Hiring an employee with railway experience

When hiring an employee with railway experience, employees must supply their qualifications cards confirming that they have received the regulatory training required as a train conductor or locomotive engineer.

First aid training will also be recognized. A copy of the qualifications cards will be placed in the employee's file, followed by an update in our Safe Track system (date of completion and new expiration date).

Hiring an employee with no railway experience

GWCI has already targeted jobs and training for regional and local development to promote railroad trades. GWCI will also promote partnering with local authority to develop cross cultural awareness and job development strategy.

Medical certificate and required physical attributes

All train crew personnel must have a medical certificate issued by Médisys for all GWCI employees. Médisys will be required to use the Fitness for Duty Medical Guidelines for the Employment of Individuals in Safety Critical Positions, as published

by the Railway Association of Canada, to ensure that employees have the required physical attributes. If the examining doctor has good reason to believe that a person in a safety-critical position has a condition that may reasonably constitute a threat to railway safety, the doctor must immediately notify the employee and GWCI. All our employees must therefore comply with the RAC's Fitness for Duty Medical Guidelines for the Employment of Individuals in Safety Critical Positions.

Monitoring certifications and medical certificates

GWCI will use the Safe Track system to monitor regulatory certifications and medical certificates for all train crew personnel. The compliance director will do an annual review of all certifications that will be expiring over the next 12 months, and will schedule training for a renewal of the certification and medical certificates. The compliance director will stringently monitor the certifications and medical certificates that are expiring in the next two months to make sure that no employee is relieved of his duties. If an employee's certifications and/or medical certificate are no longer valid, the employee will be automatically relieved of his duties and a qualified employee from the replacement list will be assigned to the suspended employee's position.

Methods and procedures – Complete and valid qualifications

Initial training and qualification for train crew personnel

All train crew personnel must minimally comply with the training and qualification requirements of each host railway. These qualification requirements will be covered in the training plan. All training programs, as well as the successful completion of the qualifications program, as defined in our training plan, will be entered in the Safe Track system and the crew management system. Once qualified for a line, the train crew management system will also be updated to make the employee available on the line in question. Note that no employee may be asked to work on a line for which he is not qualified since the crew management system will make the employee unavailable for all assignments on that line.

TYPICAL LOCOMOTIVE ENGINEER TRAINING

	TYPICAL LOCOMOTIVE ENGINEER TRAINING	
	Trainee (No railway experience)	With > 6 months experience in the industry
RAILWAY INDUSTRY FAMILIARIZATION		
Freight Transport practical training on GWCI territory (with mentor)	240 hours	n/a
Documented Competency Evaluation	✓	n/a
THEORETICAL TRAINING		
Train Conductor Experience	Min. 2 yrs	n/a
Duration	80 hours	16 hours
Passing grade	90%	90%
Requalification	Every 3 yrs	Every 3 yrs
Medical	✓	✓
First Aid, Defib.	✓	✓
Air Brake Systems and tests	✓	✓
CROR	✓	✓
Train Marshalling	✓	✓
Air Brake Systems and tests	✓	✓
Dangerous Goods	✓	✓
Safety Rules and Methods	✓	✓
Security Awareness	✓	✓
Dangerous Goods	✓	n/a
SIMDUT/HazMat	✓	✓
Train Handling	✓	✓
Locomotive Handling	✓	✓
Field Observation (Rolling Stock Familiarization, Track Equipment, Signage and Signals)	✓	n/a

Note 1 - Yearly Requalification

Note 2 - Only for employees who participate in the Health and Safety comittee

TYPICAL TRAIN CONDUCTOR TRAINING

	TYPICAL TRAIN CONDUCTOR TRAINING	
	Trainee (No railway experience)	**With > 6 months experience in the industry**
RAILWAY INDUSTRY FAMILIARIZATION		
Freight Transport practical training on GWCI territory (with mentor)	200 hours	If Required
Documented Competency Evaluation	✓	If Required
THEORETICAL TRAINING		
Duration	96 hours	16 hours
Passing Grade	90%	90%
Requalification	Every 3 yrs	Every 3 yrs
Medical	✓	✓
First Aid, Defib.	✓	✓
Customer Satisfaction (note 1)	✓	✓
CROR	✓	✓
First Aid, Defib.	✓	✓
Air Brake Systems and tests	✓	✓
Train Marshalling	✓	✓
Safety Rules and Methods	✓	✓
Security Awareness	✓	✓
Dangerous Goods	✓	✓
SIMDUT (note 2)	✓	✓
Field Observation (Rolling Stock Familiarization, Track Equipment, Signage and Signals)	✓	

Note 1 - Yearly requalification
Note 2 - Only for employees who participate in the Health and Safety comittee

TYPICAL ROLLING STOCK MAINTENANCE PERSONNEL TRAINING

	Typical Rolling Stock Maintenance personnel training										
	Initial Training - No previous Experience	Inital Training - with relevant Experience	Requalification	Duration Requalification	Prerequisite	100% of Employee	Some Employees	Supervisors	Machinists	Carmen	Electricians
First Aid, Defib.	2 days	2 days	3 yrs	2 days			✓	✓	✓		✓
Customer Satisfaction	2 hrs	2 hrs	Yearly	2 hrs	✓			✓	✓	✓	✓
CROR and GOI - Applicable Section	8 hrs	4 hrs	3 yrs	4 hrs	✓	✓		✓	✓	✓	✓
Blue Flag	1 hr	If required	3 yrs	1 hr	✓	✓		✓	✓	✓	✓
Dangerous Goods	2 hrs	2 hrs	3 yrs	2 hrs			✓	✓	✓	✓	✓
Train Marshalling	1 hr	1 hr	3 yrs	1 hr		✓		✓	✓	✓	✓
GW Rules and Safety Procedures for Rolling Stock	4 hrs	1 hrs	3 yrs	1 hr				✓	✓		✓
Dangerous Goods	16 hrs	N/A	N/A	N/A	✓	✓		✓	✓	✓	✓
Orientation - Railcars	16 hrs	N/A	N/A	N/A	✓	✓		✓	✓	✓	✓
Environnement	1 hr	1 hr	3 yrs	1 hr		✓		✓	✓	✓	✓
Fire Extinguishers	1 hr	N/A	N/A	N/A		✓		✓	✓	✓	✓
SIMDUT/WHMIS	1.5 hr	N/A	N/A	N/A	✓		✓	✓	✓	✓	✓
Lockout & Lock	2 hrs	If required	N/A	N/A	✓	✓		✓	✓	✓	✓
Close Environment Awareness	4 hrs	If required	N/A	N/A	✓	✓		✓	✓	✓	✓
Tools	4 hrs	If required	N/A	N/A	✓	✓		✓	✓	✓	✓
Protection - Travaux en hauteur	3 hrs	If required	3 yrs	3 hrs	✓		✓	✓	✓	✓	✓
Plate-Forme élévatrice	5 hrs	If required	3 yrs	5 hrs	✓		✓	✓	✓	✓	✓
Forklift Operation	8 hrs	If required	3 yrs	4 hrs	✓		✓	✓	✓	✓	✓
Crane Operation	8 hrs	If required	3 yrs	1.5 hrs	✓		✓	✓	✓	✓	✓
Sling	4 hrs	If required	N/A	N/A	✓		✓	✓	✓	✓	✓
Breathing Protection	1 hr	If required	N/A	N/A	✓	✓		✓	✓	✓	✓
Hearing Protection	1 hr	If required	N/A	N/A	✓	✓		✓	✓	✓	✓
Locomotive Brake Systems	40 hrs	If required	N/A	N/A	✓		✓	✓	✓	✓	✓
Remplacements des composantes de freins à air / COT&S	4 hrs	If required	N/A	N/A	✓		✓	✓	✓	✓	✓
Locomotive Safety Inspection	40 hrs	Note 1	16 hrs (note 1)	N/A	✓		✓	✓	✓	✓	✓
92 days Inspection - cab card	2 hrs	If required	N/A	N/A	✓		✓	✓	✓	✓	✓
Event Recorder	4 hrs	If required	N/A	N/A	✓		✓	✓	✓	✓	✓
Safety Inspections	48 hrs	Note 2	16 hrs (note 2)	N/A	✓		✓	✓	✓	✓	✓
Single car brake test	8 hrs	If required	N/A	N/A	✓		✓	✓	✓	✓	✓
Brake Tests	8 hrs	If required	N/A	N/A	✓		✓	✓	✓	✓	✓
Replacement wheels / boggie (railcars)	Note 3	Note 3	Note 3	Note 3	✓		✓	✓	✓	✓	✓
Wheel lathing	Note 3	Note 3	Note 3	Note 3	✓		✓	✓	✓		✓
Welder (pre-qualified)					✓		✓	✓		✓	

Passing grade - 90%

Note 1 - Employee must have inspected a locomotive during the last 3 years

Note 2 - Employee msut have inspected a railcar within the last 3 years

GENERAL OPERATING INSTRUCTIONS (GOI) GENESEE & WYOMING CANADA INC. APPLICABLE TO ALL CANADA REGION RAILWAYS

Genesee & Wyoming Canada Inc.

General Operating Instructions (GOI)
Genesee & Wyoming Canada Inc.
Applicable to All Canada region Railways

Effective October 14, 2015

Genesee & Wyoming Canada Inc.

GENERAL INFORMATION & INSTRUCTIONS

These General Operating Instructions are applicable to the following Railways and services operating on the Canada region:

SORR
GEXR
HCRY
OVR
QGRY
SLQ
CBNS
WLRS
SFE
KLTR

Remark:

Genesee & Wyoming Canada Inc.

TABLE OF CONTENT

SECTION 1 – GENERAL INSTRUCTIONS

1.0 SPECIAL CONTROL ZONE (SCZ) SYSTEM SPECIAL INSTRUCTION

Definition:
A method of control used in situations where SCZ Special Instruction applies. Within SCZ, the Site Supervisor will issue instructions to co-ordinate track work, the operation of movements and track units.

Director Operations must consult with Engineering Services and S&C. System Rules must be advised. This process must take place prior to authorizing Special Control Zone.

Within limits specified by GBO:
CTC is withdrawn from service and main track(s) and signaled siding(s) are designated as "NON-MAIN TRACK," or;

- OCS is withdrawn from service and main track(s) are designated as "NON-MAIN TRACK."
- Unless otherwise specified, interlocking limits remain in service.
- Unless otherwise indicated, all signal indications within the specified limits are suspended and Rules 405 439 do not apply.
- Rule 105 applies.
- All GBO within the limits remain in effect.
- Movements must not exceed 15 miles per hour while the leading end of the movement is within the limits. Track units must not exceed 15 miles per hour.
- All movements within the Special Control Zone must be coordinated by the Site Supervisor.

In the application of Rules 26 and 41 the Site Supervisor must be advised. The provisions of Rule 26 (d) apply.

- Speed restrictions not protected by Rule 41 may be provided under the provisions of Rule 43. All Rule 43 (slow track protection) within the limits remain in effect unless cancelled.
- All Rule 42 and/or TOP within the proposed limits should be cancelled before the GBO declaring Special Control Zone in effect is issued.
- Exception: When necessary to maintain protection, Rule 42 and/or TOP may remain in effect until Special Control Zone GBO is in effect.

⇨ Unless otherwise instructed by the Site Supervisor, dual control switches and dual control switch point derails must be placed in hand position. Before moving over a dual control switch or dual control switch point derail, a crew member must observe that the switch points are lined for the route to be used.

⇨ Unless manual protection is provided, road crossings equipped with automatic warning devices must not be obstructed until the warning devices have been operating for at least twenty seconds.

⇨ Within Special Control Zone, a clearance is not required. Before entering or moving within the zone, all movements and track units must receive permission from the Site Supervisor.

⇨ Prior to cancellation of the Special Control Zone, the Site Supervisor must inform all concerned, ensuring protection is in place when required, and advise the RTC accordingly.

The GBO advising of a SCZ will be issued as follows:
(EFFECTIVE AT 0800 JUNE 1, 2000) SPECIAL CONTROL ZONE IN EFFECT AND CTC WITHDRAWN FROM SERVICE ON MAIN TRACK AND SIGNALLED SIDINGS BETWEEN WESTWARD SIGNALS 11 AND 11B AT BORDEN WEST AND EASTWARD SIGNALS 30 AND 30B AT CANTIC EAST CANADA SUB BE GOVERNED BY SITE SUPERVISOR AND SPECIAL CONTROL ZONE SPECIAL INSTRUCTION

2.0 MOVEMENTS OPERATING OVER UNIDENTIFIED TRACK OCCUPANCY (UTO)

Note: The provisions of this policy also apply in controlled interlocking.

Note: "QUALIFIED ES personnel" in this policy refers to a person qualified in Operation over Rail Breaks & Pull aparts.

A. Movements may be authorized to operate over the track which contains the UTO until such time as the responding Engineering Services (ES) personnel arrive in the area and are ready to proceed with their investigation of the condition.

B. Movements must NOT be authorized to operate at any time, in any territory, if it is KNOWN that there is an unrepaired broken rail, except under the supervision of a QUALIFIED ES employee who must be at the site of the broken rail.

C. Movements may be operated over a broken rail which has received temporary repairs, in accordance with the instructions of a QUALIFIED ES employee.

D. When a movement operating at restricted speed ("on the lookout for broken rails") discovers a broken rail, the movement must stop immediately and await the arrival of a QUALIFIED ES employee at the site to determine if the movement may continue under the supervision of such qualified ES person, or if the rail must receive temporary or permanent repairs first.
The movement may then only resume operation once permission has been received from the RTC.

3.0 MOVEMENTS OPERATING OVER SUSPECTED BROKEN RAIL

(Including other track / equipment unusual conditions).

Unless moving at restricted speed, when a movement passes over a point enroute that creates a loud noise, unusual locomotive ride or other indications consistent with the possibility of a broken rail, whether in signaled or non-signaled territory, the following must be adhered to.

A. Speed must be immediately reduced to 10 MPH and a pull-by inspection or passing train inspection on at least one side of the movement must be performed as soon as possible. The crew must immediately report their observation to the RTC.

B. The provisions of "POLICY FOR OPERATING MOVEMENTS OVER UNIDENTIFIED TRACK OCCUPANCY (UTO)" apply.

Sequence of events:
1. Crew member "feels" possibility of broken rail. 2. Reduce to 10 MPH. 3. Report this observation and delay to RTC. 4. Perform a Pull-by or Passing train inspection. 5. Advise RTC of result of inspection.

4.0 UNIDENTIFIED TRACK OCCUPANCY (UTO) BEHIND A MOVEMENT

A. When more than one unknown Track Occupancy Light appears on an RTC display screen after the passage of the same movement, the RTC must immediately notify the crew to stop and inspect.

B. The speed of the movement must be immediately reduced to 10 MPH and a pull-by inspection performed at the first safe location, avoiding impediments to a safe inspection such as bridges.

C. The inspection must include a pull-by inspection of one side of the equipment at a speed not exceeding 10 MPH, followed by a stationary inspection on the other side. BOTH sides of ALL cars and locomotives must be inspected for potential wheel defects. Inspection of entire movement must be completed even if defects are found.

Note: This inspection must be performed by either a crew member or qualified Field Operations personnel.

D. If any wheels are found or suspected to have defects, that piece of equipment must be set off at that location if possible, OR moved at a speed not exceeding 10 MPH to the nearest location where it can be set off, but only if deemed safe to move by the person making the inspection.

E. Results of the inspection must be recorded on the Crew information /brake status report, noting "UTO inspection".

5.0 TRACK UNIT OPERATED AS A TRAIN

- When a track unit is operating under the direction of a conductor, it must be operated as a train in accordance with CROR.
- When a track unit is operating under the direction of an operating officer or operating foreman, it may be operated and protected as either a train, or a track unit. When operated and protected as a track unit, "TRACK UNIT SPEED" MUST NOT BE EXCEEDED AT ANY TIME.

In the application of Rule 106, when a track unit is operated as a train:

5.1 The operator of the track unit is a crew member and will perform all duties of the locomotive engineer relating to the operation of the track unit;

The conductor, operating officer or operating foreman will perform the duties of the conductor and all other duties of the locomotive engineer not relating to the operation of the track unit;
The conductor is responsible for all authorities and must ensure that the operator of the track unit is aware of the contents of a GBO, clearance or other authority, and arrangements for protection with foremen and other crews, before such authority or arrangements are acted upon.

Note: An operating foreman is a qualified foreman who has also received proper training in the CROR Rules pertaining to movements.

5.2 Maximum speed for a track unit operated as a train is time table authorized speed for freight trains or maximum speed authorized for that track unit, whichever is the lesser. At locations where Rule 41/841 is applicable, track units operated as a train must not exceed track unit speed.

Maximum speed for Sperry Cars is 40 MPH.

5.3 A track unit operated as a train must be equipped with all signal appliances necessary to comply with requirements of CROR.

5.4 The following track units operate signal systems reliably and must comply with signal indications when operated as a train:

- Harsco Track Technology: RMS series production rail grinders (number of assigned diesel unit will be used in train designation).
- Loram: RG series production rail grinders
- Sperry: All SRS 100 series rail bound Sperry cars.
  Note: This excludes Sperry Hi-Rail trucks.
- Plasser: Super Cat (520637), PTS-62 (5220-02).

5.5 Other track units when operating as a train, (including Sperry units listed above WHILE TESTING) will NOT operate signal systems reliably and, if not continuously coupled to standard railway equipment, must be governed as follows:

A. Over Public Crossings at Grade

- Over an unprotected public crossing at grade: A crew member must provide manual protection of the crossing unless the way is seen to be clear. Vehicular or pedestrian traffic must be given the right of way.
- Over a public crossing at grade equipped with automatic warning devices: A crew member must provide manual protection of the crossing unless it is known that the warning devices have been operating for at least 20 seconds or that the gates (if any) are horizontal when the crossing is reached.

B. Over Power-Operated Switches, Dual Control Switches and Dual Control Switch Point Derails:

- Must approach such switches prepared to stop and observe the switch points to be lined for the authorized route.
- Must not exceed 8 MPH over such switches and must not stand on switch points while the switch is in power position.
- Switch must be lined by the RTC, except that in the operation of a:
  - Power-Operated Switch, the RTC may give permission to have the switch operated by a qualified employee. After the track unit has cleared the switch points, the RTC must be immediately advised.
  - Dual Control Switch or Dual Control Switch Point Derail, the RTC may give permission to operate the switch in the "hand" position. After the track unit has cleared the switch points, selector lever must be restored to "Power" position and locked and the RTC immediately advised.

5.6 Rail Grinders: Descending Certain Heavy and Mountain Grades

Production rail grinders (RMS and RG series) must adhere to the following when NOT actively grinding rail:

Note: This instruction applies whether operating as a train or a track unit.

- Do not exceed 10 MPH while descending a grades of more than 1%:

- Before descending these grades, a supervisor must meet and then accompany the rail grinder to insure the contracted employees who are responsible for the operation of the rail grinder are operating safely and have performed the required daily tests.

6.0 OPERATION OF MOVEMENTS WITHOUT A MANNED CABOOSE

6.1 The conductor on a movement without a manned caboose shall be stationed in the operating cab of the lead locomotive.

Note: Where seating will not accommodate all crew members in the leading unit, a trailing unit may be used to accommodate trainman or other employees required to ride.

A company officer or a Transport Canada Safety Inspector riding a movement will be accommodated in the lead unit.

When an on-job training instructor (engineer supervisor) is evaluating a locomotive engineer trainee, the locomotive engineer may be deployed to a trailing unit.

Under these circumstances, the engineer supervisor will assume the normal responsibilities of the locomotive engineer and the locomotive engineer will have his/her normal responsibilities relaxed to the extent they may be performed from the trailing unit.

6.2 Each working conductor on a movement without a manned caboose shall be provided with an operational portable two-way radio before leaving a crew change-off point.

6.3 Each Engineering Services BTMF crew, extra crew, signal crew, welding crew, Track Maintenance Supervisor, Assistant Track Maintenance Supervisor, operator, track patrol employee and other employees or group of employees, where assigned duties along the right of way where a movement without a manned caboose may be moving and where that passing movement can be observed, shall be provided with or have immediate access to an operational portable two-way radio capable of communicating with the crew of that passing movement.

7.0 HIGH VOLTAGE ELECTRICAL CABLES

7.1 Always assume that any downed overhead wires are carrying electricity, and that it has energized the ground, the track, and any nearby wayside equipment (snow melters, switches, bungalows, etc.). Immediately notify the RTC or your immediate supervisor. Advise them that an overhead wire has fallen down on the track or right of way, whether the wire is obstructing the track or not, and provide as much detailed information about the situation as possible.
If the downed wires are contacting the rail, do not detrain within the track block that may be energized, if possible. If detraining is absolutely required, follow the procedures in item 7.4.

7.2 Installation of buried electrical cables along railway right-of-way is a common practice. These underground systems are safer than similar high voltage systems on pole lines. Power cables are normally buried at a depth of 3 to 5 feet below the surface and 4 to 6 feet from the end of the ties. Along bridges, trestles and in tunnels, the cables are installed in ducts and commonly have orange markers installed in the vicinity (not necessarily the exact location). Fuses and protective breakers should automatically turn off the electricity in the area if cable is cut or electrical equipment damaged, however it should never be assumed that the cables are de-energized.

7.3 In the case of a derailment, when the equipment is known or suspected of being in the vicinity of the electrical power cables:
1. Contact the RTC immediately.
2. Stay clear of the area and keep others clear of the area.

3. Do **not** approach derailed equipment, because the underground cable or electrical equipment may be partially severed or damaged but still energized.

7.4 If locomotives or adjacent cars have derailed in the vicinity of electrical cables then remain on the equipment if possible. This is the safest location.

If the crew must dismount due to immediate danger, or because a train carries dangerous goods, the following procedure must be followed:

1. Dismount at a location along the train where it is safe to do so.
2. Jump clear of the train and land with your two feet together.
3. Do **not** to touch the equipment and the ground at the same time.
4. While keeping both feet in contact with the ground at the same time, shuffle away from the track and away from the wire.
5. Do not stop shuffling until you are at least 50 feet clear of the track and wire.

CAUTION: DO NOT approach or touch exposed cable or damaged electrical equipment until qualified personnel have confirmed, that the system has been de-energized and grounded.

SECTION 2 -REPORTING PROCEDURES

1.0 INITIAL REPORTING REQUIREMENTS

1.1 All employees must immediately report any accident or incident of a type listed in **Table 1: Reportable Accidents** or **Table 2: Reportable Incidents**, below.

If the conductor or other employee in charge of a train or other rail equipment is unable to make the report, any other employee who becomes aware of such occurrence must make the report.

Reporting procedures:

- Report to the RTC, General Manager, yard/terminal supervision, or immediate supervisor.
- Use voice communication or personal contact.
- Include a brief description of the occurrence.
- Include all of the information listed in item 1.5.
- Do not delay reporting if all information is not available.
- Request any required medical or other emergency assistance.

Table 1: Reportable Accidents
A. Collision or derailment of on-track equipment, including track units
B. Fatality or injury from contact between on-track equipment and any person or vehicle
C. Employee fatality or injury while on duty from any cause
D. Grade crossing collision, including either public or private crossings
E. Acts of sabotage or terrorism, including bomb threats, hijacking, blockade, hostage-taking
F. Evacuation resulting from any on-track accident or incident
G. Fire or explosion involving on-track equipment
H. Explosive, radioactive or infectious that is lost, stolen, damaged, vandalized, or setoff
I. Release of dangerous goods from any car, tank, container, cylinder or vehicle
J. Unintended release of any non-regulated substance

Table 2: Reportable Incidents
A. Movement of a train, engine or track unit without proper operating authority
B. Exceeding limits or unprotected overlap of operating authority
C. Less restrictive signal indication than required for the intended movement
D. Failure to provide proper protection for on-track personnel
E. Uncontrolled movement of on-track equipment
F. Over speed coupling of equipment containing DG
G. Failure to protect a hand operated main track switch
H. Unprotected main track switch left in abnormal position
I. Operation of equipment by unauthorized or unqualified person
J. Railway safety devices that have been tampered with
K. On-track equipment being operated in excess of 10 mph over authorized speed
L. Crew member who becomes incapacitated for any reason
M. Livestock or wildlife killed or injured by on-track equipment
N. Suspicious or dangerous activities on or near tracks or adjacent property
O. Slides, washouts, or other on-track obstructions which may affect safe operations
P. Damage or vandalism to equipment, signals, or structures which may create a safety hazard
Q. Any person riding in locomotives or other non-passenger equipment, excluding assigned crew members
R. Right of Way Fires
S. Near miss incidents

1.2 The employee making the initial report must complete the appropriate accident report(s) as soon as possible after the occurrence and submit it to his/her immediate supervisor.

Incident Report/ Initial report:

To ensure that as much information as possible is given in the initial report, the employee involved or a mandated employee must complete the appropriate Accident / Incident Report) as soon as possible after the event and, if possible, before the end of the tour of duty.

Forms to use for each claim type

Type of Claim	Form to fill out
Company Vehicles	Motor Vehicle Accident Report
Other accidents/incidents Derailment on our property Hazard material release Collision Near Misses Others derailing on our property Derailment on other property Side Swipe Trespasser Grade crossing accident	Unusual Occurrences Report (UOR/G&W 97)
Personal injury Injury to other than RR employee Worker‘s Compensation	Personal injury Report
Property and Equipment Damage Crossing Equipment Third Party Property Damage	Property Claim Form

If the employee involved cannot fill out the Accident / Incident Report, a teammate must fill out the Form with as much detail as possible, as per the GOI.

The immediate supervisor must be notified as soon as possible of an accident / incident and if possible, help the employees to complete the Form. The person responsible for prevention must be notified as soon as possible by the supervisor in order to participate in the investigation.

The Form duly completed must be sent to the department heads as soon as possible.

The outcome of the investigation should be discussed with the employees in order to improve safety in the workplace and to perfect our methods and procedures**.**

1.3 Employees must immediately take whatever action may be required, and which can be performed safely, to protect the safety of persons, property, or the environment, including:

- Track protection,
- Injury assistance,
- Fire control,
- Evacuation,
- Control of leaks or spills.

1.4 Employees are to remain at the scene of accidents until released by the RTC, their supervisor, or another person in charge at that location.

1.5 Initial accident/incident information should include, where applicable:

- date & time of occurrence;
- train, engine, car, or track unit numbers involved;
- compass direction of travel & estimated speed;
- location by mileage and subdivision;
- type of track (main, yard, siding, industry, etc.);
- name or designation of other than main track;
- name of railway or company operating the equipment;
- name of railway or company who owns or maintains the track;
- method of operation (manual, remote, etc.);
- emergency application type if applicable (crew, TIBS, UDE);
- number of persons injured or killed;
- identity of injured or killed (employee, third party, etc.)
- description of any dangerous goods involved or released;
- initial, number, and position of equipment involved;
- description of any damage to equipment;
- description of damage to any track, structure, or property;
- brief description of the occurrence;
- names, address, phone numbers of any witnesses;
- names, employee number, and position of crew members;
- name of person making the report.

Do not delay reporting because some information is missing.

2.0 PROTECTING THE ACCIDENT SCENE

2.1 Employees have an obligation to protect any evidence relevant to a reportable accident, pending the Transportation Safety Board's (TSB) decision to investigate.

Members of train crews and other employees who may be on the scene or are otherwise involved with an accident should note all relevant facts, so that they will be in a position to give information when the matter is investigated.

In the event of an injury to any person, including employees, passengers, trespassers, and others, the names and addresses of potential witnesses in the immediate vicinity should be procured at once.

Train crews or other employees should examine and report on the condition of the track, structures and equipment where the accident occurred. Time of the accident should be noted.

2.2 If the TSB decides to investigate:

A. Employees on the scene will be notified as soon as possible by the RTC or their supervisor, and;
B. The TSB investigator must first communicate his/her arrival at the site to the person in charge, and
C. All evidence at the site must be protected until released by the TSB investigator, and
D. Employees must ensure that there is as little interference with the site as possible, except that;
- Emergency measures must be taken to protect safety of persons, property, or environment, and
- Before equipment or other pieces of evidence are moved, a record of the conditions must be taken by the person who directs, supervises, or arranges such action, including pictures, sketches, measurements, etc.

Note: If there is any doubt about what actions should be taken, communicate with the RTC, the TSB investigator, or other person in charge of the site.

2.3 TSB investigators can limit access to an accident site, even to railway employees.
However, they must:

A. Identify themselves upon arrival, and;
B. Notify the person in charge when the investigation is complete and all TSB staff are clear of the site, and;
C. Minimize the disruption to transportation services.

TSB investigators have extensive powers to conduct their investigations and employees must cooperate fully with them.

Employees must not provide the TSB or other persons, except company officers, with any opinion, assumption, or impression as to the cause of an accident, including speeds, distances, etc.

2.4 Where an employee is served with a notice in writing by a TSB investigator, the employee must comply with the notice and give such evidence as the investigator requests. Where an employee is required by a Transport Canada Safety Inspector to attend for questioning, the employee must do so and must comply with any reasonable request. In either case, the employee must, upon receipt of the notice, advise his/her supervisor.

2.5 At the scene of an accident or incident, if requested to give a statement to any government authority, employees should:
- Verify the other person's identification before providing any information.
- Provide only the facts as you know them. Do not offer opinions, assumptions, or impressions.
- Contact your supervisor if you are uncertain whether to respond to requests for information or any particular line of questioning.
- Always advise your immediate supervisor or the RTC when you have provided information to outside authorities.

2.6 In all incidents, provide responding authorities with only the following information:
- Your name, address, date of birth and profession
- Train, lead locomotive and equipment numbers involved in incident
- The number of cars in the train
- The location and time of the accident,
- The direction the train or equipment was travelling.
- The direction in which the vehicle or pedestrian was traveling, if observed.

- The movement of vehicles or pedestrians prior to and at time of incident.
- Whether the train was moving or stationary at the time of the accident
- The location at which the train came to a stop
- A description of the weather conditions and visibility at the time of the accident
- Whether the headlight was lit, and the bell, horn, and ditch lights were activated
- The location of each member of the crew at the time of the accident

Notes:
Do **not** provide signed statements, unless required by a company officer.

Do **not** provide a driver's license, even if requested.

Do **not** give statements or information to anyone who does not have a legal right, such as the news media, attorneys, insurance representatives, etc.

Give statements only to legal authorities (TSB or Transport Canada investigators, Police, or Coroner).

3.0 INJURIES OR FATALITIES

3.1 When an accident involving serious personal injury has occurred, the local police and any required medical support should be immediately summoned to the scene.

3.2 When a fatality has occurred due to any cause, crews must report the fact immediately to the RTC or their immediate supervisor. The RTC or Supervisor must notify the local police, and a coroner, medical examiner, or other appropriate investigator, and if available, a Company approved medical examiner.

3.3 When injuries and fatalities involve the general public:

A. Care should be taken not to disturb any wreckage more than is necessary to provide first aid or permit movement of the train.

B. If it is necessary to move a body, crews must consult with the RTC who will advise police as to their intention and reason.

C. A person must be left in charge to notify police, coroner, TSB investigator, or Transport Canada inspector of the original position in which the body was found.

D. When a train crew has been directed to remain stationary following any fatal accident, the crew will remain as long as necessary for the police or coroner to conduct their investigation.

E. To avoid train delays, arrangements may be made through the RTC for the police or coroner to take any required statements to be given on arrival at the next destination terminal in the presence of a railway operating officer.

3.4 When injuries and fatalities involve employees:
Item 3.3 does not apply, instead Section 127 of the Canada Labor Code applies which provides that:

"Where an employee is killed or seriously injured in a work place, no person shall, unless authorized to do so by a safety officer, remove or in any way interfere with or disturb any wreckage, article, or thing related to the incident except to the extent necessary to:

- Save a life, prevent injury, or relieve human suffering in the vicinity;
- Maintain an essential public service; or
- Prevent unnecessary damage to or loss of property."

Note: For purposes of this item, "serious" injury includes an occurrence which creates a substantial risk of death or which causes serious permanent disfigurement or protracted loss or impairment of the function of any bodily member or organ.

3.5 A copy of the Canadian Rail Incident Investigation Guideline is supplied and is to be provided to any police officer responding to incidents involving injuries or fatalities.

4.0 TRAIN/VEHICLE AND TRESPASSER ACCIDENTS

4.1 When an accident occurs that involves a vehicle or a pedestrian (at grade crossing or otherwise), the following facts should, when applicable, be immediately drawn to the attention of the driver, occupants, outside witnesses, and/or other employees:

- The engine bell is ringing;
- The headlight is illuminated;
- The ditch lights are illuminated;
- The oscillating headlight, if equipped, is functioning;
- Crossing warning devices including lights, bells, and gates are functioning, where equipped.

4.2 In addition to the information required in item 1.5, the following information should be recorded:

- was the whistle sounded while approaching the crossing?
- was the bell ringing while approaching the crossing?
- type of crossing warning device and if activated;
- whether or not the crossing is equipped with gates;
- direction and movement prior to impact of vehicle;
- distance beyond crossing where the head end of train stopped;
- point of impact on train and/or vehicle
- damage to vehicle;
- position of vehicle after mishap;
- whether vehicle headlights were on;
- whether the vehicle's windows were clear, dirty, open, closed, steamed, or frosted;
- whether the vehicle's radio or stereo was on or off, and approximate volume;
- make, type, and license number of the vehicle;
- name, address, sex and age of vehicle owner, driver, and occupants;
- position of each occupant in vehicle;
- was each occupant wearing properly buckled seat belts?
- identification of any casualties;
- any evidence of intoxicants;
- description of any skid marks on the roadway;
- weather and road conditions;
- possible restrictions to vehicle visibility;
- restrictions to train visibility;
- any restrictions to visibility along sightlines for the train and/or the vehicle;
- names, addresses, phone # number of witnesses;
- name and address of attending coroner and/or investigator.

4.3 In addition to the requirements in items 4.1 and 4.2, where an accident involves a pedestrian, the following information should be recorded:

- Did the pedestrian appear to be aware of the approaching train, and at what distance prior to contact?
- Describe any actions or behavior that suggested the pedestrian was aware of the approaching train.
- Did the pedestrian attempt to avoid the accident?
- Did the pedestrian appear distracted by other events?
- Was the pedestrian wearing clothing or a headset that may have impaired hearing?
- Describe any actions or behavior which may suggest that the pedestrian was aware of the train but deliberately declined to take evasive action.

4.4 In addition to the requirements in items 4.1, 4.2, and 4.3, where an accident involving a pedestrian or trespasser occurs at a location other than a crossing, the following information should also be recorded:

- Is the right of way fenced at this location on one or both sides?
- Is there an obvious reason for trespassing in this area, such as a school or shopping area with no crossing nearby?

5.0 ENVIRONMENTAL INCIDENTS

5.1 An environmental incident includes the accidental or unintended release of any dangerous or non-dangerous substance into the natural environment, including land, water, or air.

Immediate reporting to the supervisor is required for all environmental incidents.

In addition to the information required in item 1.5, the following should be reported:

- Description of the location and the surrounding environment, such as near water, near wetlands, near a drainage or sewer system, in a park, nature reserve, or other possibly sensitive area.
- Type and estimate of the quantity of the substance released
- Details of any immediate action taken, or proposed to be taken, to control the release.

5.2 Livestock and wildlife that are killed or injured by on track equipment must also be reported. Wildlife, for reporting purposes, would include most large species (elk, moose, bears, wolves, coyotes, cougars, etc.), and also any threatened or endangered species, such as eagles. If in doubt as to the species or the reporting requirement, make the report. In addition to the information required in item 1.5, the following should be reported:

- Species of animal if known;
- Behavior of animal at the time of collision (standing, running, lying down, etc.);
- Weather conditions;
- Estimated snow depth, if applicable;
- Estimated speed of train;
- Line of sight (straight or curved track and/or obstructions);
- Any measures taken to avoid collision (horn, bell, lights turned on or dimmed, braking, etc.).

5.3 Fires along a railway right of way may also have a negative impact to the environment and must be reported.

In addition to the information required in item 1.5, the following should be reported:

- description of fire & whether found or set by that train.
- any measures taken to control or extinguish the fire.

6.0 UNSAFE SIGNAL FAILURES

When a block or interlocking signal displays a more permissive indication than circumstances warrant or an indication is not as specified by CROR Rules 405 to 439 or a System Special Instruction, the train crew must:

STEP ACTION;

1. Stop immediately or if stopped do not move.
2. Transmit an emergency communication per CROR Rule 125.
3. Immediately advise the RTC of the signal number, location signal colours, and respective positions.
4. Report the positions of switches and any other pertinent information.
5. Confirm signal colours with another crew member or other employees in the vicinity.
6. Be governed by instructions received from the RTC.

SECTION 3 - REGULATORY REQUIREMENTS

1.0 RAILWAY SAFETY ACT (RSA)

Note: Railway Equipment as used in the Railway Safety Act includes "Equipment" and "Track Units" as defined in the CROR.

1.1 Under Sections 27 and 28 of the Railway Safety Act, Transport Canada has appointed a number of "Railway Safety Inspectors". Each inspector has an identification certificate, which will also state the inspector's area(s) of competence. Upon presentation of this certificate, Railway Safety Inspectors may (within the inspector's area of competence) enter any "railway work or railway equipment", whether or not in operation, to inspect such railway work or railway equipment.

An Inspector may forbid or restrict the use of a line of railway or rolling stock or an operating practice if he considers that such use or practice poses an immediate threat to safe railway operations.

Employees must give the Inspector all reasonable assistance in the course of the inspection and must comply with all reasonable requests; **it is an offence not to**.

1.2 The Railway Safety Act provides that a contravention of the Act or any Regulations, Emergency Directives, Orders or Rules made or approved under the Act, is an offence.

Where there is a contravention of the Act, an individual is liable to a fine of up to $10,000 or imprisonment for a term not exceeding one year, or both.

In the case of contravention of a Regulation, Emergency Directive, Order of the Minister, Order of a Railway Safety Inspector, or Rule approved by the Minister, an individual is liable to a fine of up to $5,000 or imprisonment for up to six months, or both. In certain circumstances, where a contravention occurs on more than one day, or is continued for more than one day, a person will be deemed to have committed a separate offence for each day on which the contravention occurs or is continued.

2.0 RAILWAY SAFETY ADMINISTRATIVE MONETARY PENALTIES REGULATIONS

(SOR/2014-233 October 10, 2014)

2.1 Description

The Regulations include schedules that set out which provisions of the Act and its subordinate instruments are designated.

There is one schedule for each of the following:

The *Railway Safety Act*,
The *Mining Near Lines of Railways Regulations*,
The *Railway Prevention of Electric Sparks Regulations*,
And the current *Railway Safety Management System Regulations*.

3.0 MEDICAL REQUIREMENTS

3.1 Safety Critical Positions

Under the Railway Safety Act employees who occupy Safety Critical Positions must receive a medical assessment at least every 5 years up to the age of 40 and at least every 3 years thereafter.

These medical assessments include a medical report to be completed by the employee's physician and include hearing and vision tests.

3.2 Safety Sensitive Positions

Sensitive Positions for whom hearing and vision tests are required.

3.3 Medical Records

All related medical records will remain confidential between you, your physician and Occupational Health Services. Supervisors will not have access to medical records. They will only receive a notification from Occupational Health Services that you are fit, fit with restrictions or conditions, or unfit for service.

Safety Critical Positions

Any employee or contractor, union or non-union, who is required to perform any of the following functions, will be considered to occupy a Safety Critical Position.

1. Locomotive Engineer
2. Conductor
3. Rail Traffic Controller
4. All people qualified and are performing the functions of 1, 2, 3.

Safety Sensitive Positions

Any employee, union or non-union, who is required to perform any of the following functions, will be considered to occupy a Safety Sensitive Position.

1. Track foreman, track supervisor and any other person who takes a track occupancy authorization.
2. S&C Maintainer, S&C Technician and any other person who maintains repairs or installs signal systems.
3. Snow plow operator
4. Engine attendant and engine attendant helper
5. Track mobile operator and track mobile helper
6. Auxiliary, mobile & shop crane operator (if rated over 60 tons)
7. Dangerous goods emergency responder

3.4 Glasses and Contact Lenses

Any employee who is required by their physician or by Occupational Health Services to wear glasses or contact lenses shall wear them while on duty and shall carry a second pair or replacement while on duty.

Exception: When safety glasses are worn, only one pair is required

4.0 WORK/REST RULES FOR RAILWAY OPERATING EMPLOYEES

Copies of Work/Rest Rule(s) will be available locally on a RAC circular TC-33 / Revised TC 0 0-140 February 23rd 2011.

5.0 TRANSPORTATION SAFETY BOARD (TSB) ACT

5.1 TSB Investigators may;

- Limit access to the site or location relevant to their investigation, but should minimize any disruption to transportation services;
- Enter and search any place relevant to the investigation with the consent of the person in charge. (The TSB investigator does not need such consent if he has a warrant. However, in exceptional circumstances where delay to obtain a warrant would threaten human life or safety or destruction of evidence, the investigator may exercise these powers without a warrant.)
- Seize and test evidence, but must take reasonable steps to allow the owner of the evidence to be present during the testing. Such evidence must be returned to the owner as soon as possible, e.g. following the test.

- By written notice: demand documents, the release of medical records or the performance of an autopsy, or compel a person to give evidence or take a medical examination.

5.2 Role of Railway Officers

A. Railway officers must cooperate with TSB Investigators, but they still have a duty to respond to an occurrence to protect the safety of the public, employees and property and to determine the cause of the occurrence and start clean- up operations

B. When contacted or approached by a TSB Investigator, railway officers should

- Ask what equipment or information the TSB Investigator is examining;
- when statements are required, arrange a convenient time, to minimize disruption to service;
- when company documents are required, ensure their confidentiality before release. Maintain copies of documents if necessary to release the originals to TSB.

5.3 Observer Status Required

A. Railway officers with a direct interest in a TSB investigation must request observer status from the TSB. (Railway officers do not automatically enjoy observer status and therefore must request it at the beginning of an investigation.

B. Observers may attend the scene of an accident or incident, examine documents, etc. However, unless specifically authorized by the TSB, they cannot attend an interview of a witness during an investigation

6.0 GENERAL LEGAL REQUIREMENTS

6.1 Employees are required, at all times, to comply with all laws of the nation in which they are required to travel, including, but not limited to, laws pertaining to customs and excise duties, immigration, the control of illegal substances and all criminal laws.

6.2 Employees must not bring any goods that are subject to any form of import duty across international borders.

6.3 The Criminal Code of Canada prohibits the impaired operation of railway equipment. If convicted, in addition to other fines and/or prison sentences, a person can be prohibited from operating railway equipment for a period of up to 5 years.

6.4 Firearms policy;
Firearms (loaded or empty) or knives with a blade longer than 3 inches are not permitted on G&W property, except for designated persons or employees performing authorized work when authorized to do so. In this case, a written authorization from a designated manager is required and the person should have in his possession all the pertinent government permits when required.

7.0 CONNIVANCE IN ILLEGAL TRANSPORTATION BY RAILWAY EMPLOYEES

7.1 Section 401 of The Criminal Code RSC 1985, c. C-46 reads:

(1) *Everyone who, by means of a false or misleading representation, knowingly obtains or attempts to obtain the carriage of anything by any person into a country, province, district or other place, whether or not within Canada, where the importation or transportation of it is, in the circumstances of the case, unlawful is guilty of an offence punishable on summary conviction.*

(2) *Where a person is convicted of an offence under subsection (1), anything by means of or in relation to which the offence was committed, upon such conviction, in addition to any punishment that is imposed, is forfeited to Her Majesty and shall be disposed of as the Court may direct."*

7.2 Your attention is also directed to Sections 159 and 160 of the *Customs Act of Canada*, reading as follows:

A. Section 159 reads;

"Every person commits an offence who smuggles or attempts to smuggle into Canada, whether clandestinely or not, any goods subject to duties, or any goods the importation of which is prohibited, controlled or regulated by or pursuant to this or any other Act of Parliament"

B. Section 160 reads in part;

"Every person who contravenes or commits an offence under section 159;
Is guilty of an offence punishable on summary conviction and is liable to a fine of not more than two thousand dollars and not less than two hundred dollars or to imprisonment for a term not exceeding six months or to both fine and imprisonment;

OR

Is guilty of an indictable offence and is liable to a fine of not more than twenty-five thousand dollars and not less than two hundred dollars or to imprisonment for a term not exceeding five years or to both fine and imprisonment."

7.3 This is submitted for your information and guidance and you will note that the consent, connivance, aid or assistance of any railway employee in illegal transportation constitutes an offence for which a prison term is a efforts to prevent violation of the law and every facility should be given officers of the Government in their investigations.

7.4 If an employee has reason to believe that a shipment is falsely billed and contains contraband, although classified as some other commodity, he must immediately inform the Supervisor in charge, Police giving full particulars, including car number.

8.0 LAWS GOVERNING WILDLIFE

8.1 Under various Provincial laws and those governing National Parks, all wildlife are the property of the Crown. It is illegal for any person to remove or to be in the possession of wildlife or wildlife parts without proper authorization documents.
Do not remove any animal carcass from the right-of-way. However, if it is necessary for safety reasons, an animal carcass may be moved up to 15 feet off the grade.
Refer to Section 2, Item 5.2, for the reporting procedures when wildlife are injured or killed as a result of coming in contact with railway equipment.
Refer to Section 2, Item 5.1, for reporting leaking grain cars or grain spills observed on the right of way.

SECTION 4 – RADIO PROCEDURES

1.0 GENERAL INFORMATION

1.1 A railway radio communication system is one employing radio for the transmission of information between moving equipment/track units, between moving equipment/track units and a fixed point, between fixed points, and/or between employees provided with portable radios.

1.2 These instructions comply with Canadian Rail Operating Rules or Special Instructions.

1.3 Only authorized radio equipment may be used. Citizen band radios must not be used to direct train or engine movements, or the operation of track units.

1.4 Only authorized technicians are permitted to make technical adjustments to radio equipment.

1.5 No employee shall transmit any unnecessary, irrelevant or unidentified communication, nor utter any obscene, indecent or profane language via radio.

1.6 Employees must not transmit or cause to be transmitted any false or fraudulent distress signal, call or message, or knowingly interfere with or obstruct any radio communication.

1.7 Time table station columns will indicate:

- The channel to use to contact the Rail Traffic Controller or other parties;
- The channel to stand by on for two way conversations; and
- The channel to use in case of emergency.
- Procedures to follow in case of emergency will be found in time tables or special instructions.

2.0 OPERATION OF LOCOMOTIVE RADIO UNITS

The radio must be properly adjusted so that calls may be received by all occupants in the cab until the trip is completed.

3.0 OPERATION OF PORTABLE RADIOS

When a rechargeable type battery is used, every effort should be made to begin each tour of duty with a fully charged battery. Employees must not tamper with, add, or use unauthorized batteries in radios

4.0 TRANSMITTING TECHNIQUE

4.1 The efficient use of a radio depends on the speech and articulation of the sender. Speak all words plainly in a clear, distinct tone to prevent the running together of consecutive words. DO NOT SHOUT. Avoid any tendency to accent syllables artificially, or talk too rapidly. Speak slowly and clearly.

4.2 The following points should be kept in mind when using a radio:

POSITION OF MICROPHONE:
Microphone: should be angled at approximately 45 degrees, not more than 2 to 3 inches from the mouth of the sender. **SPEED:** Keep the rate constant, neither too fast nor too slow. Remember in many cases the person receiving your message has to write it down. **PITCH:** Remember, that high pitched voices transmit better than low pitched ones. **RHYTHM:** Preserve the rhythm of ordinary conversation. To separate words so that they do not run together, avoid the introduction of sound that does not belong such as "er" and "um." Attempt to maintain the pitch and rhythm of voice to the end of each sentence.

5.0 CALLING PROCEDURES

5.1 In the application of Rule 121 Positive Identification,
Trains and transfers will be identified as per the provisions of SI to Rule 134(a), (e.g. 6059 East, etc.).

5.2 The following are acceptable examples when a radio communication is initiated;

Example of train calling a train on the main track:

Initiating Responding
Example of a train on the main track calling a foreman:

(Railway) Foreman Brown, this is Engr. 6059 East, OVER."
(Railway) Engr. 6059 East, this is Foreman Brown."

Example of an RTC calling a foreign train:

"CP 6059 East, this is (Railway) RTC (Subdivision), OVER."
(Railway) RTC (Subdivision), this is Engr CP 6059 East."

5.3 Except as prescribed by CROR Rule 123, instructions and messages received by radio must be acknowledged or repeated to the sender by the person receiving them. If necessary, the receiving person shall request the sender to repeat or clarify the transmission. An acknowledgement of receipt must not be given until the receiving person is certain that the transmitted message or information has been completely and correctly received and understood.

5.4 A radio conversation must always be ended by both the receiving person and the sender transmitting his/her own name or identification, followed by the word "OUT".
Example:
- *"Foreman Brown...OUT."*
- *"Locomotive engineer 6059 East...OUT."*

6.0 EMERGENCY COMMUNICATION PROCEDURES

6.1 An emergency call and distress message shall be repeated at intervals until an answer is received. The intervals between repetitions of an emergency call and distress message shall be sufficiently long to allow time for employees who have received the message to reply.

6.2 Should it not be possible to initiate an emergency call on the channel designated by Special Instructions, any available channel should be used.

6.3 The RTC may designate another channel for emergency communication after an initial emergency call has been made on the designated channel.

7.0 CROR RULE 123.2

7.1 In the application of CROR Rule 123.2, the following is an acceptable example, after positive identification has been established:

Conductor
"Engine 6059 move backward five car lengths."
Locomotive Engineer
"*Engine 6059 move backward five car lengths."*
Conductor
"Engine 6059, three cars."
Locomotive Engineer
"Engine 6059, three cars."
Conductor
"Two cars."
Locomotive Engineer
"Two cars."
Conductor
"One car." (Need not repeat when less than 2 cars …)
"Half a car… 20 feet… 10 feet… etc."

7.2 In the event of failure of radio equipment, or when radio communication cannot be maintained during switching operations, the movement must be stopped and no further movement made until radio communication is restored or arrangements are made to use hand signals in lieu of radio.

8.0 PROCEDURE FOR CHANGING RADIO CHANNELS

8.1 Except as provided in item 8.2, when required to change radio channels during a tour of duty, each crew member must be advised of the intention to change and all crew members must change channels simultaneously.

8.2 At locations where time table indicates a radio channel change, radios should be switched to the next frequency progressively. Prior to entering a new territory;

- switch channel on the first radio sufficiently in advance;
- progressively, bring all radios to the next frequency;
- to ensure continuous monitoring, the last radio should be changed when the entire train is in the new standby channel territory.

8.3 As soon as possible after changing to the new channel, each radio must be tested to ensure all radios have been changed to the correct channel.

SECTION 5- EQUIPMENT INSPECTION

Note: In this section the word train also apply to transfer

1.0 INSPECTING SPECIAL DANGEROUS COMMODITIES

1.1 A train or transfer carrying one or more full carloads, container loads or trailer loads of SPECIAL dangerous commodities MUST, within one of the mileage shown by subdivision footnote at which this instruction applies:

- Perform a pull-by or a standing inspection,
- From the front of the train to and including 8 axles behind the last full carload, container loads or trailer loads of a SPECIAL dangerous commodity.

2.0 USE OF PORTABLE RADIOS WHEN MAKING TRAIN INSPECTION

When portable radios are available they must be carried by crew members when making train inspections.

3.0 PRE-DEPARTURE INSPECTION PROCEDURES (BY OTHER THAN A CERTIFIED CAR INSPECTOR)

3.1 Hazardous Conditions

At each location where a freight car is placed in a train and a Certified Car Inspector is not on duty for the purpose of inspecting freight cars, the freight car must, as a minimum requirement, be inspected for these hazardous conditions:

- Car body leaning or listing to the side,
- Car body sagging downward,
- Car body positioned improperly on the truck,
- Object dragging below the car body,
- Object extending from the side of the car body,
- Plug door open or any door out of guide,
- Broken or missing safety appliance (e.g. handhold, ladder, sill step),
- Insecure coupling,
- Brake that fails to release,
- Missing “end cap bolt” on a roller bearing,
- Overheated wheel or journal,
- Broken or cracked wheel,
- Any other apparent safety hazard likely to cause an accident or casualty before the train arrives at its destination,
- Lading leaking from a placarded dangerous goods car,
- Suspicious or dangerous objects, including Improvised Explosive Devices (IED’s),
- Obvious leakage or spillage from grain cars.

3.2 Performing the Pre-departure Inspection

- Inspect both sides of each car.
- Perform a standing inspection on both sides, or a standing inspection on one side, then a roll-by inspection on the other.
- The roll-by inspection must not exceed 5 MPH.

Note: A pre-departure inspection may be made before or after the car(s) is added to the train.

3.3 Hazardous Condition Found

If any hazardous condition is found during the pre-departure inspection, then:

- Report it to the proper authority and if safe to do so:
- Correct the condition, or
- Remove the defective car from the train, or
- Move the car to another location, taking whatever actions necessary to ensure the safe operation of the train and the safety of the employees (e.g., reduce speed).

3.4 Train Inspection Intervals

No train may be operated in excess of 60 miles, or move past 2 consecutive non-operational hot box detectors without having been inspected on each side of the entire train. These inspections must be performed by:

- Hot Box detectors; or
- Pull-by inspection by crew members of the train; or
- Passing train inspection by:
- Wayside employees, or
- Crew members of other trains.

Note: Passing train inspections must be conducted by 2 employees on opposite sides of the train, within 1 train length of each other. The inspection results must be conveyed to the train crew to be considered an inspection.

3.5 Locomotive Engineers Inspecting Passing Trains

In the application of CROR Rule 110 the Locomotive Engineer must complete a full service brake pipe reduction before vacating the cab of the locomotive. In the application of this instruction, the Locomotive engineer must remain in close proximity of the locomotive and on the same side.

4.0 CREW CHANGE PULL-BY INSPECTIONS

4.1 Trains operating WITHOUT a caboose must perform a crew change pull-by inspection if the train meets ANY of the following three conditions:

A. It is known or suspected that the train contains loads prone to shifting.

- Loads prone to shifting include:
  Lengthwise loads of pipe, timber, poles, metal rods or other similar material, that are not protected by end bulkhead to top of lading.

Note: Loads NOT prone to shifting include:

- Flat cars loaded with steel plates or machinery, and
- Bulkhead flats loaded with banded or packaged lumber which does not extend above the bulkhead by more than 50 percent.

B. The train contains one or more cars containing dangerous goods (including residue cars) for which an Emergency Response Assistance Plan (ERAP) is required as identified by consist.

Note: For cars lifted enroute, Compressed Waybill and/or Shipping Document will indicate an ERAP/ERP number if applicable

4.2 Trains entering Canada from the USA

All trains entering Canada from the United States must receive a pull-by inspection at the first crew change location encountered in Canada.

Note: Trains that receive a pull-by inspection at border locations comply with this instruction.

5.0 PULL-BY INSPECTION PROCEDURE

5.1 Performing pull-by inspection (for other than meeting the purposes of the air brake test and procedures)

Both sides of the train must be inspected.

Position a crew member (or other qualified person) on each side of the track close to the moving train.

If only one crew member is available, then a standing inspection or combination standing/pull-by inspection is permitted.

Movement must not exceed 15 MPH. Inspect for defects and dangerous conditions.

Positioned employees must inspect for defects and dangerous conditions, including indications of:

1. Sticking brakes,
2. Skidded wheels,
3. Damaged or derailed equipment, and
4. Any apparent condition deemed unsafe for continued movement.

5.2 Inspection results at crew change points.

At crew changes, the outbound crew must be given the results of the pull-by inspection:

- Verbally (in person, or by radio), or
- By the Crew information/ Brake status form (when the outbound crew does not take over control directly from the inbound crew).

Note: Whenever a train receives a pull-by or standing inspection – the name of the crew members, or any other employee, performing the inspection, and the side they are on- must be recorded on the Crew information /Brake status form.
If the outbound crew does not receive the inspection results, then an outbound pull-by inspection must be performed.

6.0 INSPECTION WHEN EQUIPMENT IS STOPPED ON A BRIDGE.

A. On a bridge without catwalks, where types of railway equipment permit, or where the bridge structure itself permits:
- Crews may use these to gain access to the trouble area or traverse the bridge;
- Employees must not put their personal safety in jeopardy;
- Employees must not walk on tops of cars with running boards removed.

B. Car(s) stopped on a bridge requiring replacement of air hoses or knuckles may be pulled off the bridge with brakes applied provided:
- Sufficient brakes on the remaining cars on the train can be released to permit movement without the use of excessive force.

C. Where car(s) stopped on a bridge have more serious defects, or where the train cannot be moved account insufficient brakes released;
- The RTC or Operating department must be contacted for assistance.

7.0 DEFECT SUSPECTED - IMPORTANT

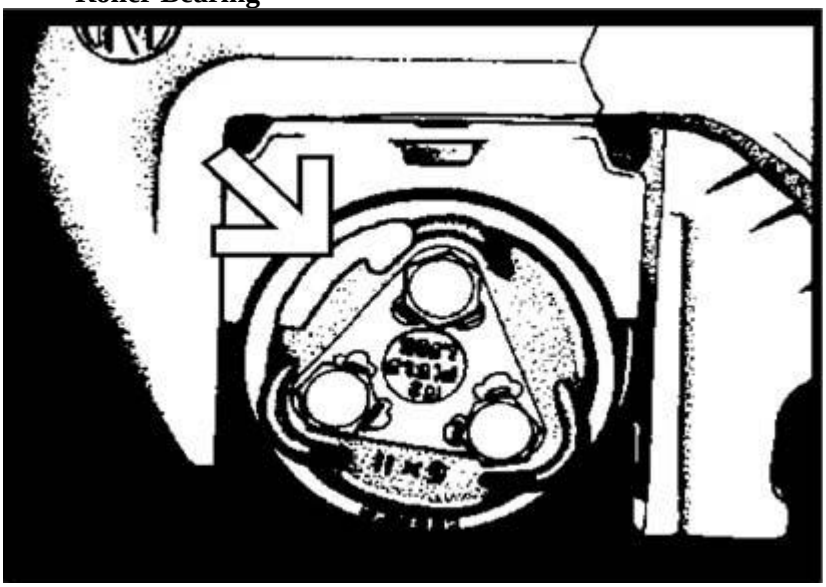
When, an overheated bearing or other defect is suspected :
- Stop the train immediately, and
- Make a close inspection.

8.0 OVERHEATED BEARINGS

8.1 Testing for Overheated Bearings

Roller bearings - apply a temperature indicating crayon to the face or side of the outer ring (cup) of the roller bearing.

Roller Bearing



8.2 Bearing Inspection Using the Back of the Bare Hand and Temperature Indicating Crayon (150ºF):

CAUTION: When using the back of the hand, **do not** physically touch the bearing housing if excessive heat is felt as your hand approaches the bearing housing or axle.

A. Required Equipment:

- All crew members, other than locomotive engineers, of each movement must be in possession of a temperature indicating crayon (150ºF).

B. Crayon Application:

- Use crayon as per illustrations in item 8.1
- Crayon may not melt at or below freezing.

C. Crayon Results:

- Wax-like, shiny smear indicates overheated bearing.
- Thin, colored line indicates the metal is not overheated (i.e., metal is below the temperature indicated on the crayon).

D. Inspection Procedure:

- Inspection for suspected overheating must include feeling the roller bearing housing using the back of the bare hand and use of the temperature indicating crayon.
- When using the temperature crayon, the employee performing the duties must mark the bearing housing and end bolt(s) with sufficient force with the crayon to make an identifiable mark to indicate that it has been checked. (8.1).
- In all cases, inspection must be as instructed and requires an inspection of 8 axles in both directions, both sides from a defect that is found and 16 axles in both direction, both sides if no **defect is found.**

8.3 Overheated Bearing Confirmed

If a bearing has overheated, then:

- Set-out the car at the first available location, or location designated by the Time Table,
- Complete defect report, and notify the RTC.

9.0 WHEEL DEFECTS; OVERHEATED, HOT, SKIDDED, AND SHELLED

9.1 Overheated Wheels (Pre-departure Inspection/En route)

This applies to trains detecting hot wheels en route, or at any location where a freight car is to be placed in a train and a certified car inspector is not on duty to conduct inspections.

Safety Defect:

- Heat discoloration on any type of wheel which extends more than 4 inches from the rim into the plate, on both the front face and back face.

Actions to be taken:

- Set off car with safety defect at first available location;
- Do not place a car with a safety defect in the train;
- Complete defect report, and notify RTC.

9.2 Hot Wheels (En route)

A. Detection/Description:

- Trains required to stop and inspect for a hot wheel condition;
- Usually caused by sticking brakes or set hand brakes.

B. Safety Defect:

- Brakes that cannot be released.

C. Actions to be taken:
1. Check for sticking air brakes and set hand brakes. (Refer to item 10.0, Sticking Brakes, for cause and release of sticking brakes.) 2. If the brakes are successfully released, then perform a pull-by inspection of the car to ensure: • Wheels are turning freely and • All skids and shells are detected. 3. If the brakes cannot be released, then the car must be set off at the first available location. 4. Complete defect report notify RTC.

9.3 Skidded and Shelled Wheels

A. Detection/Description:

- Detected by observing or being advised of pounding wheels.
- Skidded wheel - a wheel that has flat spots.

Shelled Wheel

- Shelled wheel - a wheel tread defect where portions of the tread surface are missing.

Skidded Wheel

B. Safety Defects:

- A skid measuring more than 2 ½ inches in length.
- Two adjoining skids each measuring more than 2 inches in length.
- A shell spot that is more than 1 ¼ inches in width and 1 ½ inches in length.

C. Actions to be taken:
1. Proceed at 10 MPH to the first location where an inspection for skidded and shelled wheels can be made. 2. Closely inspect for skids and shell spots, measuring to determine if safety defects exist. 3. Check for sticking air brakes and set hand brakes. (Refer to item 10.0, Sticking Brakes, for cause and release of sticking brakes.) 4. If the brakes are released, then perform a pull-by inspection of the car to ensure: • wheels are turning freely, and • all skids and shells are detected. 5. If any safety defects exist, then the car must be set off at the first available location. 6. Complete defect report, and notify RTC.

10.0 STICKING BRAKES

Sticking brakes refers to brake shoes that are against the wheel (applied position) when they should be clear of the wheel (released position).

10.1 Indications of sticking brakes:

- **A.** A defect indicated by wayside inspection.
- **B.** Brake cylinder piston in applied position.
- **C.** Hand brake chain tight.
- **D.** Noise of brake shoes against rotating wheels.
- **E.** Odor of hot metal or burning oil.
- **F.** Smoke, sparks or fire around wheels and brake shoes.
- **G.** Sliding wheels.

10.2 Causes of sticking brakes:

- **A.** An insufficient brake pipe reduction to ensure proper release.
- **B.** Hand brake not fully released.
- **C.** Retaining valve not in direct exhaust position.
- **D.** Defective automatic slack adjuster.
- **E.** Binding or fouled brake rigging.
- **F.** Overcharged air brake systems.
- **G.** Excessive brake pipe leakage.
- **H.** Defective control valve.

10.3 To release a suspected sticking brake:

- **A.** Ensure the hand brake is fully released.
- **B.** Ensure the retainer is set to direct exhaust.
- **C.** If the brake cylinder is in the applied position, then request the locomotive engineer to make a full service brake application and then release.
  - If the brakes release on the affected car, then do NOT cut out the car brakes. Proceed.
  - If the brakes do not release on the affected car, then cut out the car brakes and bleed the air system.
- **D.** If the brake cylinder is in the release position, and the brake rigging indicates the brake is applied, then attempt to release by applying the hand brake fully and releasing several times.
  - If sticking continues the car must be set out at the nearest available point.

11.0 CUTTING OUT CAR AIR BRAKES

Car air brakes must NOT be cut out except when:

- Any portion of the rigging has failed.
- There is a continual blow at the control valve exhaust or at the pressure retaining valve.
- When pipes are broken beyond the branch pipe cut out cock.

Note: When a brake is cut out at the branch pipe, the combined auxiliary and emergency reservoirs must be completely drained.

12.0 INSPECTION REQUIRED FOLLOWING AN EMERGENCY BRAKE APPLICATION WHILE MOVING

12.1 Passenger Trains Stopped by an Emergency Brake Application

Before the movement resumes:

- Each car must be inspected to ensure all brakes are released,
- A pull-by inspection of the train must also be made - without exception.

12.2 All other trains stopped by an Emergency Brake Application

A. Complete a pull-by inspection (on at least one side of the train), watching in particular for:

- skidded wheels,
- applied brakes, and
- evidence of derailment.

If a pull-by inspection cannot be made due to terrain, proceed at 10 MPH speed to the first location where a pull-by inspection can be made.

B. If there is evidence of derailed equipment or unusual train action, then stop the train immediately and determine the cause.

C. Record, on the **Crew information/Brake status form**, the:

- location the emergency brake application occurred, and
- results of the pull-by inspection.

Exception: A pull-by inspection of the entire train is NOT required if ALL of the following conditions are met:

1. A pull-by inspection was performed for a previous emergency brake application and documented on the Crew information/brake status form;
2. Train tonnage is:
   - less than 6,000 tons; or
   - 6,000 tons or more, and each car (except a caboose marshalled as the last car) exceeds 100 gross tons.
3. Speed at time of the emergency brake application was greater than 25 MPH;
4. The emergency brake application occurred within 15 seconds of initiating a service brake application;
5. No unusual slack action was noted during the stop;
6. When the brakes are released, the air flow indicator and rear car brake pipe pressure readings indicate no loss of air pressure; and
7. The train is NOT carrying SPECIAL dangerous commodities.
   - If conditions 1 through 6 have been met, **but** the train is carrying SPECIAL dangerous commodities, then complete a pull-by inspection from the leading locomotive to the last car containing SPECIAL dangerous commodities.

12.3 Employees Performing Emergency Brake Application Pull-by Inspection

This pull-by inspection may be made by:

- Crew members of the train itself;
- Crew members of a stopped train;
- Other wayside employees.

The person making the inspection must have a portable radio and be informed of the situation.

13.0 REPORTING DETENTION OR DEFECTS

13.1 The conductor must complete the defect report when:

- A train is stopped for unscheduled inspection,
- A train crew makes repairs enroute to any car (e.g. replacing knuckles, air hoses, etc.),
- Brakes are cut out,
- Any wayside (HBD) detector information is provided, except "No Alarm"
- A wayside (HBD) detector appears to be operative

13.2 Defect report form.

A. Conductor must:

- Transmit defect report information to the RTC verbally, at first opportunity:
- car or engine number of the defective or suspected defective equipment;
- condition found;
- type of defective bearing (e.g., plain or roller);
- action taken.
- Leave a copy on the train (for the relieving conductor at run-through terminals, the Mechanical Officer at final destination).
- Fax the original copy of the defect report form to the supervisor.

B. RTC must advise the mechanical department of all details of defective equipment, including:

- Set off location,
- Nature of temporary repairs, and
- Other actions taken (e.g., brakes cut out).

14.0 CREW INFORMATION/BRAKE STATUS FORM

The Crew information / brake status form provides each relieving crew with information regarding the condition of the train, including:

- Wayside (HBD) detector information and details of inspections, including whether a defect was found;
- Emergency brake application inspection report;
- Results of inbound train inspection;
- Location of all hand brakes applied;
- Details of any brakes cut out (including reservoirs drained);
- Details of any defective cars being moved in the train (including actions taken to move them safely);
- Locomotive defects.

A copy of the Crew information/brake status form remains on the train destination.

15.0 WAYSIDE (HOT BOX) DETECTOR AND WILD INSTRUCTIONS

15.1 CROR Rules 110 and 111

These instructions are in addition to the requirements of CROR Rules 110 and 111.

15.2 Definition – "Train"

Where the term "train" appears herein, it also applies to a transfer and/or engine.

16.0 WAYSIDE DETECTOR (HBD) EQUIPMENT DESCRIPTION

16.1 Wayside Hot Box Detectors (HBD) Description

HBD's operate for trains in either direction on the track in which they are installed.
HBD's detect the following:

- **Dragging Equipment:** Detects equipment dragging between or near the rails.
  Hot Box: Detects overheated journals by measuring the temperature of the heat radiated from the journal box. Hot Box alarms can also be caused by overheated traction motor suspension bearings and sticking brakes.
- **Hot Wheel:** Detects sticking or dragging brakes, and set hand brakes by measuring the temperature of the heat radiated from the wheel rim.
- **Temperature:** Measure outside temperature and report it after the entire train passes the HBD. Temperature is used in the application of Hot and Cold Weather Temperature Speed Zones.

Some HBD's also detect:

- **Dimensional Shipment**: Detect shipments exceeding acceptable dimensions. A dimensional shipment may be loaded or empty, i.e. leaning car body, sagging car body, improper positioning on trucks or shifted load, etc. When the train is passing, a tone is transmitted without an announcement. The final results message specifies dimensional equipment. Time table footnotes indicate locations equipped with dimensional shipment detectors.

Note: Double asterisks (**) mean; when identified, wayside / hot box detector identified in the Time Table subdivision footnotes, refer to item 25.0. (HBD mandatory inspections)

17.0 WAYSIDE DETECTOR (HBD) TALKER DESCRIPTION

HBD's have a "talker" that transmits, by train radio, a recorded voice message of alarm data. Alarms are announced as the train passes, and are repeated after the entire train passes the HBD location.

There are different models of HBD's in use GWCI, the older systems will repeat the results message twice while the new model only announces the result message once, and a DTMF code must be entered to have the HBD repeat the message. DTMF codes for each HBD will be indicated in the Time Table or by Special Instruction.

Hot box detectors equipped with a bilingual talker transmit a message in French and repeat the message in English.

17.1 No Alarms – Final Results Messages

If there are no alarms the talker transmits one of the following messages immediately after the rear of the train passes the HBD.

- **Older Model HBD:** After a two second pause, the message is repeated once, followed by "Message complete; detector out."

- **New model HBD:** No automatic repeat and no post message. DTMF code may be used to repeat last message. Repeated message is preceded by the word "Repeat". ("Message complete; detector out" will not be announced on the repeat.)

17.2 Alarm Announcements While Passing HBD

As the train passes the HBD, the talker transmits a one second alert tone and announcement for each alarm. The following table summarizes the announcements.

Alarm Announcements while Passing HBD			
Situation	**Older Model HBD Announcement**	**New model HBD Announcement**	**Repeat**
Dragging Equipment	Tone + "dragging equipment"	Tone + "dragging equipment"	None
Hot Box	Tone + "hot box"	Tone + "hot box"	None
Hot Wheel	Tone + "hot wheel"	Tone + "hot wheel"	None
Dimensional Shipment	Tone + "hot wheel"	Tone + "Dimensional Shipment"	None

17.3 Alarms - Final Results Message

If there are alarms, the talker transmits a two-second tone followed by a final results message. This message is in addition to the alarm announcements and tones while a defect passes the HBD.

The final results message lists defects sequentially, starting with the defect nearest the head-end. Location is given by axle number from the front of the train, including locomotive axles.

- **Older Model HBD**: After a two second pause, the message is repeated once, followed by "Message complete; detector out."

- **New model HBD**: No automatic repeat and no post message. DTMF code may be used to repeat last message. Repeated message is preceded by the word "Repeat". ("Message complete; detector out" will not be announced on the repeat.)

18.0 PROCEDURES – APPROACHING AND PASSING OVER WAYSIDE DETECTOR'S (HBDS)

18.1 Approaching HBDs

When approaching a HBD		
Step	**Responsible Employee(s)**	**Action**
1	Locomotive engineer	Brakes – Avoid prolonged use of train brakes where practicable, until the entire train passes the HBD. (This prevents false hot wheel and hot box alarms.)
2	Crew members	Radio - Ensure the train radio is on the correct standby channel.

18.2 Passing over HBDs

When the train reaches the HBD…		
Step	**Step Responsible Employee(s)**	**Action**
1	Locomotive engineer	DMD (Distance Measuring Device) – Set the DMD as soon as the movement reaches the HBD location. (Distance helps identify defect location and identify when to expect the final results message. Axle count is unavailable until the rear of the train passes over the HBD.)
2	Crew members	Radio – Avoid using the radio system until after the final results message
3	Crew members	Verbal Communication – Confirm, while passing the HBD, any defects announced.

19.0 WAYSIDE DETECTOR (HBD) ALARMS AND PROCEDURES SUMMARY

No Alarms: If the final results message reports "no alarms," then proceed without an inspection.

Note: If there was an announcement indicating "Hot box", but the final results report "no alarms", then resume speed and proceed without an inspection.

Use this table to identify the appropriate HBD procedure for various events.

Events/ Defect		Procedure
A	Dragging equipment announced while passing HBD.	See Item 20.1
B	Hot box announced while passing HBD.	See Item 20.2
C	Hot wheel announced while passing HBD.	See Item 20.3
D	Alert tone only while passing HBD.	If this is a dimensional shipment detector, then see Item 20.4
E	Final results message reports "system not working."	a) If any announcement and/or alert tones were heard, then inspect the entire movement following the procedures in items 20.1, 20.2, 20.3 and 20.4 as applicable. b) If no announcement and/or alert tones are heard, then inspect the movement only if carrying SPECIAL dangerous and the HBD is noted by ** in the time table. See item 25.0.
F	Speed is 8 MPH or less passing an operating HBD and final results message reports a defect.	Inspect the entire movement following the procedures in items 20.1, 20.2, 20.3 and 20.4 as applicable.
G	Speed is 8 MPH or less passing an operating HBD and final results message reports NO defect.	Inspect the movement only if carrying SPECIAL dangerous and the HBD is noted by ** in the time table. See item 25.0.
H	Defect announced while passing the HBD, but message unclear or in doubt.	Reduce to 10 MPH and listen carefully to the final announcement.
I	Final results message reports defect, but the location is not heard or is in doubt.	Inspect the entire movement following the procedures in items 20.1, 20.2, 20.3 and 20.4 as applicable.

J	No final results message received.	a) If any announcement and/or alert tones were heard, then inspect the entire movement following the procedures in items 20.1, 20.2, 20.3 and 20.4 as applicable. b) If no announcement and/or alert tones are heard, then inspect the movement only if carrying SPECIAL dangerous and the HBD is noted by ** in the time table. See item 25.0.
K	HBD withdrawn from service by GBO/DOB or by Operating Bulletin.	No inspection unless the movement is carrying SPECIAL dangerous and the HBD is noted by ** in the time table. See item 25.0.
L	Incorrect axle count and the final results message reports No defects.	• No inspection unless the movement is carrying SPECIAL dangerous and the HBD is noted by ** in the time table. See item 25.0. • See item 22.0, Incorrect Axle Count.

20.0 ALARM PROCEDURES

20.1 Dragging Equipment

When an alert tone is followed by the announcement "dragging equipment"…	
Step	**Action**
1	Note the DMD reading.
2	Stop the train immediately using good train handling practices.
3	Perform a stationary train inspection. a) If the entire train passes the HBD location before stopping, then locate the defect using the axle count as per item 21.1. b) If the train is stopped before the entire movement passes the HBD, then locate the defect using the noted DMD distance as per item 21.2
Note	Do not pull ahead to a crew member to perform the inspection, unless it is unsafe to walk back. If it is unsafe to walk back, then pull ahead not exceeding 10 MPH to inspect for defect. If the train must be pulled ahead over a facing point switch, do not exceed 5 MPH.

20.2 Hot Box

When an alert tone is followed by the announcement "hot box"…	
Step	**Action**
1	Note the DMD reading.
2	Immediately reduce to 10 MPH using throttle modulation and dynamic brake, and without using the air brakes, if possible. • If a subsequent announcement states "dragging equipment," then stop immediately and follow the procedure for dragging equipment.
3	Observe the train for defects. If the defect is visible from the cab of the locomotive, then stop the train immediately and inspect. (See item 21.2, Locating Defects using Measured Distance.)
4	When the rear of the train has passed the HBD and the final results messages have been reported, stop the train, making every reasonable effort to stop before a facing point switch. • Note: If an inspection point is designated, then proceed at 10 MPH (without stopping) to the inspection point. • Exception: if the final results message reports more than six alarms, stop the train immediately to perform the inspection.
Note	If the final results message reports "No Alarms" then resume speed and proceed without an inspection. (The final message corrects for inaccurate readings of converted plain bearing journals).
5	Perform a stationary train inspection. a) Locate the defect using the axle count as per item 21.1. b) See item 8.0, to test for overheated bearings.
Note	Do not pull ahead to a crew member to perform the inspection, unless it is unsafe to walk back. If it is unsafe to walk back, then pull ahead not exceeding 10 MPH to inspect for defect. If the train must be pulled ahead over a facing point switch, do not exceed 5 MPH.

20.3 Hot wheel

When an alert tone is followed by the announcement "hot wheel"…	
Step	**Action**
1	Note the DMD reading.
2	Immediately reduce to 10 MPH using throttle modulation and dynamic brake, and without using the air brakes, if possible. • If a subsequent announcement states "dragging equipment" or "hot box," then follow the procedure for that alarm.
3	Observe the train for defects. If the defect is visible from the cab of the locomotive, then stop the train immediately and inspect. (See item 21.2, Locating Defects using Measured Distance.)
4	When the rear of the movement has passed the HBD and the final results messages have been reported: • allow a crew member to detrain, and • pull the train ahead, not exceeding 10 MPH, to the hot wheel defect. Exception: If an inspection point is designated, then proceed to the inspection point, not exceeding 10 MPH Slow Speed and perform the inspection. **Note:** If the final results message reports more than six alarms, stop the movement immediately and perform a stationary inspection. It is not acceptable to pull the movement ahead to the defects.
5	Perform an inspection. a) Locate the defect using the axle count as per item 21.1. b) To inspect for the hot wheels, see item 9.2, Hot Wheels (En route).

20.4 Dimensional Shipment

This instruction applies only to HBDs equipped with dimensional shipment detectors, as listed in the time table subdivision footnotes.

When an alert tone is heard without an announcement…	
Step	**Action**
1	Note the DMD reading.
2	Immediately reduce to 10 MPH using throttle modulation and dynamic brake, and without using the air brakes, if possible. • If a subsequent announcement states "dragging equipment" or "hot box," then follow the procedure for that alarm.
3	Observe the train for defects. If the defect is visible from the cab of the locomotive, then stop the movement immediately and inspect. (See item 21.2, Locating Defects using Measured Distance.)
4	When the rear of the movement has passed the HBD and the final results messages have been reported: • allow a crew member to detrain, and • pull the train ahead, not exceeding 10 MPH, to the hot wheel defect. Exception: If an inspection point is designated, then proceed to the inspection point, not exceeding 10 MPH Speed and perform the inspection.
Note	If the final results message reports more than six alarms, stop the train immediately and perform a stationary inspection. It is not acceptable to pull the train ahead to the defects.

21.0 PROCEDURES FOR LOCATING DEFECTS

21.1 Locating Defects using Axle Count

When available, use axle count to locate defects (rather than distance measured using the DMD).

Step	**Action**
1	Note the location of the defects stated in the final results message.
2	**Locate the defects** by counting the actual axles from the front of the movement, beginning with the lead locomotive. • Ensure cars and locomotives with other than four axles are **not** counted as having four axles.
3	**Inspect the train** in the specified location. • If a defect **is found** at or near the indicated location, then inspect both sides of the train for **8 axles in each direction** from the suspected defect. (This helps verify that the defect has been correctly identified.) • If a defect is **not found** at the indicated location, then inspect both sides of the train for **16 axles in each direction** from the indicated location.
4	If any part of the movement passed the HBD at **8 mph or less**, then inspect the entire train for additional defects.
5	**Notify the RTC** of the inspection results and take appropriate action (e.g., make repairs, set off car, etc.).
6	Complete the **reporting requirements**. See: • item 13.0, Reporting Detention or Defects, and • item 14.0, Crew information / Brake status form.
7	If the defect was a suspected **hot box** and **no defect was found**, see item 23.0, No Defect Found - Hot Box.
Note	In some cases, alarms from hot wheel detectors and dragging equipment detectors can only indicate the general vicinity of the alarm, rather than an exact location.

21.2 Locating Defects using Measured Distance

When axle count is unavailable, locate defects using DMD distance measured.

Step	Action
1	Determine the approximate location of the defect by using the: • noted **DMD** distance, and • **train consist or movement information** (e.g., train length 2000 foot indicators, etc.)
2	**Inspect** the movement at the measured location. • If a defect **is found** at or near the indicated location, then inspect both sides of the train for **8 axles in each direction** from the suspected defect. (This helps verify that the defect has been correctly identified.) • If a defect is **not found** at the indicated location, then inspect both sides of the train for **16 axles in each direction** from the indicated location.
3	Inspect the entire train for additional defects.
4	**Notify the RTC** of the inspection results and take appropriate action (e.g., make repairs, set off car, etc.).
5	Complete the **reporting requirements**. See: • item 13.0, Reporting Detention or Defects, and • item 14.0, Crew information / Brake status form.
6	If the defect was a suspected **hot box** and **no defect was found**, see item 23.0, No Defect Found - Hot Box.

22.0 INCORRECT AXLE COUNT

When a HBD reports an incorrect Axle Count

Step	Action
1	Advise the RTC of the incorrect axle count and arrange to verify train consist or journal information. • If the train is carrying an additional car or cars and any of these are dangerous goods cars, then arrange for a radio waybill (section 13, item 4.2). • If any of these additional cars are SPECIAL dangerous, then the inspection requirements at HBDs indicated by a double asterisk (**) in the time table apply (item 25.0).
2	Use the defect Form (or any other appropriate form) to record the correct information.
3	If the train has **placarded cars**, then update the train consist to show the correct position of all placarded cars. (See section 13 item 4.0.)
4	If the train has SPECIAL dangerous, then see item 25.0.
5	Communicate the correct information to the outbound conductor, and RTC.

23.0 NO DEFECT FOUND - HOT BOX

Whenever a car or engine is identified by an alarm for the defect "hot box" at the same axle location twice within 75 miles and there is no apparent reason for the alarms, that car or engine must be set off at the designated set-off point.

Important: At crew-change points, leave the relieving crew a copy of defect form and Crew information / Brake status form for any car or engine remaining on the movement that was identified by a "hot box" alarm within 75 miles of the crew change point.

24.0 PASSING OCCUPIED SERVICE EQUIPMENT CARS

In the event that a car or engine is identified by a "hot box" alarm and no defect is found;
Such train or engine is restricted to a maximum of 10 MPH while passing occupied service equipment cars as identified by GBO, until passing the next operational detector with no "hot box" alarm.

25.0 SPECIAL DANGEROUS AT DOUBLE ASTERISK (**) OR FOR GATEWAY INSPECTION

HBD - Mandatory Inspection

HBD identified in the time table by a double asterisk (**) indicate mandatory inspection points for trains carrying SPECIAL dangerous commodities. **Note:** the HBD must report a complete and accurate inspection.

A. If a movement carrying SPECIAL dangerous commodities passes a HBD identified with a double asterisk and:
- The HBD is withdrawn from service,
- The HBD reports "System Not Repeat Not Working" or is otherwise known to be inoperative,
- Any part of the movement passes the HBD at 8 MPH or less,
- No message is received, or
- The HBD reports incorrect axle count and system reports No alarms then inspect the train within one mile of the mileage shown in the subdivision footnotes.

B. Perform the inspection:
- On both sides,
- From the front of the train to and including eight axles behind the last full carload, container load, or trailer load of a SPECIAL dangerous commodity,
- At a speed not exceeding 5 MPH.

C. The inspection can be performed by:
- Mechanical department inspectors,
- Crews of standing movements,
- A pull-by inspection by crew members, or
- A standing inspection.

26.0 REPORTING DEFECTIVE HBDS

A. Notify the RTC when a HBD:
- Transmits a message to "inspect the entire movement;"
- Does not transmit any messages;
- Transmits an improper message;
- Transmits a message difficult to hear or understand;
- Transmits the message "system not repeat not working;"
- Total axle count does not appear to be correct; or
- Reports a defect, but upon train inspection there is no defect found.

B. Include appropriate details such as:
- HBD location,
- defect axle number,
- suspect car number,
- train direction,
- side of the movement, and
- type of defect reported by the HBD.

C. The RTC must report this information to the appropriate S&C.

27.0 HOT AND COLD WEATHER TEMPERATURE SPEED ZONES

Note: Cold Weather Temperature Speeds do not apply to passenger trains.

A. During extreme hot and cold weather, movements are governed by specific speed restrictions. The speed restrictions / zones, and specific hot & cold temperature ranges are specified by GBO and/or Summary Bulletin (SB).
- When specific whole miles are indicated in the GBO/SB, the speed restrictions only apply between the mileages stated.
- The HBD temperature announcement prior to the mileages stated, or as determined by thermometer, will govern speed until the next HBD transmission.
- When no specific mileages are indicated in the GBO/SB, the speed restriction applies to the entire subdivision, unless or until otherwise indicated.

B. The conductor must:
1. Record the temperature on the Crew information / Brake status form (Other important information to subsequent crews section).
2. Advise the RTC when a Hot or Cold weather speed restriction goes into effect and when it is terminated
3. Transfer this information to the relieving crew, when applicable.

C. When leaving an initial station or crew change point while extreme Hot or Cold weather temperature is suspected, determine the outside ambient temperature:
- Using an outside thermometer, or
- As indicated on the Crew information / brake status form.

If in doubt as to the outside ambient temperature, the speed restriction applies.

28.0 WHEEL IMPACT LOAD DETECTORS (WILD)

Wheel Impact Load Detectors (WILD) measure excessive wheel impact on rail and identify defective cars using AEI car tag IDs. The WILD transmits the information to a central location. Train crews do **not** hear a tone or a message. When a defective car is identified, the RTC relays instructions to the crew (e.g., speed restriction, set off location).

It is important to set off the car specified by the RTC, because serious defects may not be heard, visible, or otherwise identifiable by train crews. (e.g., A wheel out of round, with no associated sound, may create a greater rail impact than a skidded wheel that is audible.)

29.0 BRAKE PIPE RUN-AROUND HOSE

29.1 Mechanical Services Responsibility

When a brake pipe run-around hose is applied to a car, the Mechanical Services employee in charge must:

A. Secure the uncoupling levers and render them in-operative.

B. Arrange to have an appropriate message generated on the train consist advising train crews that the applicable car cannot be uncoupled from an adjacent car account run-around hose applied.

For example, the message would say:

****

WARNING DO NOT UNCOUPLE FROM CAR CP 123456 ACCOUNT BRAKE PIPE RUNAROUND HOSE APPLIED. UNCOUPLING LEVERS RENDERED INOPERATIVE

****

29.2 Conductor Record Keeping

The conductor must record this information on the Crew information / brake Status form or other appropriate form for the outbound train crew and at the car's destination, advise the Supervisor responsible.

29.3 Handling Restrictions

A. Non-sensitive traffic: Set off the car for repair at the next repair point reached enroute to destination.

B. Cars with brake pipe run-around hose are captive and must not interchange with another railway;

29.4 Destination or Repair Point - Car Setoff

1. Before uncoupling brake pipe run-around hose gladhands, ensure the brake pipe pressure is 0 psi.
   - Trains equipped with an SBU - The locomotive engineer must activate the TIBS emergency feature.
   - Trains **not** equipped with an SBU - The locomotive engineer must make an emergency brake application using the automatic brake valve.
2. Part brake pipe glad hands by hand. It is prohibited to "pull the pin" and allow the hoses to part by car/locomotive movement.
3. After hoses are parted, attach any excess length of run-around hose securely to the car body.
4. Advise the responsible supervisor that the brake pipe run-around hose is no longer in use.

SECTION 6- AIR BRAKE TEST AND PROCEDURES

1.0 GENERAL INFORMATION

1.1 Purpose

These test procedures are intended to ensure the safe operation of brakes on all locomotives, freight trains, and passenger trains operating in Canada. These instructions are in compliance with *Transport Canada's Railway Freight and Passenger Train Brake Rules*.

1.2 Responsibility

Unless otherwise specified, the conductor and/or locomotive engineer are responsible for determining that the required brake test has been completed prior to departure.

1.3 Observe Locomotive Gauges

Brakes will be operated from the lead locomotive.
All air gauges and displays should be observed with sufficient frequency to know that pressures are as required. Should air flow and/or brake pipe gradient increase and continue beyond the limits established in the test procedures, the train crew must take corrective action.

1.4 Definitions

"automatic brake handle" - the handle, push/pull button, rotary knob or other device used to control the application and release of the automatic brake.

"block of cars" means two (2) or more cars that have previously received a No.1 or No.1A brake test, as a solid coupled block, for which a record (Brake Status) is available.

"block swap" means the addition to a train of a maximum of two (2) solid coupled block(s) of cars that have previously received a No.1brake test.

"brakes" means pneumatic (air) or electronically controlled pneumatic (ECP) brake systems.

"calibrated" - an indication on the Air Flow Indicator at a position that corresponds to a flow of air into the brake pipe of 60 cubic feet per minute (cfm).

"certified car inspector" - a mechanical services employee who has been trained and certified to inspect and repair car brake equipment.

"continuity" - having the capability to transmit a brake signal between the leading locomotive and the rear of the last piece of equipment of a train.

"integrity" - having the unimpaired capability to supply air to the rear of the last piece of equipment of a train.

"locomotive" - any on-track equipment intended for propulsion and/or control of freight, passenger, or service equipment and includes locomotives coupled in a consist for multiple operation.

"operative" - the brakes on a car or locomotive apply and release and are in suitable condition to retard and stop that equipment.

"person in charge" - a person appointed by the Company to ensure the safe conduct of a railway operation, and who is certified according to the appropriate Transport Canada Rules.

"qualified person" - a person who has the knowledge, training, and experience to perform a specific duty safely and properly. Train crews are qualified to perform certain brake tests and to perform pre-departure and pull-by inspections.

"safety inspection" - a stationary examination of a locomotive or car for safety defects by a person who is certified or qualified according to the appropriate Transport Canada Rules, to verify that it may move safely or to identify defects which require correction.

"safety inspection location" - a location designated by the Company, and recorded with Transport Canada, where persons are employed for the purpose of performing safety inspections on cars and/or locomotives.

"terminal area" - a location that includes one or more yards together with the tracks connecting the yard or yards and industries within that area.

"Positive Reduction": an application of the train brakes creating a minimum of a 6 PSI brake pipe reduction in the rear car as indicated on the IDU.

"Positive Release": a release of the train brakes creating a minimum of a 3 PSI. increase in the brake pipe of the rear car as indicated on the IDU

"Full Service Application": brake pipe reduction of at least 25 PSI.

2.0 LOCOMOTIVE BRAKE TEST

2.1 Perform a locomotive air brake test when:

- A locomotive has been:
  - placed into service after maintenance,
  - repaired,
  - altered by adding a locomotive, setting off a locomotive from the middle of the consist, or changing operating ends. (A locomotive brake test is not required when setting off the trailing locomotive(s) in a consist.)

A locomotive engineer takes charge of a locomotive, except when changing off with another locomotive engineer, or as provided in 2.2 below.

2.2 Locomotive Brake Test Information

If locomotive brake tests are performed by qualified persons other than the locomotive engineer, then prior to departure, the locomotive engineer must confirm the brake test was completed by obtaining the results:

- in writing (on the appropriate form),
- in person, or by radio from a person who has immediate access to the test results.

If the results of the brake test are made available to the locomotive engineer, and if the locomotive has not been placed in active service, then another brake test is NOT required, regardless of time elapsed. If the results of the brake test are NOT made available, then the locomotive engineer must perform the brake test.

2.3 Locomotive Brake Test Procedure

1. Ensure the locomotive is protected from unintended movement.
2. Place the automatic brake handle in the release position for at least 2 minutes, to ensure the locomotive air brake system is sufficiently charged.
3. Fully release the independent brakes.
4. Make a 15 psi brake pipe reduction and release the locomotive brakes by depressing the independent brake handle (bail) for at least 5 seconds for each locomotive in the consist.
5. Make a further brake pipe reduction (Full Service) and then release the automatic brake
6. Fully apply the independent brakes.
7. Test the operation and recovery of the Safety Control System, except when adding a trailing locomotive(s).

Note: A qualified person must be positioned on the ground to observe that all brake pistons extend and retract as intended on the locomotives being tested.

2.4 Distributed Power (Distr Pwr): Remote Locomotive Air Brakes

To verify the brakes on the remote consist(s) are functioning as intended, observe the decrease and increase of the remote consist(s) brake cylinder pressure on the controlling locomotive's Distr Pwr screen. It is not necessary for a qualified person to be positioned at the remote consist(s) to observe brake pistons.

3.0 RSC (SAFETY CONTROL SYSTEM)

3.1 Locomotive Safety Control System and Test Procedure

Every controlling locomotive must be equipped with an operative safety control system capable of initiating a full service brake application and removing all tractive effort in the event that the locomotive engineer becomes inattentive or incapacitated.

A controlling locomotive must be equipped with a reset safety control (RSC).

Test Procedure

1. Ensure the locomotive is protected from unintended movement.
2. Ensure the safety control valve or switch is cut-IN and sealed.
3. Initiate a penalty brake application by placing the automatic and independent brake handles in release position.
4. Ensure the audible alarm and warning lights (RSC) or warning whistle (safety control foot pedal) is functioning.
5. Ensure the PC, PCS, or Power Off indicator light illuminates.
6. Ensure equalizing reservoir pressure reduces to zero.
7. Recover Penalty brake application.

3.2 Movement with a Defective Safety Control System: Road Locomotives

A movement must not depart an initial terminal or regular crew change location with a defective safety control system on the controlling locomotive.

Note: The Safety Control System on a locomotive is considered defective, when the activation of the RSC fails to initiate a penalty brake application as required.

The safety control cock or switch must be cut-IN at all times, except for enroute malfunctions. Any practice or action which otherwise interferes with the normal and proper functioning of this equipment will be considered a dismissible offence.

If the safety control system completely malfunctions while enroute (e.g., non-recoverable penalty brake application), then the locomotive engineer must:

1. Immediately notify the RTC and the immediate supervisor of the situation and record the defect on the engine defect report.
2. On locomotives equipped, cut out the Safety Control cock or switch.
3. Proceed to the first location where the controlling locomotive can be exchanged another locomotive with an operative RSC.
4. In the event that an exchange locomotive is not available, the movement may proceed to the next regular crew change location and must not proceed beyond that point until the safety control system has been repaired or the defective locomotive replaced.

3.3 Defective Locomotive Event Recorder

If it is determined by the Mechanical Service's Employee that the event recorder has failed on a controlling locomotive, be governed by item 3.2 (e.g., defective Safety Control Systems on road locomotives).

4.0 LOCOMOTIVE AND YARD TEST PLANT AIR PRESSURE SETTINGS

4.1 Brake Pipe Pressure

Standard brake pipe pressure with automatic brake handle in release position:

- For passenger service is 100 psi.
- For freight service is 90 psi.
- Yard test plant is 75 psi.

Specific trains or territories may require brake pipe pressure to be set higher or lower than standard.

4.2 Main Reservoir/Brake Pipe Pressure Differential

With the automatic brake handle in release position, main reservoir pressure must be at least 15 psi higher than locomotive brake pipe pressure.

4.3 Independent Brake Cylinder Pressure

With the independent brake handle in full application position, brake cylinder pressure must be set to the pressure posted in the locomotive cab.

4.4 Equalizing Reservoir / Brake Pipe Pressure

The maximum variance between equalizing reservoir and locomotive brake pipe pressure is 3 psi with the automatic brake handle in the release position.

4.5 En-route Brake Pipe Pressure Requirements

When automatic brake handle is in the release position, other than during intended brake application and/or release activity.

On **Conventional Trains**, if brake pipe air flow exceeds 60 CFM or brake pipe gradient (between lead locomotive and rear car) exceeds 15 psi,

On **Distr Pwr trains**, if combined air flow to the brake pipe exceeds 90 CFM and/or more than 60 CFM at any one locomotive consist on the train.

Corrective action must be taken if the flow or gradient do not return to acceptable limits within a reasonable period of time. This may include stopping the train at the next available location and inspecting for leaks.

5.0 TRAIN BRAKE TESTS

Note: A freight train having received a No.1 or 1A brake test may only depart a terminal if:

A. The train line brake pipe pressure on the tail end of the train is within fifteen (15) psi of the locomotive brake pipe pressure, and,

B. Air flow to the brake pipe does not exceed sixty (60) cubic feet per minute, as indicated by the flow indicator or brake pipe leakage does not exceed five (5) psi in sixty (60) seconds**.**

C. **Distr Pwr Trains Only** – combined air flow to the brake pipe does not exceed ninety (90) CFM and no more than 60 CFM at any one locomotive consist on the train, as indicated by the flow indicator. Brake pipe pressure must be within 15 psi of standard operating pressure. Distr Pwr trains with air flow greater than 60 cfm must use the Air Flow Method only, (leakage test not allowed).

5.1 Brake Test Overview

Follow the train air brake test procedure described in 5.2, and 5.3 to complete each of the brake tests outlined below. Please refer to the detailed instructions for each of these train air brake tests on the next pages.

Test--	**Item --**
No 1--	6.0 --
No 1-A --	7.0 --
Continuity --	9.0--
Transfer --	15.3--

Note: If an emergency brake application occurs while performing any of the above brake tests, then consider the test unsuccessful. The brake test must be repeated until a service brake application applies properly (without going in emergency).

5.2 Before performing a train brake test complete the following steps:

1. Properly position all cocks and valves.
2. Couple the brake pipe air hoses.
3. Release hand brakes unless required because of grade.
4. Ensure the rear car is charged to within 15 psi of locomotive brake pipe pressure.
5. If using the Air Flow Method, the Air Flow Indicator must be calibrated. (Indicator at or below 60 cfm total of all flows not to exceed 90 CFM on Distr Pwr tains).

5.3 Train Brake Test Procedure: Air Flow Method

The Air Flow Method is the preferred Train Brake Test Method. To use this method, the controlling locomotive must:
Be equipped with an EPIC or CCB electronic brake controller or 26L or equivalent brake equipment,
Have an operative Air Flow Indicator.

1. When a signal is given to apply the brakes, make a full service brake pipe reduction.
2. When a signal is given to release the brakes, release the automatic brake.
3. Report the train brake test results to the conductor or locomotive engineer.

5.4 Train Brake Test Procedure: Brake Pipe Leakage Method

Note: Use this method only if the Air Flow Method cannot be used.

Step Description
1. When a signal is given to apply the brakes, make a 15 psi brake pipe reduction.
2. When exhaust ceases, wait 60 seconds.
3. Cut-out the automatic brake. Wait 60seconds.
4. Note brake pipe pressure. Wait 60 seconds.
5. Note brake pipe pressure again. Pressure drop must not have exceeded 5 psi.
6. Reduce equalizing reservoir pressure 3 psi below brake pipe pressure.
7. Cut-in the automatic brake.
8. Make a full service brake pipe reduction.
9. When a signal is given to release the brakes, release the automatic brake.
10. Report the train brake test results to the conductor or locomotive engineer.

5.5 Use of TIBS

On trains equipped with TIBS, the decrease and increase of rear car brake pipe pressure as displayed in the controlling locomotive cab will provide an indication of the application and release of the air brake on the rear car and of continuity between the locomotive and the rear car.

5.6 Inspecting for Brake Release

To determine if the brakes are released, either a standing inspection, or a pull-by inspection at a speed not exceeding 5 MPH is acceptable. When a pull-by inspection is performed, radio communication with the locomotive engineer must be maintained. The locomotive engineer must be advised of the results of the inspection.

Report the train brake test results to the conductor or locomotive engineer.

6.0 NO 1 BRAKE TEST

6.1 No 1 Brake Test:

- Is performed by a certified car inspector;
  - Where a train is made up or on cars added or interchanged at a safety inspection location,
  - And while enroute at any subsequent safety inspection location(s) designated for that train.
- Verifies the integrity and continuity of the brake pipe.
- Verifies piston travel and the condition of brake rigging on each car in the train.
- Verifies the application and release of air brakes on each car in the train.

Exception: A No 1 brake test is not required on:

Trains operating over main tracks, between yards, up to a maximum of a thirty (30) mile radius, which are engaged exclusively in the setting off or lifting of equipment at industry(s), and/or the transfer of equipment between yards.

6.2 If a train is made up at other than a safety inspection location, a No 1 brake test will be performed at the first safety inspection location designated for that train.

6.3 At locations where a No 1 brake test has been performed, the conductor or locomotive engineer, is responsible to ensure that the brake status information for that train is recorded on the Crew to Crew Form. The results of this brake test may be obtained in writing, in person, or by radio from a person who has immediate access to the test results.

6.4 Perform the No 1 Brake Test following the procedures described in items 5.2 and 5.3.

7.0 NO 1-A BRAKE TEST

7.1 No 1-A Brake Test:

Is performed by a qualified person(s):

- Where a train is made up at other than a safety inspection location.
- When an en-route train is extensively switched, except where solid blocks of 2 or more cars are re-marshalled within the same train.
- At an interchange location when Train Brake Status records are not available.
- When cars which have not been previously tested are added to a train.
- On trains operating over main tracks, between yards, up to a maximum of a Thirty (30) mile radius, which are engaged exclusively in the setting off or lifting of equipment at industry(s), and/or the transfer of equipment between yards.
- Verifies the integrity and continuity of the brake pipe.
- Verifies the application and release of air brakes on each car in the train.

7.2 Perform the No 1-A Brake Test following the procedures described in items 5.2 and 5.3.

8.0 CARS BRAKE TESTED PRIOR TO ADDING TO A TRAIN

8.1 No 1A Brake Test is not required on blocks of cars lifted en-route that have:

- Previously received a No.1 brake test; and/or previously received a No.1A brake test at that location within twenty-four (24) hours of the lift.

Note: In both circumstances the brake status information must be received.

Cars Brake Tested Prior to Adding to a Train

When it is required to perform a brake test on cars before adding them to the train and it is not possible to determine brake pipe pressure on the last car being added, the brake test may be performed when:

- The last car being added has had the air cut in for at least 5 minutes, AND
- It is verified that the Air Flow indicator is calibrated. After the cars are placed on the train, a **Continuity Test** must be performed before proceeding.

9.0 CONTINUITY TEST

9.1 Continuity Test

Is performed by a qualified person(s) when:

- Solid block(s) of coupled cars which have received a No 1 or No 1A brake test are added to a train.
- The controlling locomotive has been attached to a train which has received a No 1 or No 1A brake test.
- The locomotive consist has been exchanged or altered.
- The locomotive engineer has been changed.
- Controlling ends of a locomotive consist or a push-pull train operation have been changed.
- Verifies the capability to transmit a signal between the leading locomotive, to the rear of the last piece of equipment on the train.

9.2 When the brake pipe has been uncoupled to set off cars or the trailing locomotive(s) in the consist, and when cars or locomotives have not been added to the train, it is only necessary to recouple the brake pipe and establish brake pipe continuity (e.g. air rising on last piece of equipment).

9.3 A locomotive engineer must perform a brake pipe continuity test immediately prior to leaving if:

- The train does not leave the terminal immediately upon completion of the brake test,
- Stops are made and there is public access to the train,
- Public crossings are blocked,
- Any time that brake pipe continuity is suspect.

9.4 Continuity Test Procedure:

Step Description
1. Make at least a 15 psi brake pipe reduction and ensure that brake pipe pressure has decreased at the rear of the train. 2. Wait for the exhaust to cease.
Note: On Distributed Power trains, the remote brake valve/feed valve(s) must be cut out prior to releasing the automatic brake.
3. When ready to proceed, release the automatic brake. 4. Ensure that brake pipe pressure is increasing at the rear of the train. 5. Train may be started after the brakes release. **Note :** When performing a crew change continuity test, the inbound engineer performs Steps 1, 2 and the note and the outgoing engineer performs steps 3, 4 and 5. Integrity must be confirmed.

10.0 BRAKE PIPE CONTINUITY TEST (ECP TRAINS)

10.1 Although the ECP system has safeguards built in to protect continuity, the following test can be used to confirm brake pipe continuity through the train.

10.2 Continuity Test Procedure for ECP Trains:

Step Description
1. Command a full service brake application (100% TBC) and note the slight drop in brake pipe pressure at the rear of the train.
Note: On a Wired Distributed Power train, the Feed Valve(s) must be cut-out on the remote(s) prior to commanding the full service brake application.
2. When the main operating screen indicates that Train Brake Effort (TBE) reaches 85% or greater, then release the brake immediately (0% TBC). 3. Look for the rise of brake pipe pressure on the EOT. 4. On Wired Distributed Power trains feed valve(s) on the remote(s) can now be cut in.

11.0 RUNNING BRAKE TEST

11.1 A running brake test must be made on all trains prior to descending grades of 2 percent or greater and at locations specified in special instructions.

11.2 Running Brake Test Procedure

Step Description
When the speed of the train permits, apply the train brakes with sufficient force to verify the brakes are operating properly. The locomotive brakes should not be allowed to apply at this time. If the brakes do not operate properly, immediately stop the train, determine and correct the cause of failure, then repeat the running brake test.

12.0 SNOW PLOW BRAKE TEST

Following the appropriate train brake test, and before starting a snow plow operation, an emergency application of train brakes must be obtained from the operator's cab of the snow plow.

13.0 BLOCK SWAPS

13.1 A maximum of two (2) solid coupled block(s) of 2 or more cars removed from a train may be added to another train, or CUT INTO the same train, with only a Continuity test, provided that:

Item Condition

1. Each block of cars being added has:

- Received a No 1 brake test at a prior location, and
- Remained coupled together, and
- Been off air for less than 24 hours (48 hours with notification to TC)
- Train brake status information that includes:
  - date
  - location
  - number of cars previously tested with a No 1 brake test
  - car number and location of any car in the block with inoperative brakes

2. The conductor or locomotive engineer must:

- Receive the train brake status information for those cars being added (in writing or verbally), and
- Update the train brake status information on the Crew information / brake status Form.

14.0 TRANSFER MOVEMENTS

14.1 Transfer Brake Test

A brake test is NOT required for transfer movements, providing:

- Prior to departure, the locomotive engineer, or the RCLS operator must verify that there is sufficient braking effort to control the transfer, confirmed by a running test as soon as possible.
- Except where block signals provide protection, transfers must have air applied throughout the entire equipment consist and the last three cars, if applicable, must be verified to have operative brakes.

IMPORTANT: Transfers carrying dangerous goods MUST have air cut-IN throughout the equipment consist, without exception.

15.0 MOVEMENT OF CARS AND LOCOMOTIVES WITH INOPERATIVE BRAKES

15.1 Cars and locomotives with inoperative brakes may be moved in trains for the purpose of unloading or for repair if all applicable parts of this section are complied with.

Prior to departure, the conductor or locomotive engineer must be notified of any inoperative car or locomotive brakes, and their location.
Inoperative brake information must be recorded on the defect Form.

15.2 To calculate the percentage of operative train brakes, include both locomotives and cars.

15.3 Safety Inspection Locations - 95 percent operative brakes

A. When a train is made up at a safety inspection location, it must have 95 percent operative train brakes.
B. Cars permitted to depart from a safety inspection location with inoperative brakes, may be moved only for unloading or for repair.
C. When cars are added to a train at a safety inspection location, the train must not depart unless a minimum of 95 percent of the brakes on those cars added are operative.
D. When it is impractical to comply with the 95 percent requirements, trains of 18 cars or less may leave a safety inspection location with no less than 85 percent operative brakes. Appropriate actions must be taken to ensure safe operation (e.g., reduce speed).
E. Cars or locomotives with brakes inoperative due to damage may be moved in a train with less than 95 percent operative brakes when authorized by a person in charge who will ensure that appropriate measures have been taken to move such equipment safely.

Trains destined for the USA must have 100 percent operative brakes on all cars unless being move for repairs and properly tagged by a qualified mechanical inspector. (ABTH 100.4)

15.4 Locations other than Safety Inspection Locations - 85 percent operative brakes

A freight train must not be operated with less than 85 percent of train brakes operative, except as provided in item 2 below.

1) Cars or locomotives with brakes inoperative due to damage may be moved in a train with less than 85 percent operative brakes when authorized by a person in charge who will ensure that appropriate measures have been taken to move such equipment safely.
2) A passenger train must not be operated with less than 85 percent of train brakes operative, unless an appropriate reduction in train speed, as determined by the locomotive engineer, is made.

15.5 Locomotives with inoperative brakes:

The lead locomotive must have operative brakes at all times.

The air brake system of all trailing locomotives must be cut-IN so as to respond to the operation of the automatic brake and independent brake in the controlling locomotive, except when a locomotive with inoperative brakes is being moved for repair.

The locomotive engineer must be advised prior to departure when a locomotive in the consist has inoperative brakes.

When a locomotive in a consist has inoperative brakes, the locomotive engineer must take appropriate measures to ensure safety of movement.

No more than 2 locomotives with inoperative brakes may be handled in a locomotive consist. (They may be coupled together.)

15.6 Cars with inoperative brakes:

Cut-out the brakes on all cars or trucks, where appropriate. (Complete defect Form.)
No more than 2 cars with inoperative brakes may be coupled together, except in the case of item 3 below.

1) Multi-platform articulated cars must not be operated with more than 2 consecutive control valves cut out. (typically 3 control valves on a 5 platform car).
2) The rear 3 cars (cars, equipment or locomotives) of a freight train must have operative brakes, except:
3) A 2 axle scale test car without brakes may car of the train and it is coupled to cars be moved in a freight train provided it is placed ahead of the rear with operative brakes.

   Other test cars (e.g. Track Evaluation Cars) may be moved at the rear of a Freight train for test purposes, provided it is coupled to a car with operative brakes.

Note: on cars of articulated or permanently coupled multi-platform design, at least fifty (50) per cent of the control valves must be operational for car to be considered as having operational brakes.

In accordance with company procedures, the person in charge may move cars or locomotives with inoperative brakes, due to damage enroute, at the rear of the train when no other option exists.
The rear car of a passenger train must have operative brakes on one truck.
Railway equipment which is designed without brakes may operate in a freight train.

16.0 RECORDING THE TRAIN BRAKE STATUS

16.1 Train Brake Status following No 1 or No 1A Brake Test

Crews will receive the results of a No 1 brake test verbally or will receive a copy of the Train Brake Status form from the file and immediately record these results in the Crew information /brake status form.

The conductor must record the following information on the Crew information/brake status form in the Grey Box: Date, Conductor or Carman's Name, Train ID, Location, Number of cars on the train, "OK" or any exceptions.

16.2 Updating the Train Brake Status

Prior to arriving at each crew change point or terminal enroute, the conductor must update the Crew information /brake status Form, indicating the date, conductor's name, train ID, name of crew change point or terminal, number of cars on the train, "OK" or any exceptions noted. The originating crew who has recorded the results of the No 1 or No 1A brake test, in the Grey Box, is also required to record brake status when the train arrives at the next crew change point or terminal. All other crews must ensure brake status is updated and recorded, prior to delivery at the next crew change point or terminal, regardless if any changes have occurred.

The original and subsequent Crew information /brake status form(s) must remain with the train to destination. The Crew information /brake status form(s) must be kept current and updated prior to delivery at the next crew change point or terminal. (i.e. when picking up and setting out cars en-route) On arrival at the final destination the original and subsequent Crew information / brake status form(s) must be submitted and retained for a period of thirty (30) days.

16.3 Train Brake Status Lost En-route

If the record of Train Brake Status is not available at a crew change point, and if the incoming crew cannot be contacted to verbally provide train brake status, then a No 1 or No 1A brake test must be performed before the train may proceed. This information must be recorded in the Grey Box.

17.0 TRAINS FOR INTERCHANGE

17.1 Entering the USA from Canada

Trains which are destined for the United States of America (USA) must have 100 percent operative brakes upon departure from the latter inspection location. No train may be operated into the USA at any time with less than 85 percent operative brakes. Cars destined for the USA with inoperative brakes or any other identified safety defects must not be moved past the next location where repairs of that type can reasonably be made.

A Crew information / brake status form, complete with train brake status information should be made available for train crews receiving trains from Canada.

17.2 Entering Canada from the USA

When a train enters Canada from the USA and is accompanied with train brake status information which verifies that a prior initial terminal brake test has been performed on that train, then a No 1 or No 1A brake test is not required. In this case, a Continuity test must be performed.

The train brake status information received at interchange must be transferred to Crew information / brake status form and continue to be maintained and updated as required.

If the necessary train brake status information does not accompany the train, then a No 1 or No 1A brake test must be performed.

17.3 Trains Interchanging within Canada

When a train is received from another railway within Canada and is accompanied with train brake status information, then another No 1 or No 1A brake test is not required. In this case, a Continuity test must be performed.

The train brake status information received at interchange must be transferred to on the Crew information / brake status form and continue to be maintained and updated as required.

If the necessary train brake status information does not accompany the train, then a No 1 or No 1A brake test must be performed.

A Crew information / brake status form, complete with train brake status information should be made available for train crews of other railways receiving trains.

SECTION 7 – HAND BRAKE INSTRUCTIONS & PROCEDURES

1.0 GENERAL INFORMATION

Unless otherwise specified by special instructions, the following instructions apply in the application of CROR Rules 62 and 112.

2.0 LEAVING EQUIPMENT UNATTENDED

(i) Single car must ALWAYS be left with the hand brake applied.
(ii) When leaving three or less cars unattended, apply hand brakes to all cars.
(iii) When leaving more than three cars unattended, refer to the handbrake chart in item 3.0 A. (i) or to CROR rule 112 (k)**.**
(iv) Never leave a car with a defective hand brake by itself. It must be coupled to another car with an effective hand brake.
(v) Individual blocks of cars must be secured with hand brakes on each block.
(vi) Where practicable, hand brakes must be applied on the cars which are at the low end of a downward sloping track.
(vii) When leaving equipment in a track equipped with a derail, it should be left as close as practical to the derail (between 50 and 100 feet). This does not include cars which have been spotted for loading/unloading, repair or cars being handled while switching. Operating Rules which govern proximity to public crossings at grade still apply.
(viii) Effectiveness of the hand brakes must be performed as per CROR rule 112 (e) (ii).

Note: If the result of testing the effectiveness of the hand brakes applied indicates hand brakes are not sufficient, additional hand brakes must be applied and redo a test.

3.0 LEAVING EQUIPMENT UNATTENDED – IN A YARD AND NON-MAIN TRACK AT OTHER THAN SIDING, SUBDIVISION TRACK OR HIGH RISK LOCATION

A. Leaving Equipment Unattended;
Apply a sufficient number of hand brakes according to Hand Brake chart.

(i) **Hand Brake Chart - Yard and Non-main track at other than Siding, Subdivision track or High risk location**

Numbers	Minimum Handbrakes Required
1	1
2	2
3 to 29	3
30 to 39	4
40 (or more)	5
On track with grades of 0.6% equal to or greater, unless protected by an additional physical securement measure, the minimum number of handbrakes required will be determined based on "Minimum Handbrakes Chart for Securing Equipment or Movement Left Unattended" **(CROR 112).**	

(ii) In the application of (2.0), the numbers of hand brakes on locomotives in the lead consist are not to be included in the required number of handbrakes.
(iii) There may be situations where all hand brakes must be applied.

(iv) On Yard and Non- Main Track at other than Siding, Subdivision track or High risk location, special instruction will specify when the number of hand brakes is less than item (i) but not less than 3 hand brakes.

B. Switching and Handling Equipment – In aYard and Non- Main Track at other than Siding, Subdivision track or High risk location

When actively switching the three hand brake minimum referred to in item 2.0 A. (iii) may be reduced. At least one hand brake must be applied and tested to prevent movement when all brakes are released. When switching is completed and leaving the area, comply with item 2.0 A. (i.e. finish with the track, switching at the other end of the track or spotting a costumer, etc…).

4.0 HAND BRAKE APPLICATION PROCEDURES

A. When securing cars handled with air, always reduce brake pipe pressure by at least 20 psi before applying hand brakes. Apply 3 step protection and ensure that the slack has adjusted on cars.

***** Do not attempt to bleed a car off with SERVICE brake applications in effect as this can trigger an undesired air brake release of all other cars*****

B. When applying a hand brake, it must be applied fully.

C. Under winter conditions ensure braking surfaces are free of ice and snow.

5.0 WRECK DAMAGE EQUIPMENT

When hand brakes have been damaged due to derailment or mishap, it may be necessary to secure equipment with wheel chocks or chains. In these cases employees will be governed by the supervisor.

6.0 RELEASING HAND BRAKES

A. Hand brakes have the ability to provide far more brake shoe force than the air brakes; therefore to avoid damage to wheels, hand brakes must be FULLY RELEASED before moving car(s).

B. When releasing a hand brake, it may be determined that it is properly released by ensuring that the bell crank has dropped and that the vertical rod and chain are slack.

> **Note:** Do not depend on brake shoes being clear of the wheels as on many cars the hand brake applies on the "B" end only.

C. Hand brakes must not be released from cars or trains left standing on a grade until the train air brake system has obtained its fully charged state, unless movement can be prevented with locomotive brakes.

7.0 SEPARATION OF EQUIPMENT (I.E. SET OFF ENROUTE)

A. Before Closing the angle cock on the portion to be moved:

(i) Make a service application sufficient to prevent train movement.

(ii) The service exhaust must stop blowing at the automatic brake.

(iii) Advise the crew member when it is OK to close the angle cock on the portion to be moved.

** On trains equipped with TIBS:

- The crew member must advise the locomotive engineer when the angle cock has been closed, and then
- the locomotive engineer must activate the TIBS emergency braking feature.

B. The standing portion must be left in EMERGENCY with angle cock FULLY OPEN.

Crew members are responsible to inquire and confirm with each other that the standing portion has emergency brakes applied. The FULLY OPEN angle cock may be subsequently closed only when:

(i) The angle cock is FULLY OPEN on opposite end of the equipment, or

(ii) A locomotive is coupled on opposite end of the equipment, or

(iii) The equipment has been secured with hand brakes in accordance with CROR 112.

C. In the application of this instruction, hand brakes may be applied near the head end of a train, regardless of low end or high end of a particular grade.

D. When equipment is left unattended on the main track, after the equipment has been properly secured as required by CROR 112 and GOI section 7, except when an immediate set out or lift is performed, the crew must notify the RTC of the number of handbrakes applied and confirm that their effectiveness has been verified as required. This instruction applies also to unattended equipment left on a subdivision track and on a siding.

8.0 MINIMUM HAND BRAKE REQUIREMENT

When unable to Test Effectiveness (I.E. Broken Drawbars on Light, Heavy and Mountain Grades)

Unless otherwise specified in Time Table subdivision footnotes or special instructions, if it is not possible to test hand brake effectiveness on equipment left unattended, hand brakes must be applied immediately as required by the Number of Hand Brakes for Securing Equipment or Movements Left Unattended chart, by going one step above the column grade associated for the movement **(CROR 112).**

On mountain grades of 2.0 % and higher, apply hand brakes on 100% of the cars.

9.0 VENTED BRAKE PIP ANGLE COCK

Many leased and foreign locomotives are equipped with a "vented brake pipe angle cock". When closed, the vent will drain brake pipe pressure in the brake pipe hose. This can cause problems when uncoupling, because if brake pipe has already been vented to 0 psi, then the standing portion cannot be placed in emergency. When leaving a portion of a train standing in emergency:

- IF there is a leased or foreign locomotive in the consist.
- IF you are uncoupling immediately next to that foreign or leased locomotive.
- THEN BEFORE instructing the crew member on the ground that it is OK to close the angle cock on the portion to be moved.
- PLACE the entire movement in EMERGENCY using the automatic brake valve.

10.0 LEAVING A MOVEMENT UNATTENDED

With locomotive(s) attached:

- No locomotive attached to one or more tank cars or a flat car transporting a road tanker containing dangerous goods may be left unattended on a main track or a siding.
- This instruction also applies to transfers on the main track and movements on sidings**.**

Movements left unattended with locomotive(s) attached may be left as follows:

(i) On an ascending grade, train must be stopped with slack stretched; on other than ascending grade, stop with slack in or out.

(ii) LOCOMOTIVES must be ATTACHED with brake pipe coupled and angle cocks open.

(iii) Apply the hand brakes on each locomotive in the lead consist.

(iv) Apply sufficient hand brakes and test their effectiveness as per the minimum number of hand brakes to be applied indicated in minimum required handbrakes chart **(CROR 112).**

(v) When equipment is left unattended on the main track or sidings, after the equipment has been properly secured as required by CROR 112 and GOI section 7, except when a set outs or lifts is performed, the crew must notify the RTC of the number of handbrakes applied and confirm that their effectiveness has been verified as required. This instruction applies also to unattended equipment left on a subdivision track and on a siding.

(vi) On the controlling locomotive, the control stand must be left as follows:

- Independent brake cut-IN and FULLY applied.
- Automatic brake cut-IN and Make a full service brake application after allowing the brake system to re-charge.
- Throttle in Idle.
- Selector handle in the OFF position if equipped.
- Generator Field OFF, Engine Run ON, Control/Fuel Pump ON.
- Engine Control Switch (ECS) to Isolate.
- Reverser handle removed.
- Remove the reverser handle from the cab of all locomotives in the consist.

WARNING: If the ECS switch is set to Isolate on an Auto Engine StopStart System (AESS) equipped locomotive, main reservoir and independent brake pressure are not monitored and can leak off, if the locomotive is in a shutdown mode. If brake pipe pressure must be maintained, the ESC switch must be

left in the Run position. On locomotive equipped with auxiliary Power Unit (APU), It must be Cut-Out on the controlling unit to maintain the engine running.

Turn off all unnecessary lights and close and lock all doors and windows.

CAUTION: It is imperative that all steps in this procedure be followed. Otherwise, apply hand brakes on the cars which are at the low end of a downward sloping track.

Crew information/Brake status report: When required to leave a train in this manner, the information relative to hand brakes applied and inspection performed must be documented on the Crew information/Brake status report as required by air brake and train handling rules.

11.0 LEAVING A LOCOMOTIVE

A. When changing off with Another Locomotive Engineer - Coupled With or Without a Train or Cars

(i) Complete Train information/ Brake status report.

(ii) Take the reverser handle from the cab of the leading locomotive.

B. Leaving locomotive(s) unattended

(With or without cars attached / engines running or dead)

(i) When one or more locomotives are left in a Yard and Non-main track at other than Siding, Subdivision track or High risk location, handbrake must be applied on Each locomotive in the lead consist.

(ii) Test the effectiveness of the hand brakes, release all air brakes and apply sufficient tractive effort to determine effectiveness of the hand brakes and that the hand brakes will prevent equipment from moving once the tractive effort is terminated.

(iii) If separating locomotives, close the cocks on all air hoses between the locomotives to be separated, remove the jumper cable(s) and disconnect walkway safety chains. After separation, secure all hoses in the receptacles / dummy couplings (if provided).

(iv) On the controlling locomotive and/or one of the locomotives left, the control stand must be set as follows:

- Independent brake cut-IN and FULLY applied.
- Automatic brake cut-IN and Make a full service brake application after allowing the brake system to re-charge.
- Throttle in Idle.
- Selector Handle in the OFF position if equipped.
- Generator Field OFF, Engine Run ON, Control/Fuel Pump ON.
- Engine Control Switch (ECS) to Isolate.
- Reverser handle removed.
- Remove the reverser handle from the cab of all locomotives in the consist.

CAUTION: If the ECS switch is set to Isolate on a AESS equipped locomotive, main reservoir and independent brake pressure are not monitored and can leak off, if the locomotive is in a shutdown mode. If brake pipe pressure must be maintained, the ESC switch must be left in the Run position.

(v) Turn off all unnecessary lights and close and lock all doors and windows.

(vi) Where applicable, Automatic Reporting Unit (ARU) must be connected for monitoring of locomotive.

(vii) Complete the Crew information /Brake status report if necessary.

C. Electronic Air Brake (EAB) Failure

WARNING: It is not possible to cut-IN the automatic and independent brake on a locomotive on which the electronic air brake (EAB) system has failed. With a failed EAB system, the locomotive air brake backup mode defaults to trailing locomotive status only. This means the air brakes will eventually leak off. When setting off or leaving a locomotive on which the EAB system has failed, it is especially important that the hand brake effectiveness is tested.

Note: When leaving a locomotive with a failed EAB, after securing the locomotive, the automatic brake handle must be placed in the Handle Off position and the independent brake handle in release.

12.0 SPOTTING OF EQUIPMENT - PROHIBITED SIGN

If equipment must be left between the Spotting of Equipment Prohibited Sign and the Road Crossing:

Prior to leaving equipment between the sign and the road crossing, a crew member must advise the RTC of the location and estimated distance between the equipment and the crossing. A GBO will be issued restricting movements entering the crossing account restricted sightline. If equipment is left less than 150 feet from a crossing, then manual protection of the crossing must be provided, unless it is seen to be clear of vehicular or pedestrian traffic.

At locations not equipped with signs:

A crew member must advise the RTC when equipment causing restricted sightlines is left at locations not equipped with a sign and be governed by instructions from the RTC.

Note: This instruction does not apply to equipment spotted for loading or unloading as per CROR Rule 103(e).

13.0 WINTER OPERATION AIR CONSERVATION INSTRUCTION

CONDITIONS

- This instruction is intended for, set outs or lifts on run through trains only;
- Temperature must be below minus five (-5) degrees Celsius;
- Does not apply to Locotrol equipped trains.

When conditions are met, the following may be applied:

- In the application of this instruction, 7 B above does not apply.
- The train or standing portion must be secured in accordance with CROR 112.
- The train or portion thereof is secured with sufficient handbrakes and their EFFECTIVENESS has been tested;
- Prior to leaving the standing portion unattended, the brake pipe must be reduced to "ZERO" at a rate that is no less than a service rate reduction, this is accomplished by placing the brake handle into the Handle Off position and waiting for the air to deplete from the train line. The SBU must be observed to ensure "ZERO Pressure".

Note: On GE locomotives, due to a built-in locomotive emergency feature, the brake pipe will only reduce to 10 - 11 psi.

- TIBS emergency braking feature should not be tripped.
- Once the air is fully depleted or stabilized (10 - 11 psi as indicated above) at the SBU, the standing portion must be left with the angle cock open.

SECTION 8 – LOCOMOTIVE OPERATION

1.0 DUTIES OF THE LOCOMOTIVE ENGINEER

1.1 Locomotive engineers are responsible to ensure they are familiar with current information regarding the systems and mechanical procedures which apply to locomotives in service on the railway they operate. Locomotive engineers are responsible for the motive power in their care and when other duties permit, must make every effort to ensure their efficient and productive operation.

1.2 The locomotive engineer must take charge, inspect and leave the train in ways that ensure safe operation of both the locomotive and train.

1.3 Locomotives may only be operated as follows:

A. On a shop track, locomotives may be operated by;

- Certified engine attendant (restricted to confines of the shop track), or
- An engine attendant in training under the direction of a certified engine attendant.

B. On all tracks, locomotives may be operated by;

- A qualified locomotive engineer (employee or officer)
- A locomotive engineer trainee under the direction of a qualified locomotive engineer instructor,
- An operating officer (who is not a qualified locomotive engineer) only when:
  - they are under the immediate direction
  - and control of a qualified locomotive engineer (see note), and
  - that officer assumes all responsibility for his/her actions, (see note)

Note: "Immediate direction and control," requires the qualified employee remain in the operating cab of locomotive prepared to take control immediately, if required.

2.0 GENERAL INSTRUCTIONS

2.1 Employees are restricted from opening engine covers and electrical cabinet doors unless authorized, or in the case of emergency.

2.2 In case of mishap or fire to locomotives, the engines and fuel pumps should be stopped, emergency fuel cut off tripped and battery switches opened as soon as possible.

2.3 When locomotive consists are in motion, personnel may move from one locomotive to an adjoining locomotive only when both locomotives are equipped with walkways or vestibules. Hinged walkways should be in the raised position, with safety chains in place, on single locomotives or when coupled to other locomotives not equipped with walkways or vestibules.

2.4 Unless otherwise authorized or in use with Distributed Power, locomotives handled in freight service, including shut-down or idling locomotives, must be marshalled as part of or immediately behind the working locomotive consist.

2.5 Not more than 8 locomotives working or idling are to be handled in a train.

2.6 Locomotives with Non-Alignment Control Couplers Locomotives with non-alignment control couplers (NACC) are susceptible to jackknifing under heavy buff conditions, such as when applying high levels of dynamic and/or independent brake, or when applying throttle to shove cars, etc. are subject to the NACC restrictions outlined below. Locomotives not identified as being NACC can be handled unrestricted.

Unless it can be otherwise determined, all passenger locomotives and/or foreign 4-axle freight locomotives are to be considered as having NACC and are also subject to the following restrictions.

NACC Handling Restrictions:

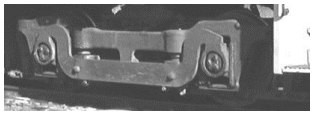
- Trailing Tonnage Does Not Exceed 4000 Tons: a maximum of two (2) NACC locomotives may be operated or moved on a train, and must be marshalled immediately behind head-end locomotive consist.
- Trailing Tonnage Exceeds 4000 Tons: a maximum of one (1) NACC locomotive may be operated or moved on a train, and must be marshalled immediately behind head-end locomotive consist.

2.7. Maximum Permissible Motorized Axles

Unless otherwise specified, the maximum number of working locomotives permitted in any engine consist is restricted to 24 motorized axles. In unit train service on subdivisions specified in the time table or by special instructions, the locomotive consist may be increased to 30 motorized axles.

2.8. LOCOMOTIVES RESTRICTIONS

Locomotives with AAR Type "A" switcher trucks: 25 MPH



3.0 PRE-DEPARTURE LOCOMOTIVE INSPECTIONS

3.1 Locomotive Safety Inspection Locations

Note: The brake test form has been revised to include information regarding a locomotive safety inspection, locomotive defects, and dynamic brake (DB) factors. Other methods may also be used to convey this information.

At locations where a locomotive safety inspection has been performed by mechanical services personnel, the locomotive engineer must be notified verbally or in writing that:

- The inspection was completed, and
- The nature of any safety defects when a locomotive is being moved for repair, and
- to ensure safety of movement, any restrictions.

Before departing, the locomotive engineer must:

- Record any safety defects on the Crew information /brake status form.
- Know that the DB factor does not exceed the maximum permissible limit, and record the DB factor on the Crew information /brake status form.
- Ensure that the headlights, ditch lights, bell and whistle are working on the lead locomotive.
- Know that the flagging equipment is fully supplied on the lead locomotive.
- Ensure that the hand brakes are released.

Note: If the locomotives consist does not roll freely when movement is commenced, stop and check hand brakes on all locomotives.

- Unless advised verbally or in writing that a locomotive brake test was previously completed at that location, perform a locomotive brake test in accordance with GOI Section 6.
- Unless advised verbally or in writing that a locomotive safety inspection was previously completed at that location, perform a locomotive pre-departure inspection in accordance with Item 3.2.

NOTE: At safety inspection locations where remote locomotive(s) are to be added to a train or a rear end remote is set up for lead position (switching ends), the remote locomotive(s) must receive a safety inspection.

3.2 Locations Other than Locomotive Safety Inspection Locations

At locations where a locomotive(s) has laid over more than eight hours without a safety inspection, prior to departing, the locomotive engineer or other qualified person must perform a locomotive pre-departure inspection as follows:

A. Start up the engines, if shutdown.
B. Inspect the running gear and trucks for visible defects.
C. Inspect the locomotive(s) for any other apparent hazards likely to cause an accident or injury.
D. Where applicable, the Automatic Reporting Unit (ARU) must be disconnected.
E. Record any defects on the Crew information /brake status form.
F. Know that the DB factor does not exceed the maximum permissible limit and record the DB factor on the Crew information /brake status form.
G. Know that the air brake system is set up correctly for lead and trailing locomotives.
H. Ensure that the headlights, ditch lights, bell and whistle are working on the lead locomotive.
I. Know that the flagging equipment is fully supplied on the lead locomotive.
J. Ensure that the hand brakes are released on all locomotives.
K. Perform a locomotive brake test in accordance with GOI Section 6.

Notes: At other than safety inspection locations where remote locomotive(s) are added to a train, the remote locomotive(s) must receive a pre-departure inspection.

Where remote locomotive(s) have already been added to a train but the train lays over more than 8 hours, no pre-departure inspection is required.

When a rear end remote locomotive is set up to operate in the lead position (switching ends), that locomotive must receive a pre-departure inspection at that time.

3.3 Changing Off with Another Locomotive Engineer

A. Examine the Crew information /brake status form. If the form does not clearly indicate that the DB factor is within permissible limits, check each locomotive and then update the Crew information /brake status form

Note: Normally a remote consist will not include enough locomotives to exceed the maximum permissible DB factor, so a personal check is not required

B. Know that two flagging equipment are fully supplied on the lead locomotive.

4.0 WINTER OPERATION: LEAVING LOCOMOTIVES

4.1 Policy:

IF…	THEN…
Temperatures are at, or expected to drop below minus 20° Celsius (- 20°C), **And** any locomotive in the consist that may not be equipped with high idle protection **And** such locomotives are being left unattended,	Manually throttle up the consist as follows: On leading locomotive ensure: **1.** Generator Field switch is OFF. **2.** Control/Fuel Pump & Engine Run switches are ON. **3.** REVERSER is inserted and in NEUTRAL. **4.** Throttle is in #3 position.

Note: Locomotives equipped with the High Idle feature should be ISOLATED so that they do not rev up unnecessarily. This should be noted on the *Crew information/brake status form.* It is recognized that train crews do not have easy access to the exact outside temperature. Care and good judgment are essential tools in the application of this instruction.

4.2 Automatic Reporting Units (ARU)

A. In areas where locomotives are connected to an ARU, do not increase the throttle to notch 5 unless so advised by maintenance personnel.

B. All unattended locomotive consists which are tied up at locations where an ARU is located or a portable ARU is used at a remote location, must have the ARU connected as per local operating instructions or as per instructions posted at the ARU or within the portable unit.

C. ARU & DISTR PWR - When leaving DISTR PWR consists at a location where an ARU is to be used, the remote unit(s) must have a MU cable connecting it to the lead consist. This will allow any alarms on the remote unit to be relayed to the lead unit and the ARU. This information must be recorded on the *Crew information /brake status Form.*

D. **CAUTION:** Before moving the locomotive(s), check to ensure ARU cable is unplugged:
- On DISTR PWR consists, the MU cable between the master (lead) consist and the remote consist(s) MUST be disconnected prior to the movement of the locomotives.
- Store the ARU in the designated area to avoid possible damage to equipment/components.

Crews are responsible to ensure that portable ARU's are with the locomotives consist prior to leaving the initial location as well as the remote location.

Note: If the reverser is placed in a direction before the ARU is unplugged, the locomotive wheel slip alarm will activate**.**

E. If responding to an alarm from an ARU:
- Find and correct fault and restart if shut down.
- Ensure locomotive(s) is running in idle. Check isolation switch to ensure it is in RUN position.
- Ensure the ARU plug is correctly set into the MU receptacle on the locomotive.

4.3 Auxiliary power Unit APU

In order to reduce greenhouse gas emissions and fuel consumption, GWCI has installed Auxiliary Power Units APU on some locomotives.

The following instructions apply:

Definitions
- APU: Auxiliary Power Unit.
- ME: Main Engine (locomotive).
- EST: Engine Shutdown Timer.
- ECU: APU – ECU (Engine Control Unit)

APU purpose

The purposes of the basic APU system:
- Maintain ME water temperature between 60°F & 100°F.

Benefits are:
- Reduced idling time
- Reduction of engine slugging.
- Reduced fuel consumption
- Reduced wear on the ME engine parts and maintenance costs.
- Reduced noise and greenhouse gas emissions.
- Maintain the locomotive batteries at 64 VDC.
- Maintain ME lubricating oil between 60°F & 100°F.
- Cab Heat (Optional, only if applied)
- Main benefit:
    - Increase engineer / conductor comfort when ME is stopped. NOTE: This heater is designed to take the chill off the cab, not to provide total heat comfort when the APU is running.

APU operation in "SENTRY" mode

The APU is a stand-alone system that will start and stop based on:
- ME water temperature.
- ME battery voltage.
- Cab temperature (where applied, optional).
- APU Engine battery voltage.

Note: One or all 4 criteria may request that the APU start and run during the same time period but the APU will only stop when all 4 criteria system is satisfied.

Important:
- In order for the APU to perform effectively it must be left in "SENTRY" mode at all times (green light flashing).
- The APU will start and run based on the above conditions regardless:
- Whether the ME is running or not.
- Whether the EST is shutting down or has shut down the ME.

EST Operation

The EST is a timer that will ONLY shut down the ME when certain locomotive and APU conditions are met:

Locomotive conditions:

- The reverser is in the neutral position.
- The Generator Field switch is OFF.
- here is a high Aux. Gen signal to the EST. (ME running)
- When the locomotive is not used for 20 minutes.

APU conditions:

- There is a 12 VDC signal from the APU to the EST indicating that the APU is present, ready and enabled but not necessarily running.
- There is no diagnostic fault code from the APU system. This indicates that the APU is healthy.

Note: The **EST** does not operate or restrict the APU operation in any way shape or form. If the EST is faulty the APU will still operate normally based on its Start / Run conditions.

When is disabling the APU allowed?

Currently there are two scenarios that warrant disabling the APU.

1. When the mechanical department as authorized it.
2. When there is a defect in the APU system.

Note: When there is a problem with the APU or the EST, a report must be made immediately to the mechanical department and the locomotive engineer must complete a defect report and forward it to the mechanical department.

Note: The defect indicated on the APU control panel.

Disabling the APU

- Press the emergency stop button on the APU control panel.
- If necessary secure with the locking device.

Enabling the APU

- Restore the emergency button by slightly turning it in the direction indicated by the arrows on the APU's emergency stop button.

Shutting down the locomotive

- The APU operates independently of the ME. The ME may be normally shut down without affecting the APU.

To leave a locomotive unattended, engine running:

- Secure the locomotive as required by CROR rules 62 and 112.
- Ensure that all lights are closed.
- Close all doors and windows.
- Open (OFF) the silence alarm switch on APU equipped locomotives.
- Ensure that the APU is in "SENTRY" mode (green light flashing) on the APU control panel.

Note: This instruction does not change the existing rules and instructions

5.0 DRAINING A LOCOMOTIVE IN FREEZING WEATHER

5.1 Winter Operation - Draining Locomotives.

During winter operations,

A. IF any engine dies and cannot be restarted, THEN the cooling system MUST be drained using the manual drain valve.

B. IF a LEASED locomotive is trailing and
- it has to be left ISOLATED and
- it is not equipped with an Alarm Silence Switch THEN the cooling system MUST be drained using the manual drain valve:

CAUTION: refer to item 5.2 below.

Silent Alarm Circuit

Some locomotives that are equipped with an Alarm Silence Switch, even when isolated will “sound the alarm” if the engine shuts down and is not equipped with this feature, if ISOLATED, will NOT "sound the alarm" if the engine shuts down.

Automatic Drain Valve
- Do not rely on automatic drain valves. When a crew member responds to an alarm, the cooling water temperature may still be warm enough to prevent the valve from opening.
- When it is cool enough, no one will be present to confirm that the valve opens automatically and if it doesn't, serious damage is likely.

5.2 When the engine of a locomotive is shut down and there is a possibility of damage from freezing, the engine cooling water must be drained.
Refer to the draining instruction posted in the cab. If in doubt, contact the locomotive Specialist for instructions.

PRECAUTIONS

A. When it is necessary to drain the coolant from a locomotive, ensure the drain pipe or pressure relief outlet is not pointed at you.

B. If the locomotive is not equipped with a pressure relief valve on the expansion tank and it is required to remove filler pressure cap, ensure that coolant temperature gauge indicates that coolant temperature is normal or cold prior to attempting to remove the filler cap.

C. Stay clear of the filler pipe connector when releasing pressure. Once the pressure is vented, carefully remove filler pressure cap.

D. Care should be taken as to where cooling water containing compound is drained.

5.3 Locomotive Water Cooling Systems

There are many different types of water cooling systems on locomotives. Water fill instructions are located in the locomotive cab or at the water filling station on the locomotive. If in doubt as to the procedure or if the instructions are missing, contact the Locomotive Specialist and be governed by their instructions.

6.0 CAUSES OF A PCS OPERATION (PNEUMATIC CONTROL OR POWER CUT-OFF SWITCH)

Note: In the following instructions, PCS also refers to PC or Power Cut-Off lights.

The following will cause the PCS switch to operate:

A. An emergency brake application.

B. A penalty brake application caused by**:**

- a timing out of the reset safety control (RSC),
- exceeding the maximum speed of the locomotive.

7.0 RECOVERING A PCS FOLLOWING A PENALTY BRAKE APPLICATION

1- Place the independent brake handle in FULL application.
2- Place the throttle/dynamic brake handle(s) in IDLE/OFF.
3- On a locomotive equipped, depress the safety control foot pedal.
4- Place the AB handle in SUPPRESSION
5- On a RSC equipped locomotive, operate any system reset and wait for brake pipe exhaust to cease, or the PCS light to extinguish.
6- Return the AB handle to RELEASE.

WARNING - PCS RECOVERY (GM & GE Locomotives)
The throttle and dynamic brake handle MUST NOT be moved from the IDLE position before attempting an automatic brake release. Following the release, ensure brake pipe pressure is being recharged AND the PCS light is out.

Note: On some locomotives, after the exhaust ceases, the PCS light will not extinguish until the AB handle is returned to the RELEASE or RUNNING position.

8.0 FOLLOWING AN EMERGENCY BRAKE APPLICATION

1- Place the independent brake handle in FULL application.
2- Place the throttle/dynamic brake handle(s) in IDLE/OFF.
3- Place the AB handle in EMERGENCY
4- Wait 60 seconds AND on locomotives equipped with an electronic display screen, ensure reset message appears or the fault disappears.
5- Return AB handle to RELEASE, pausing briefly in HANDLE OFF and SUPPRESSION.

WARNING - PCS RECOVERY (GM & GE Units)
The throttle and dynamic brake handle MUST NOT be moved from the IDLE position before attempting an automatic brake release. Following the release, ensure brake pipe pressure is being recharged AND the PCS light is out.

8.1 PCS Recovery/TIBS Failure

The TIBS is known to be defective and it is necessary to recover the PCS while standing on a grade, and

- IF the state of charge of the brake pipe cannot be determined or is in doubt, and
- IF the locomotive brakes are not sufficient to prevent train movement,
- THEN a sufficient number of retainers and/or hand brakes must be applied to hold the train standing, before releasing the automatic brake.

8.2 Emergency Brake Application Recovery

Procedure when Moving from a Stop - Retainers/Handbrakes

1. Refer to:
   - GOI Section 9, Descending Heavy Grade, "Use of Retaining Valves," or
   - Time Table footnotes regarding mandatory use of retainers or handbrakes.
2. When hand brakes are used, they must be released before moving the train, but only after the train air brake system is fully charged.
3. When High Pressure (HP) retainers are used, the train must not exceed 20 MPH. The train must be stopped every 20 minutes for a period of 10 minutes in order to allow the wheel and brake shoes time to cool off.

9.0 CHANGING OPERATING CAB OF A MULTIPLE LOCOMOTIVE CONSIST

Note: Ensure that the locomotive is protected from unintended movement.

9.1 At the cab being cut-out (to set up for TRAILING locomotive).

Place

- the throttle in IDLE
- the selector handle in OFF (if applicable) and
- remove the reverser handle

Place the independent brake handle in FULL application.

Make a full service reduction.

- Cut-out the automatic brake.
- Move the automatic brake handle to HANDLE OFF and remove the handle, if removable and place in receptacle.

Place the Cut in /cut out cock, MU-2-A valve or electronic equivalent in TRAIL position.

Place the independent brake handle in RELEASE and remove the handle if removable and place in receptacle.

Note: Brake cylinder pressure is not maintained when the independent brake is cut out. Observe brake cylinder pressure for leakage, and if necessary apply hand brake(s).

At the control stand, ensure the Generator Field switch is OFF. Leave the Control/Fuel Pump and Engine Run switches ON until after having set up the controls on the locomotive being cut in as the controlling locomotive.

Note: On AC4400 locomotives, ensure the dynamic brake circuit breaker on the control stand is OFF.

Return AB handle to RELEASE, pausing briefly in HANDLE OFF and SUPPRESSION.

9.2 At the cab being cut in (to set up for LEAD).

Replace the handles to the automatic and independent brake, and move the independent brake handle to FULL application.

Place the Cut in /cut out cock , MU-2A valve or electronic equivalent in LEAD.

Move the automatic brake handle to RELEASE. If necessary adjust Equalizing Reservoir Pressure.

Cut-IN the automatic brake.

At the control stand, ensure the Control/Fuel Pump, and Engine Run switches are ON.

Note: On AC4400 locomotives ensure the dynamic brake circuit breaker on the control stand is ON.

Return to the cab of the locomotive being cut out, place the Control/Fuel Pump and Engine Run switches to OFF.
Perform a Locomotive Air Brake test.

10.0 JOINING A LOCOMOTIVE CONSIST

1. Couple the locomotives and STRETCH to ensure that the couplers are locked.
2. On the controlling locomotive, apply the independent brake FULLY.
3. Before coupling the air hoses, open the cocks enough to blow out any accumulation of dirt or snow from the hose couplings. Check the air hose gaskets.
4. Ensure that all air hoses are properly connected, and that the airline cocks are open.
5. Ensure that the jumper cables are properly connected and secured in the captain hook, or other securing device.
6. Ensure that the controls and switches are properly positioned on all locomotives in the locomotives consist. (e.g. for lead or trailing).
7. Release the hand brakes where applied.
8. Perform the required air brake test.

Note: Ensure that any locomotive(s) to be left standing is properly secured in accordance with CROR rules 62 and 112.

11.0 STARTING/STOPPING THE DIESEL ENGINE – BATTERY KNIFE SWITCH

CAUTION: Electrical arcing may occur when opening or closing the main battery knife switch.

- Do not wear dangling accessories, jewellery or other similar items likely to come in contact with the bare metal parts of the switch
- Grasp the battery knife switch by the handle only
- Avoid direct contact with the bare metal bars and bare metal surfaces of the battery knife switch

12.0 STARTING/STOPPING THE DIESEL ENGINE – GMS AND GES

12.1 GM Locomotives – Starting Description Action

1. Lube oil, cooling water, compressor oil	Check

2. On control stand:	
Engine Run switch	**ON**
Generator Field switch.	**OFF**
Control/Fuel Pump switch.	**ON**
Throttle	**IDLE**
Reverser handle	**CENTERED**
MU Engine Shutdown. (if equipped)	**RUN**

3. SD90MACs ensure:	
CONTROL circuit breaker (CBrk).	**OFF**
COMPUTER CONTROL C Brk	**OFF**

4. Main Battery Knife Switch.	CLOSE
Note: On EMD locomotives, f the engine has been shutdown for more than 12 hours, open the cylinder test valves. To ensure that the engine will not start during the cylinder discharge, trip the low oil button on the governor. If water or oil is discharged from any of the test valves when the engine is rotated, allow the engine to rotate (no more than 20 seconds) until the discharge ceases, then close the cylinder test valves and report the condition to the mechanical service by way of the locomotive engineer's report.	

5. On SD90MACs in the following order:	
FUEL INJECTION SWITCH (on #2 C Brk Panel)	**START/RUN**
C Brks in black and yellow striped zone	**ON**
COMPUTER CONTROL C Brk	**ON**
CONTROL C Brk.	**ON**
WAIT FOR 2 MINUTES TO ALLOW COMPUTER POWER UP	

6. Isolation switch	START/STOP/ISOLATE

7. Alarm Silence Switch (if equipped).	ON

8. On DC traction locomotives, at start station	
Governor low oil button (if equipped)	Reset if tripped
Engine over speed lever (if equipped).	Reset if tripped
Fuel Prime/Engine Start switch (if equipped).	**PRIME** (until return fuel sight glass is full and free of Bubbles)
Fuel Prime/Engine Start switch (if required).	(20 seconds maximum)
***Layshaft* (if equipped) move to 1/3 of full travel (until engine starts)** **Caution: Do NOT use *Layshaft* on engines equipped with Q-TRON Electronic Governor (QEG).**	
Low water protective device (within 1 minute of starting). RESET	

9. On SD90MACs, in the locomotive cab on Engine Control Panel	**Engine Start Press for 2 Seconds and Release**
Note: An alarm will sound for 5 seconds prior to start-up. If the engine fails to start, the computer will display a fault message on the left operator screen.	
10. If engine fails to start within 20 seconds,	**Re-check steps 1 - 9, Allow at least 2 minutes between attempts (for starting motors to cool or computers to reboot) and try starting again.**

13.0 ENGINE SHUTDOWN ACCOUNT CRANKCASE OVERPRESSURE

Certain conditions can cause a severe build-up of dangerous gases within the engine crankcase. GM and GE engines are protected in different ways and therefore respond differently.

GM Engines:

If the crankcase pressure button trips (pops out); DO NOT attempt to restart the engine. Explosive gases in the crankcase could be ignited and cause injury.

14.0 OPERATING THROUGH WATER

Locomotives should not be operated through water of a depth of more than three inches above the rail. They may be operated through water if the depth is three inches or less above the top of the rail, but at a speed not exceeding three miles per hour.

If it becomes necessary for a locomotive to operate through water aboverail level the following should be done:

1. Place the throttle in idle and reduce the speed as quickly as possible.
2. Place the generator field switch in OFF and advance throttle to notch 4 to increase the volume of air supplied by the traction motor blowers to prevent water from entering the traction motors.
3. After passing through the water, resume power with caution and watch for any abnormal operation. If locomotive operates normally (no ground relay, etc), it may be considered safe to proceed.
4. If the motors are flooded, power should not be reapplied.
5. Whether water has affected the motors or not, the occurrence must be reported to the Locomotive Specialist and noted on the Crew information /brake status form

15.0 LOCOMOTIVE LOAD METER

Note: AC traction locomotives are not subject to short time ratings or traction motor stall burn.

15.1 Short Time Ratings

1. Unless the locomotive is isolated, Locomotive Engineers should observe the load meter, but particularly so when under slow speed full throttle conditions.
2. If the load meter enters the short time current rating, or if an AC locomotive is controlling in a locomotives consist with DC locomotives trailing, the rating table must not be exceeded in order to avoid traction motor damage.

Speed	Rating
11 MPH	Continuous
10.5 MPH	60 minutes
10 MPH	30 minutes
9 MPH	15 minutes
8 MPH	10 minutes
5 MPH	5 minutes

15.2 If the load meter enters the short time current rating, to avoid traction motor damage, the short time rating must not be exceeded.

15.3 It should be understood that the different short time rating zones are not to be considered as consecutive ratings.

For example: The locomotive must not under any circumstances be operated at the ¼ hr. rating for ¼ hr., then at the ½ hr. rating for ½ hr. then at the 1 hr. rating for 1hr.

15.4 If operating in the short time rating zone, but the load is then reduced such that the load meter falls below the short time rating zone for less than 20 minutes, and then the pointer re-enters the short time rating zone, the time operating in the short time rating zones must be added together. Do not exceed the time indicated by the most restrictive zone reached by the load meter.

15.5 Should it appear that the short time rating will be exceeded, the RTC must be advised and the train crew shall take the necessary corrective action by either;

A. Stopping the movement and cooling the traction motors for 20 minutes by centering the reverser, place the GF switch OFF and advance the throttle to No. 4 position, or

B. Stopping the movement and either reducing or doubling the grade.

15.6 In addition, to avoid traction motor damage, DO NOT power up the locomotive to hold a train at a standstill on a grade OR allow the locomotive to stand without movement for more than 10 seconds after the throttle is opened.

16.0 LOCOMOTIVE SPEED INDICATORS

16.1 Locomotive engineers must verify that speed indicators are in working order when leaving a shop track.

16.2 The speed indicator must be checked for accuracy, as soon as possible after leaving a terminal. This check must be made before reaching maximum speed and again after maximum speed is reached, and thereafter as often as may be required. When speed indicator inaccuracy is observed, speed must be adjusted accordingly and the exception noted on a Crew information /brake status form.

16.3 In the event the speed indicator on a controlling locomotive fails enroute, the locomotive engineer will advise the Locomotive Specialist and RTC accordingly. Arrangements will be made so that the controlling locomotive will have an operative speed indicator before the return trip.

17.0 LOCOMOTIVE EVENT RECORDERS

17.1 Locomotive Event Recorders are installed to record the following data:

• Locomotive number • Speed • Acceleration / Deceleration • Tractive effort • Dynamic Brake position • Brake pipe pressure • End of train (EOT) messages • Equalizing Reservoir • Horn • Headlight Operation • RSC override operation • Dynamic Brake operation • Locomotive over speed • Emergency Brake Application – Lead Loco • Additional engine/locomotive diagnostic data	• Time/Date • Distance and Direction • RSC system operation • Throttle position • Tractive Effort Wheel Slip • Brake cylinder pressure • End of train pressure • Independent Bail • Bell • Ditch light Operation • RSC system failure • Wheel slip • ECP Messages (if equipped) • Emergency Brake Application – Train Initiated • Other miscellaneous operational data (Manufacturer provided)

17.2 The data will be monitored to provide information in a minimum of the following areas:
- Rule compliance/speed control
- Train handling/fuel conservation
- Training/qualification standards
- Accident/incident analysis
- Litigation/claims and legal
- Identifying mechanical problems.

18.0 PUMPING AIR

If main reservoir pressure cannot be maintained 15 psi above feed or regulating valve setting at low engine speed, air compressor output can be increased by:
1. Place reverser handle in NEUTRAL.
2. Place generator field switch OFF.
3. Advance throttle to not exceed No. 3.

Note: On GE & SD90MAC locomotives, leave the throttle in IDLE .

19.0 RESPONSE TO ALARMS

19.1 Continuous Wheel Slip/Pinion Slip Indication

If wheel slip and/or pinion slip indicator and accompanying ALARM indicates slipping, even though throttle or dynamic braking are reduced enough to prevent slipping:
1. **STOP MOVEMENT IMMEDIATELY.**
2. Check locomotive wheels while moving slowly to see that all wheels are rotating freely.
3. If all wheels are rotating freely, a traction motor pinion may have loosened. Contact the Locomotive Specialist and be governed by their instructions. Inform RTC of train delay.

4. If no loose pinion is detected and the locomotive is equipped with a traction motor cut-out switch, cut out the motors in sequence until the wheel slip indicator stops. The locomotive can now be worked unless special instructions specify otherwise.
5. If a locked pair of wheels is found the locomotive must not be moved further, until instructions are received from the Locomotive Specialist.

19.2 Response to Locomotive Alarm Indications

IF the locomotive alarm is sounding and/or being displayed, the cause of the alarm must be investigated as soon as practical. If the cause of the alarm cannot be determined, the alarm indication may indicate pinion or wheel slip problems and must be handled as per item 19.1.

Note: Before SILENCING continuous alarms by cutting out traction motors or ISOLATING a locomotive when the cause cannot be determined, It must be known that:

a. All wheels are rotating freely, and
b. There is no evidence of overheating or disintegration of rotating electrical equipment**.**

20.0 OVERCHARGED CONDITIONS

20.1 When a train's air brake system is charged to a pressure higher than the prescribed standard for that train, the overcharge will be maintained to the train's destination, providing the brake pipe pressure is not higher than 110 psi.

20.2 An overcharged air brake system occurs when the storage reservoirs on the locomotive and/or cars are charged to a value higher than the feed or regulating valve setting on the controlling locomotive. This is indicated by the air brakes being applied on the train or portion thereof, when the automatic brake handle is in the RELEASE position on the controlling locomotive.

20.3 To eliminate an overcharge on a car or block of cars:

A. Close the angle cock between the locomotive and the overcharged car(s).
B. Bleed the reservoirs on the overcharged car(s).
C. Cut the air in on the car(s).

20.4 To eliminate an overcharge on a train:

A. Protect against undesired train movement.
B. Place the automatic brake handle in RELEASE position.
C. Using the feed/regulating valve, ensure equalizing reservoir pressure is adjusted to the required pressure.
D. Place the automatic brake handle in EMERGENCY position. Wait at least 2 minutes before recharging the train air brake system.
E. A pull-by inspection must always be made to ensure the overcharge has been eliminated.
F. Repeat the above procedure if the pull-by inspection reveals the overcharge has not been eliminated.

20.5 An overcharged brake system is most likely to occur in the following situations:

A. When adding one or more cars with an overcharged condition to a train.
B. When attaching locomotive to the opposite end of a train.
C. When changing the locomotive.
D. When picking up cars that were set off of a train operating with higher brake pipe pressure.

21.0 USE OF THE INDEPENDENT BRAKE

(i) The blocking of the independent brake handle in the BAIL position is prohibited.

(ii) To release the locomotive brakes when train brakes are applied, hold the independent brake handle in the actuating (bail) position for five seconds per locomotive.

(iii) Use of the independent brake to control train speed can cause overheating of the locomotive wheels. Unless otherwise indicated in train handling rules, the independent brake should not be used to control train speed.

(iv) Full application position on the independent brake is used when the locomotive is stationary.

(v) To control a consist of seven or more locomotives, the automatic brake is to be used instead of the independent brake.

SECTION 9 – HANDLING / OPERATION OF MOVEMENTS

TRAIN OPERATING INSTRUCTIONS
(ore / freight / others)

GLOSSARY

Conventional train :
A train with only head-end engines as a driving force.

***Locotrol* train**:
A train with one or several engine(s) at the center or the rear of the train controlled by remote control from the lead engine.

Departure:
A train is considered to have departed when the speed of the train has gone from 0 to approximately 1 MPH.

Acceleration:
A train is considered to be accelerating during the interval when its speed goes from approximately 1 MPH to its authorized speed (normal speed).

Circulation:
When the train reaches its authorized running speed (normal speed) and continues to move at that speed.

Level track:
A section of the track that is sufficiently level for the track configuration not to cause significant stress to the train.

Sharp incline:
An incline of more than 1.0%.

Crest:
A long ascending grade followed by a long descending grade.

Sag:
A section of the track composed of an incline followed by an ascending grade, a level track or an almost level track.

1.0 GENERAL INSTRUCTIONS

1.1 The locomotive engineer will be responsible for proper train handling in both yard and road service.

1.2 Braking practice will depend on weather and rail conditions, speed and weight of train, braking capacity, grade and other factors.

1.3 The above conditions will govern the point at which a brake application should be initiated, as well as the speed at which a running release can be safely made. A running release must not be attempted under circumstances which will damage couplers or draft attachments.

1.4 A train or locomotive must start down a heavy or mountain grade at a very slow speed, gradually allowing speed to increase as braking power is seen to be sufficient.

1.5 When coupling together two portions of a train, a brake pipe reduction of 35 psi is to be made before opening the angle cock, unless train movement can be prevented with the locomotive brakes.

1.6 Winter Conditions

A. During weather conditions which may cause snow or ice build up to occur between brake shoes and wheels, periodic running brake tests must be performed to insure proper braking effort is being provided.

B. During weather conditions described above, when trains are approaching a location which will require the use of the train air brake, the locomotive engineer must make an automatic brake application sufficiently in advance of that location to determine that brakes are working properly.

C. If there are abnormal train braking indications (e.g., the brakes have had time to warm up and speed should be decreasing, not remaining the same or increasing) the train shall be stopped by a full service brake application with dynamic brake fully applied (using care not to jackknife the train). If, in the locomotive engineer's judgment, circumstances require an emergency brake application, this is to be done without hesitation.

D. After stop is made, train will be inspected to determine that brake shoes are free of snow and ice build-up before proceeding.

E. Immediately after proceeding, a running brake test must be made at a safe speed to determine whether or not the brakes respond properly.

2.0 USE OF THE AUTOMATIC BRAKE

2.1 When commencing a service application and the train air brake system is FULLY charged, the initial equalizing reservoir reduction must not be less than 5-8 psi.

2.2 When commencing a service application and the train air brake system is NOT FULLY charged, one of the following methods must be used:

A. On Conventional or Distr Pwr trains (except tail end remote), make an equalizing reservoir reduction of at least 7 psi below the rear car brake pipe pressure.

B. On Conventional or tail end remote equipped trains, using the equalizing reservoir gauge, measure at least a 7 psi reduction from the point where the service exhaust starts to blow.

C. On Conventional and Distr Pwr equipped trains, the following method may be used, but in order to avoid an undesired release, it is necessary to understand the following information:

- **True Gradient**
  After charging or re-charging, if brake pipe pressure (BPP) on the rear car has stopped rising, then the train air brake system is considered FULLY charged
- **False Gradient**
  During charging or re-charging, if BPP on the rear car is still rising, then the train air brake system is NOT FULLY charged.

D. The application of paragraphs A and C above, if TIBS fails to display rear car brake pipe pressure and it is necessary to apply the brake with the train air brake system not fully charged, an equalizing reservoir reduction of at least 5 psi more than the last reduction must be made.

2.3 Using the **regulating valve** to make brake pipe reductions is prohibited**.**

2.4 Should locomotive brake pipe pressure be reduced below 48 psi during service brake operation, the train must be stopped and the brake system recharged.

3.0 MINIMIZING STICKING BRAKES

A. Do not overcharge the train brake system above the standard pressure for that train, unless otherwise specified as per special instructions.

B. Whenever a train is operating in a false gradient condition, if an angle cock is closed such as when changing a defective air hose, a build-up of brake pipe pressure in the cars ahead of the closed angle cock may result in sticking brakes when the angle cock is opened. In order to eliminate the possibility of sticking brakes, a full service brake pipe reduction must be made before the angle cock is closed.

C. The total brake pipe reduction should be 10 psi or more before the release is made. An overall reduction of less than 10 psi should therefore be increased to 10 psi or more before releasing. Brake pipe exhaust must be stopped for at least 20 seconds before releasing.

D. Whenever air brakes are used to stop a train, if a 15 psi brake pipe reduction has not been made, it must be increased to that amount, and comply with Continuity Test Procedure.

4.0 EMERGENCY AND PENALTY BRAKE APPLICATION

4.1 All employees concerned must familiarize themselves with the location of the emergency valves on locomotives and cars so equipped. Emergency valves are to be used only in cases of emergency, and when used must be opened wide and left open until the movement is stopped. Members of the train crew are to communicate to the extent possible in the event of an emergency brake application so as to ensure personal safety.

4.2 An EMERGENCY BRAKE APPLICATION must not be made unless it is necessary. In cases that require stopping in the shortest possible distance, when contact has been made or to avoid imminent contact with, someone or something that could result in harm to members of the public, employees or property, an EMERGENCY BRAKE APPLICATION must be made;

- On trains so equipped, the TIBS emergency brake feature must also be activated.
- If accessible to other crew members, the conductor's emergency valve must be opened fully and left open until the movement stops.
- Except in DB, place the throttle to idle.

4.3 When an EMERGENCY BRAKE APPLICATION occurs from any source, the locomotive engineer must immediately:

- Activate the TIBS emergency feature (if so equipped)
- Place the automatic brake handle in the EMERGENCY position and leave it there until the movement stops.

4.4 In the event of a PENALTY or EMERGENCY BRAKE APPLICATION while moving, the locomotive engineer must, until the movement stops, regulate locomotive brake cylinder pressure to obtain the shortest possible stop required by the situation. Care and good judgment must be exercised to avoid locomotive wheel slide and severe in-train forces.

Note: After an emergency brake application, brake pipe vent valves will remain open for as long as one minute. No attempt should be made to release brakes or recharge the brake pipe until this interval has elapsed.

4.5 If there is an indication by the air flow indicator or otherwise that the air brakes are being applied from other than the automatic brake, the locomotive engineer must immediately shut off power, placing the automatic brake handle in full service position, and leave in that position until movement stops.

4.6 To stop a locomotive in an emergency situation, if both the air brake and the dynamic brake are inoperative, "plug" or reverse the traction motors.

This procedure may be hazardous to personnel and equipment and should only be used as a last resort. It should be performed as follows:

1. Alert all personnel on the locomotive.
2. Place the throttle in IDLE.
3. On locomotives so equipped, place the selector lever in the No 1 or Power position.
4. Place the reverser handle in the position opposite to the direction of locomotive movement.
5. Advance the throttle to FIRST notch only.

5.0 DYNAMIC BRAKING (DB)

Summary of available DB on locomotives:

Locomotive Type or series	Retarding Force per locomotive	DB Factor
All 4 axle (except GP60)	= 40,000 lbs	DB factor 4
SD40-2	= 60,000 lbs	DB factor 6
AC4400 & ES44AC	= 98,000 lbs	DB factor 10
SD90MAC	= 96,000 lbs	DB factor 10
SD45	= 80,000 lbs	DB factor 8
SD60	= 80,000 lbs	DB factor 8
Some leased units	= nil	

Note (1): Some older SD40/40-2 locomotives and other 4 & 6 axle locomotives:
Leased Units, Yard Engines, low horse power road switchers are NOT equipped with DB.

Note (2): If in doubt, check locomotive control stand for DB controls or refer to locomotive information on consist list or contact the locomotive shop supervisor.

Note (3): When SW 1500 locomotives are moved in a freight train, dynamic braking is prohibited.

EXAMPLE:
3 SD40s = 3 times factor 6.0 = 18 (DB factor is 18)
2 SD90MACs = 2 times factor 10 = 20 (DB factor is 20)

5.1 Using Dynamic Brake

Except as otherwise restricted, full available DB may be used with up to a maximum of 4 SD 40-3 engines (200,000 lbs) (referred to as DB factor of 20) DB should be cut-IN on the lead locomotive and cut-out on trailing locomotives so that DB factor does not exceed 20.

Note: When operating conditions permit, it is acceptable to operate with the lead locomotive isolated. Ensure DB factor does not exceed 20 when the locomotive is placed back "on line".

When changing off with another locomotive engineer, if the Crew information/ brake status form does not clearly indicate that the DB factor is 20 or less, then the locomotive engineer in charge must inspect the consist, limit DB properly, and then update the Crew information/brake status form accordingly.

5.2 When changing from motoring to DB when the train is in motion, pause for ten seconds with the throttle in IDLE.

5.3 When moving into the braking zone, pause at the minimum braking position long enough to adjust train slack, then move the handle slowly within the braking zone to obtain the desired braking effect.

5.4 After releasing the DB in preparation for applying power, the throttle must be advanced with care to ensure gradual adjustment of train slack.

5.5 Handling Dynamic Brake (DB) in the following situations;

1. **At Sidings and Crossovers**
   When entering a siding or crossover and the DB factor of the lead locomotive consist is 14 or greater, the DB effort **MUST NOT** exceed 60 Klbs (500 amps) before reaching the turnout and until at least half the train has entered the siding or crossover.
2. **When governed by Temporary Speed Restriction**
   When the DB factor of the lead locomotives consist is 14 or greater, the DB effort **MUST NOT** exceed 60 Klbs (500 amps) for approximately one half mile prior to the beginning of, or when the locomotive is moving over any track governed by temporary speed restriction.

Note: The train air brakes and DB may be used to comply with the speed restriction.

3. **On Yard Tracks**
   When operating on any yard track, if the DB factor of the lead locomotives consist is 14 or greater than the DB effort **MUST NOT** exceed 60 Klbs (500 amps).

5.6

A. The train air brakes and DB may be used in conjunction with each other. To avoid skidding locomotive wheels during this operation, the locomotive brakes must be actuated (bailed off) manually to protect against a DB interlock malfunction.

B. When the release of an automatic brake application is to be followed by a DB application or an increase in DB, the DB should be applied before releasing the automatic brakes. However, the DB should be reduced for at leased two minutes after releasing the automatic brakes to prevent a run-in of slack of jackknifing proportions.

C. The independent brake may be used in conjunction with DB but only at speeds of 10 MPH

- On locomotives without extended range DB, wheels are likely to skid if independent brake pressure of more than 25% at 10 MPH or 50% at 5 MPH is used, based on maximum pressure posted in the cab.
- On locomotives with extended range DB, close observation of DB effort displays and locomotive brake cylinder pressure is required to ensure that total braking effort does not cause wheel slide or loss of DB as per IPS pressure settings described below.

5.7 Dynamic Brake Interlock (DBI)

A feature which (while operating in DB) prevents application of the locomotive air brakes when automatic service brake applications are made; unless otherwise specified, DBI does not function during Emergency or Penalty brake applications.

5.8 Independent Pressure Switches (IPS)

These are switches activated by pre-determined pressures in locomotive brake cylinders that will reduce, remove or restore DB levels. IPS are designed to help prevent locomotive wheel slide on locomotives equipped with extended range DB. IPS switches will function as intended during normal DB or during DB holding.

IPS pressure settings operate as follows:

- On DC traction locomotives with extended range DB, IPS pressures are set at 10 and 15 psi. This means that if the locomotive is in DB and if locomotive brake cylinder pressure rises to 15 psi, DB is reduced or removed entirely, if pressure is then lowered to 10 psi, DB is restored entirely.

5.9 DB Holding Feature

A feature that HOLDS or maintains DB if an emergency or penalty brake application occurs for any reason. The PCS switch will open immediately, but normal DB control is retained indefinitely.

Additional information about DB holding:

- Trailing locomotives depend on the controlling locomotive for DB holding feature.
- If the controlling locomotive is equipped with DB holding, then trailing locomotives will hold DB if an emergency brake application occurs.
- Conversely, if the controlling locomotive is not DB holding equipped, then trailing locomotives will not hold DB if an emergency brake application occurs.
- On Distr Pwr operated trains, the remotes will not hold DB if an emergency or penalty brake application occurs but will develop 45 psi locomotive brake cylinder pressure.

5.10 DB Holding Feature Operating Instructions:

A. On locomotives with an Emergency or Penalty PCS switch open, and with a locomotive in DB holding mode, DB interlock will not prevent the build-up of locomotive brake cylinder pressure caused by the drop in brake pipe pressure. This build-up of locomotive brake cylinder pressure can only be reduced by operation of the independent bail.

B. While in dynamic braking mode, if a controlling locomotive is equipped with DB holding feature, and if an emergency or penalty brake application occurs for any reason, the locomotive engineer must regulate brake cylinder pressure (bail and depending on the situation, moderately apply independent brake) so that the DB holding feature will function as intended. Close observation of DB effort displays and locomotive brake cylinder pressures is required.

C. After the movement stops, Emergency PCS must be recovered.

6.0 RESTRICTION WHEN MOVING BACKWARD

6.1 **Note:** Extreme caution and good judgment must be used when making reverse movements. Throttle is to be advanced slowly and only sufficient enough to cause the equipment to move. Once the equipment starts to move, throttle is to be reduced to only maintain movement.
Unless otherwise authorized by special instructions, if any part of the movement is on non- main track, and if handling one or more cars, the limits as shown for curves & turnouts must be used shoving or doubling over.

The following table is to be used when moving backward, shoving, doubling over or assisting.
The tractive effort (amp) values in the table are for the indication that will be shown on the lead locomotive.

Unit Type	**Maximum Tractive Effort on:**	
AC	**Curves & Turnouts**	**Straight Track**
1 unit	150 klbs	Maximum available
2 units	75 klbs	110 klbs
3 units	50 klbs	75 klbs
DC	**Curves & Turnouts**	**Straight Track**
1 unit	900 amps	900 amps
2 units	450 amps	600 amps
3 units	300 amps	450 amps

Exception: If the above ratings are not sufficient to move, then the ratings may be exceeded, but only to the extent to cause or allow movement of the equipment. Extreme caution and good judgment must be used as there is a high risk that jackknifing may occur.

Note: No more than 3 operating locomotives may be used when making reverse movements. Additional locomotives must be isolated.

6.2 On Distr Pwr trains, if at least 35 cars/platforms separate each locomotive consist, then each consist is permitted the limits as indicated in item 6.1.

7.0 INTRODUCTION TO TRAIN HANDLING GUIDELINES

7.1 Knowledge of the road and train make-up are the most important factors the locomotive engineer must take into account when developing a train handling plan to operate safely, efficiently and with competence.
The purpose of these guidelines is twofold:

1. to eliminate the occurrence of personal injury associated with severe slack action and;
2. to minimize damage to the draft gear, cars and lading caused by poor train handling practices.

The particular care and attention required when starting or stopping a train must also be exercised when the train is undergoing a transition from bunched to stretched or vice versa. Changes in slack due to grade changes and/or train make-up, as well as those initiated by the locomotive engineer must be handled in such a way as to maintain the in-train forces within acceptable levels

7.2 Starting Freight Trains

Factors to be considered:

- Throttle response characteristics of locomotive consist.
- Weight and length of train.
- Amount of slack in train.
- Weather.
- Grade.
- Rail conditions.
- Proximity of curves in relation to head portion of train.
- Train marshalling.
- Rear car should be started with care, using lowest throttle possible to start train moving.
- After train is moving, throttle may be moved to the next higher position when amperage or tractive effort begins to decrease.

7.3 Stopping Freight Trains

Factors to be considered:

- Knowledge of the territory over which you are operating is extremely important. With this familiarity, planning ahead will enable you to select the most desirable train handling method.
- Unless rules specify otherwise, during planned stopping, slowing or controlling train speed, if dynamic brakes are available, the power braking method should be avoided.
- Total braking effort from dynamic and air brakes should be kept at the lowest practical level when stopping in curve territory.
- In many of the train handling methods, a final reduction is made approximately 200 feet from stop. This reduction is to keep the train bunched.
- When the instructions require that the locomotive brakes be applied to complete a stop, brake cylinder pressure must be sufficient to prevent a run-out of slack without creating excessive buff forces.
- A 30 second pause between split reductions minimizes in-train forces.
- Unusual blocking of loads or empties (train marshalling) must be considered in choosing the proper train handling method.
- The various train handling methods must be known and understood. The method that you select should be the one that minimizes in-train forces and locomotive fuel consumption.

7.4 Modified Slack Bunched – Under 15 MP¨H –Dynamic brake not available

a) Gradually reduce throttle to idle and allow slack to adjust.

b) Further bunch slack with the independent brake.

c) Make a minimum reduction and allow locomotive brakes to apply.

d) Approximately 200 feet from stop make a final reduction exhausting on stop and allow independent brakes to apply

Note: Care and good judgment must be exercised to avoid locomotive wheel slide and severe in-train forces.

7.5 Slowing or Controlling Freight Trains

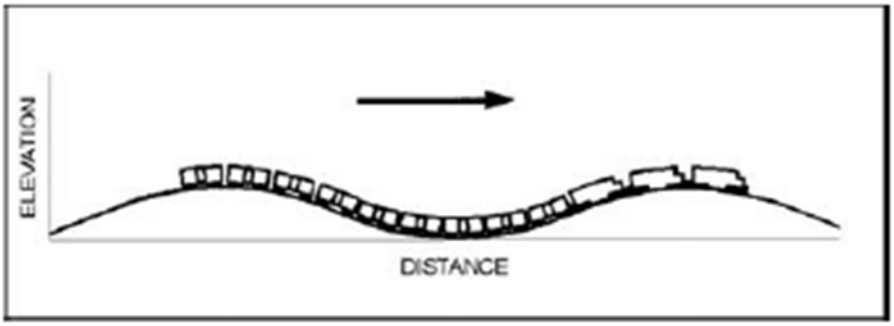
Methods to be considered:

- Throttle Modulation - Gradually reduce throttle one notch at a time to adjust train slack gradually until desired speed is reached.
- Dynamic Brake - If the dynamic brake alone will provide sufficient retardation to slow or control speed, use of the train brakes is unnecessary.
- Stretch Braking - Throttle 4 or less with automatic brake application.

8.0 DEFINITION OF TRACK PROFILES

8.1 Undulating Grade

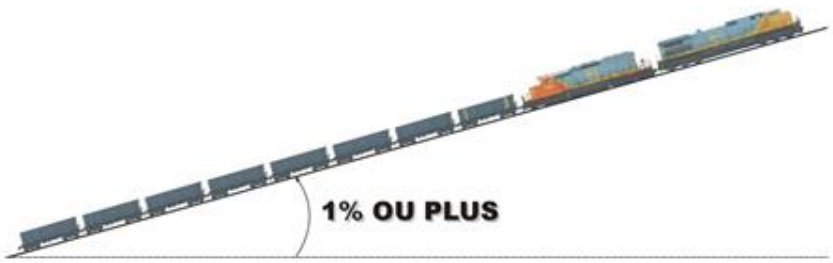
A track profile with grade changes so often that an average train passing over the track has some cars on three or more alternating ascending and descending grades. The train slack is always tending to adjust as cars on descending grades tend to roll faster than those on ascending grades.



8.2 Ascending Grade

An ascending grade is considered HEAVY between and including 1.0 and 1.8 percent. A LIGHT grade is below 1.0 percent.

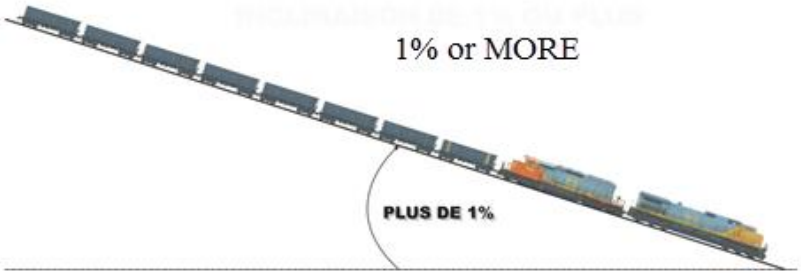
STEEP ASCENDING GRADE 1% or more



8.3 Descending Grade

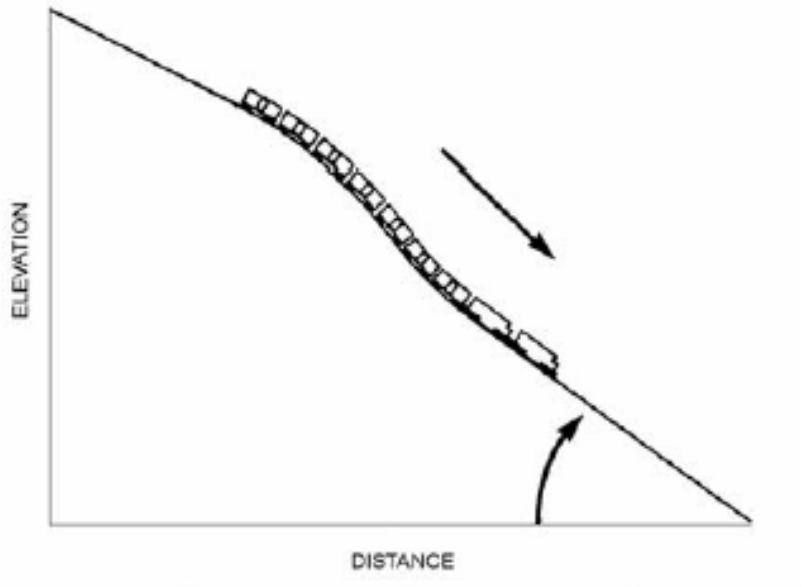
A descending grade is considered HEAVY between and including 1.8 and 0.8 percent, while a light descending grade is below 0.8 percent.

STEEP INCLINE 1% or more



8.4 Mountain Grade

A grade is designated a MOUNTAIN grade when it is greater than 1.8 percent.



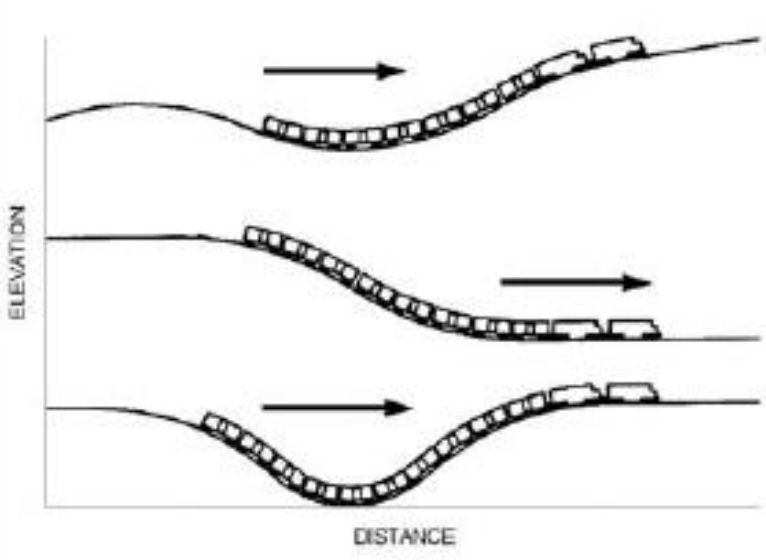
8.5 Cresting Grade

A long ascending grade which rapidly changes to a long descending grade, both of significant magnitude to require a change in the train handling procedure when the grade is topped

CREST

8.6 Sag or Dip

A rapid decrease in grade followed by an increase in grade sufficient to result in abnormal slack adjustment.



8.7 Level track - Departure

LEVEL

Forward Departure

1. Make sure that the brakes on the train and the engine are released before departing.
2. Put the independent brake valve in the "release" position, to allow the coupling to start to stretch.
3. Put the throttle at notch 1 and watch the ammeter.
4. When the ammeter needle stabilizes, bring the throttle up a notch until the desired speed has been reached.
5. If there is wheel slippage during train departure, bring the throttle down a notch until the wheel slippage warning light goes off. If necessary, activate the sanding control and bring the throttle back up to the desired notch. Sanding can be used until it is no longer required.
6. If the train does not manage to depart and the ammeter value is high and/or there is repeated wheel slippage, the throttle must be closed to prevent damage to the equipment and to the track. Bring in the slack and try to depart again: (each car has approximately 4 inches of slack).

9.0 PASSENGER TRAIN HANDLING

9.1 When approaching stopping points, after gradually shutting off power or adjusting throttle as required, and after allowing for any necessary slack adjustment, the initial reduction must be at least 10 psi to ensure brakes apply throughout the train. Subsequent brake pipe reductions will depend upon train speed.

9.2 To avoid slack action, the locomotive brake may be held off during the first reduction, if necessary, until the train brakes have applied.

9.3 After the speed of the train has been reduced sufficiently, the brakes may be graduated off, if necessary.

9.4 When the speed has decreased or the deceleration rate is too high, brake cylinder pressure should be reduced in graduated steps. This is accomplished by moving the automatic brake handle to RELEASE position, on a Passenger equipped 26 type brake valve, move the handle slightly toward release position in the application zone. The equalizing reservoir gauge should show an increase of approximately 4 psi. Do not attempt a further graduation after the brake pipe pressure has been restored to within 10 psi of the standard brake pipe pressure. Graduations should be spaced so a relatively low brake cylinder pressure will be retained when the train is moving 15 MPH or less, especially with cast iron shoes.

9.5 When making a spot stop in passenger service, braking should be commenced at a sufficient distance from the stopping point to allow for two distinct automatic brake applications.
The final application should be commenced at a speed which will permit a light reduction to bring the train to a stop. Time should be allowed for all brakes throughout the train to be released before starting this application.

9.6 When making slowdowns on passenger trains, the slack should be kept stretched by working light power. As the train slows down from the brake application, the throttle must be reduced to prevent excessive load meter readings.

9.7 When passenger trains are controlled by use of a back-up hose or valve, the locomotive engineer must not allow the speed to become excessive. When it is noted that brakes are being applied, place the automatic brake cut-off valve in OUT position. Power must be reduced as required and brakes must not be released until stopped or a signal is received to continue the movement.

10.0 FUEL CONSERVATION

Using the most fuel efficient method of operation, not only reduces the amount of fuel used, it can also have tremendous advantages environmentally. The reduction of emissions into the atmosphere, such as hydrocarbons, nitrogen oxides, carbon monoxides, sulphur dioxides and particulate matter are greatly reduced.
Because fuel conservation techniques are of such importance, the following train handling guidelines are required, whenever, and wherever practicable. These instructions are in addition to those train handling guidelines and instructions contained in GOI train handling section.
Whenever practicable, the most fuel efficient method of operating must be used.

A. Dynamic Brake should be considered the primary choice of retardation.
B. Use contour braking/throttle modulation, allow the natural resistance of grade, curvature and friction slow the train.
C. Use a combination of low power split reduction and dynamic braking.
D. When choosing the low power split reduction method, the following steps must be followed:
1) reduce the throttle to the 4th notch or less.
2) the train air brakes must be applied in the following sequence:
- make an effective minimum reduction.
- reduce throttle again.
- make additional brake pipe reductions in 2-3 psi increments as required,
- throttling down if possible between each supplement.
- * There are occasions when "ZERO THROTTLE" stretch braking might be employed - i.e. cresting grades, relatively short train with multi-unit consists, trains where loads are marshalled near the head end, trains which are dynamically stable and are virtually slack free (i.e. bulk trains).

E. Unless authorized by Time Table or Special Instruction, High Throttle Power Braking (notch 5-8) is prohibited.
F. Whenever practicable, avoid increasing the throttle while the brake is set.
G. When a train is going to be delayed for a period of time greater than 20 minutes, the RTC is responsible to communicate to the affected crew:
- the location and estimated duration of delay
- calculate the speed required based on their distance from the delay point and the duration of the delay.

H. Avoid short bursts of speed.

I. When charging the train air brake system, advance the throttle only when Main Reservoir pressure cannot be maintained at or above 105 psi. then promptly return the throttle to IDLE as soon as Main Reservoir pressure exceeds 105 psi.

J. The following locomotive defects are of particular significance concerning the efficient use of fuel and must be reported to the Central Locomotive Specialist:

1. Non-operating, malfunctioning, or ineffective Dynamic Brakes.
2. Engine not loading properly.
3. Locomotive exhaust (e.g. excessive black smoke).
4. Battery failure or other starting problems.

K. When you are making your train handling decisions, safety and rules compliance are the first consideration. However, fuel conservation must be a major factor in the train handling method selected. Train handling practices in conjunction with fuel conservation will be monitored through random event recorder downloads and on the job observations and evaluations of operating officers to ensure that all locomotive engineers re making the proper fuel conservation decisions.

11.0 PRESSURE RETAINING VALVE (RETAINERS)

The purposes of a pressure retaining valve are:

a) To exhaust brake cylinder pressure to the atmosphere.

b) To retain and control the air pressure in the brake cylinder when the train brakes are released. They help to better control the speed of a train when braking during a descent.

There are two types of pressure retaining valves in service: the four-position valve and the three-position valve. The positions of the valves are indicated by letters cast in the body of the valve:

SD - slow direct exhaust
LP - low pressure
HP - high pressure
EX - direct exhaust

This does not relieve locomotive engineers or crew members of their responsibility to ensure that retaining valves are in the proper position before descending grades.

11. 1 Operation

When the handle is placed in position:

SD - SLOW DIRECT EXHAUST (handle at 45° above the horizon): the air coming from the brake cylinder will go through a choke in the retaining valve and escape to the atmosphere. It will take approximately 90 seconds to release the brakes on a car which had a 20 psi brake pipe reduction.

LP - LOW PRESSURE (handle horizontal): the air coming from the brake cylinder will go through a 10 psi calibrated spring valve located in the retaining valve, and the pressure will lower from 50 to 10 psi in about 60 seconds. The valve will shut off and the last 10 psi brake cylinder pressure will be retained.

HP - HIGH PRESSURE (handle at 45° below the horizon): the air coming from the brake cylinder will go through two calibrated spring valves located in the retaining valve, and the pressure will lower from 50 to 20 psi in about 90 seconds. The valve will shut off and the last 20 psi brake cylinder pressure will be retained.

EX - DIRECT EXHAUST (handle turned downward - vertical): the air coming from the brake cylinder will go directly to the atmosphere since there is no restriction in the pressure retaining valve.

11. 2 Special instruction steep incline

Locomotive engineers operating ore trains on steep incline who are unable to maintain authorized speed due to air brake or dynamic brake problems, **must stop their train and are not to proceed prior to having advised the RTC and the transportation supervisor.** If this occurs, a minimum of twelve retaining valves shall be put in **HP**: (high pressure) position.

12 sets = 36 cars.

During severe snow and/or cold weather operations, it might become necessary to put retaining valves at **HP** (high pressure) on loaded ore trains in order to maintain the prescribed time table speed.

11.3 Manual "load/empty" lever

Some companies Ore car (IOC) **"LOAD and EMPTY"** change-over valves will be placed in the **"LOAD"** position on all loaded cars of ore at **loading points** and will be placed in the **"EMPTY"** position where the cars are emptied as indicated in special instruction. Employees making pull-by inspections must ensure that the valves are in the proper position.

On an empty ore car, the lever must be positioned to "EMPTY".

On a loaded ore car, the lever must be positioned to "LOAD" at all times.

The following demonstrates the importance of having the **"LOAD/EMPTY"** lever in the appropriate position:

- A 20 psi brake pipe reduction on an empty ore car with the lever in the **"EMPTY"** position gives approximately 9,590 pounds of braking force on the wheels of the car.

- The same reduction on an empty ore car with the lever in the **"LOAD"** position gives approximately 23,980 pounds of braking force on the wheels of the car.

There is therefore an increase of 14,390 pounds of braking force on a car with the lever in the **"LOAD"** position. It is this difference in braking force that can cause the wheels to skid on an empty car thus causing flat spots.

It is very important to have the "LOAD/EMPTY" lever in the proper position.

SECTION 10 – EQUIPMENT HANDLING


CN 667013

1.0 GENERAL DEFINITIONS

1. 1 Definitions

A. **Cars or Platforms** – When used together, it means conventional car(s) or platforms. "Cars or platforms" is usually used with a number, such as "10 cars or platforms." Conventional cars count as one. Multiplatform cars count by the number of platforms (i.e., a five-pack counts as five).

B. **Container Slot** – Space for a container on a platform of an intermodal car. Intermodal cars have more slots than platforms. Double stack cars have bottom slots and top slots.

C. **Cushioned Drawbar** – Designed to dampen the car coupling and in-train forces by using a hydraulic-style car impact cushioning system with longer travel than typical drawbars. Cars that often have cushioned drawbars include:

- multi-level automobile cars,
- automobile parts boxcars,
- centrebeam lumber cars,
- intermodal flat cars (greater than 80 feet in length and capable of holding two FEUs),
- flat cars used to ship loads prone to shifting.

Cars that **do not** have cushioned drawbars include:

- covered hopper cars,
- hopper cars,
- gondolas,
- tank cars.

D. **Extreme Head End** – First car or cars on the train immediately next to the lead locomotive consist.

E. **Extreme Rear of Train** – Last car or cars on the train with no other cars trailing except an operating caboose or "crew transportation car." Cannot be ahead of a remote locomotive consist.

F. **FEU** – Stands for "Forty-foot Equivalent Unit." It refers to a container 40 feet long, or its equivalent. Equivalent means two TEUs, or a single container 40 feet or longer (for example, 45 feet, 48 feet, or 53 feet).

G. **Maximum Trailing Car Tonnage** – The trailing car tonnage that a car can safely handle in a train. It depends on the type and weight of the car.

H. **Outside Length** – The distance between pulling faces of couplers. It is not stenciled on the car, but can be found on the train consist documents.

I. **Platform** – Loading area of a car. Conventional cars have one platform.

i. Multi-platform cars typically have 2 to 5 platforms. Intermodal platforms have

ii. container slots.

J. **TEU** – Stands for "Twenty-foot Equivalent Unit." One twenty-foot long container is one TEU.

K. **Threshold Tonnage** – Maximum train tonnage that can be handled without the possibility of causing a maximum trailing car tonnage violation.

i. Threshold tonnage applies to Mixed Conventional trains. (See item 3.4.)

L. **Trailing Car Tonnage** – Applies to Mixed trains. On a Mixed Conventional train, the trailing car tonnage is the total weight of all the other cars following that car in the train.

i. On a Mixed Distributed Power train, the trailing car tonnage of cars located ahead of one or more remote locomotive consists is determined by a calculation that depends on the position of the remote locomotive consists in the train. The trailing car tonnage of cars located behind the last remote locomotive consist is determined in the same manner as it is for conventional trains.

M. **Train** – In these instructions, the term Train can apply to Trains / Transfers or Engines handling equipment.

1.2 Car Type Definitions

A. **Multi-platform Car** – Any car with two or more platforms.

B. **Articulated Car** – A car with two or more platforms sharing common inboard trucks.

C. **Articulated Double Stack Car** –
Articulated intermodal container car with 2 or more platforms. They have deep wells that permit double-stacking (i.e., have bottom container slots and top container slots).

D. **Spine Car** – Articulated intermodal container car with 2 or more platforms.
These cars do not have deep wells to permit double stacking (i.e., single-stack, with bottom container slots only).

E. **Solid Drawbar Connected Car** – A car with two or more platforms that do not share common in-board trucks. Platforms are connected by solid drawbars.

F. **Solid Drawbar Connected Double Stack Car** – a solid drawbar connected intermodal car capable of handling double stacked containers (i.e., have bottom container slots and top container slots).

G. **Long-Runner Car** – a solid drawbar connected intermodal car capable of handling up to either three or four trailers. This diagram shows how a long runner car that can handle a maximum of three trailers would be loaded.

H. **Conventional Car** – Any freight car equipped with two trucks and a standard or cushioned drawbar at each end.

2.0 GENERAL

A. Specific Equipment Restrictions: In addition to those found in this section, specific equipment restrictions may be found in special instructions, operating bulletins, messages, etc., and/or, as a follower line on train journal or on computer generated lists. No matter how they are provided, the instruction must be complied with.

B. Authority for Movement: Prior to placing work equipment, scale test cars, dead locomotives, dimensional Loads, or cars requiring special handling and/or speed restrictions in any train or movement, it must be preauthorized by the proper authority. Conductors must advise the locomotive engineer and other members of the crew and be governed by the applicable speed restrictions or special handling requirements.

C. RTC Notification: Before any movement enters a main track, the RTC must be advised of any car on such train or movement which requires special handling.

D. Speed restrictions on consist/ Train Journals and switch lists: Equipment having a speed restriction which can be identified and tracked in the RMI system will be included on a follower line on Train Journals and Switch lists, and such restriction may not be shown in this section.

E. Conductors on trains and transfers provided with a train consist / journal or train list are responsible for ensuring that such documents once received are thereafter maintained in a current, correct and legible manner as concerns any change in car sequence, Train Brake Status and/or cars with air brakes cut-out.

Any lifts or set-offs must be identified on the original document. In the case of an enroute lift, where a list of cars is provided, it must be verified for accuracy and included with the original document which must have a written insertion mark as indication of where the cars were placed in the train or transfer.

3.0 MIXED TRAIN INSTRUCTIONS – CONVENTIONAL AND DISTRIBUTED POWER

3.1 Marshalling Heavy and Light Cars or Blocks

To reduce undesirable track/train dynamics in Mixed trains, apply the following marshalling instructions, subject to destination blocking.

Heavy Cars and Blocks

- Marshall heavy cars as close as possible to the head end.
- Do **not** marshall heavy blocks of cars to the rear of train unless blocks of cars ahead are equally as heavy.

Light Cars and Blocks

- Marshall light cars or blocks as close as possible to the rear, unless the cars behind are also relatively light.

Marshalling Restrictions:

Articulated Car

Articulated cars should be marshalled in the last half of the train with not more than 4000 tons of traffic to the rear of the car when either end platform is empty. When both end platforms are loaded, this restriction does not apply.

3.2 Short Car Coupled to Long Car (32/65 Rule and 41/80 Rule)

A car with an outside length less than 32 feet must not be coupled to a car or platform greater than 65 feet in outside length.

A car with an outside length less than 41 feet (other than operating cabooses or "crew transportation cars") must not be coupled to a car or platform greater than 80 feet in outside length.

Exception: Cranes coupled to Idler cars are exempt from this item, and any short car/long car violation.

3.3 Maximum Trailing Car Tonnage for Cars Greater than 65 Feet in Outside Length

On Mixed trains there is a maximum trailing car tonnage for all cars greater than 65 feet in outside length. Cars that have more than the allowable maximum trailing must be re-marshalled or set off before the train may proceed.

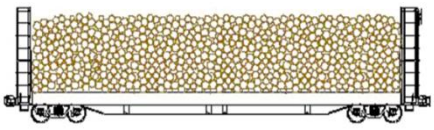
3.4 Threshold Tonnage

When the train tonnage is lighter than the threshold tonnage, maximum trailing car tonnage violations will **not** occur. Threshold tonnages apply to Conventional Trains only.

Threshold Tonnage Conventional Trains: 9550 tons

4.0 SPEED RESTRICTIONS

Use the following table to identify speed restrictions for various kinds of loads and equipment

Speed Restrictions for Various Equipment			
	Equipment Type	**Must NOT Exceed…**	**Additional Information**
A.	**Business Cars / Passenger Coaches**	**Freight train speed**	See item 9.1
B.	**Passenger Equipment**	Passenger Train speed as indicated in Time table	Unless otherwise advised or restricted by operating agreement, applies to Passenger Train equipment (other than business cars) such as GO, Via, AMT, etc..
C.	**Bulkhead flats:** a) Empty b) Loaded crossways with pulp wood or other logs Example: 	45 MPH 40 MPH	When required – notification on consist / train journal as well as when these cars are lifted en route.

Speed Restrictions for Various Equipment			
	Equipment Type	**Must NOT Exceed…**	**Additional Information**
D.	**CWR and Strings of bolted Rail** **16 Strings or more-** ***Curves 8 degrees or over will be identified by the engineering department.**	40 MPH 15 MPH 10 MPH	On straight track On curves of at least 8 degrees*. Through turnouts See item 19.0
E.	**Occupied service Equipment**	35 MPH	**Note:** Occupied service equipment may be moved at the head end of freight trains, behind the locomotive(s), but for no greater distance than 20 miles, and at no greater speed than 20 MPH.
F.	**Snow plows**	35 MPH, handle in the direction of travel or maximum freight speed whichever is the slower.	If not possible to handle the snow plow in the direction of travel, then the train speed must not exceed 20 MPH.
G.	**Spreaders**	Unless otherwise authorized, Spreader in operation Max. speed 15 MPH.	Spreaders handled in a train with the wings secured and nose headed in the direction of movement may be handled at freight speed to a maximum of : 25 MPH for slow speed spreaders.
H.	**Handling of partially loaded cars**		Movements handling partially loaded car, must with extreme care.

5.0 HEAVY CARS AND LOADS – AUTHORITY REQUIRED

5.1 Cars Exceeding Maximum Standard Weight

A Protection Notice or authority from the General Manager - must be obtained for the following cars:

- car (less than 55 feet) exceeding 268,000 pounds
- car (55 feet or longer) exceeding 286,000 pounds.

5.2 Articulated Multi-platform Cars

A. Restrictions are specified in subdivision footnotes for movement of articulated multiplatform cars having a content weight on ANY platform up to **106,000 pounds**.

B. Unless authorized by Protection Notice, authority must be secured from the General Manager - for movement of articulated multi-platform cars:

- having a content weight on ANY platform in excess of 106,000 pounds; or
- having a content weight on ANY platform in excess of 118,000 pounds (when equipped with 125 ton trucks).

5.3 Solid Drawbar Connected Multi-platform Cars

- Restrictions are specified in subdivision footnotes for movement of solid drawbar connected multi-platform cars having a content weight on ANY platform up to **173,000 pounds**.
- Unless authorized by Protection Notice, authority must be secured from the General Manager for movement of standalone multi-platform cars having a content weight on ANY platform in excess of173, 000 pounds.

6.0 SWITCHING, SPOTTING, AND LOADING

6.1 Tank Cars

Due to the sloshing action in loaded or partially loaded tank cars special handling may be required when using train or hand brakes. In train or yard operations, train brakes should be left applied longer after a stop is made to prevent any movement. The application of extra hand brakes may be required to prevent further movement of loaded or partially loaded tank cars after they have been placed.

6.2 Coupling Cars Safely Maximum coupling speed is 4 MPH (unless further restricted elsewhere).

To prevent damage to equipment and lading, couple while moving at the slowest speed possible.
Do not attempt to couple a car or locomotive to another piece of equipment, unless the couplers are in line with each other. When it is necessary to adjust a mismatched coupler, follow the procedures outlined in the transportation safety rules and procedures.

6.3 Centre Beam Bulkhead Flats

Centre Beam Bulkhead Flats: Centre beam bulkhead flat cars must not be coupled to or moved while partially loaded or unloaded, unless the load is equally distributed on both sides of the car deck. Movement of these cars when the load is unbalanced may cause car to overturn and/or derail. Cable tie downs on empty center beam flat cars could create a safety hazard if left loose and improperly stowed. All Equipment Department personnel and customers using this type of equipment are being advised that cable tie downs must be properly secured prior to movement. Instructions for proper securement are stencilled on these cars.

6.4 Switching Restrictions and Precautions - Equipment

Use the following table to identify switching restrictions for specific equipment.
Refer to Dangerous Goods, and, Dimensional Traffic, for additional restrictions.

Switching Restrictions – Types of Equipment		
	Equipment	**Switching Restrictions and Precautions**
A	Service equipment car	See item 17.0
B	Cars **over 65 feet** (outside length), including Multi-level autos	Whether loaded or empty: • Couple to other cars on straight track (when possible). • Follow the steps in item 6.2, Coupling Cars Safely, to properly align coupler heads before coupling. • Shove fully clear of adjacent tracks before being uncoupled. In addition, loaded multi-level automobile cars should not be hung onto during switching.
C	**Multi-platform** cars	a) When loaded or empty: • Do **not** cut off in motion. • Do **not** allow to be struck by a car moving under its own momentum. • Do **not** couple onto with more force than necessary to complete the coupling. b) In addition, when loaded with one or more trailers or containers: 1. Stop between 12 and 6 feet from a stop block or from the equipment being coupled onto. **CAUTION**: If required to align coupler heads, follow the steps in the transportation safety rules. 2. Couple with care to avoid damage to lading.
D	**Two axle** scale test cars	See item 8.0
E	**TEC** (Track Evaluation Car)	See item 18.0
F	Cuts of **20 or more cars**	When cuts of 20 or more cars are subject to damage from overspeed impact: 1. Stop between 12 and 6 feet from the cars to be coupled. **CAUTION**: If required to align coupler heads, follow the steps in the transportation safety rules and procedures. 2. Couple with care to avoid shock.
G	**SBU** (Sense and Braking Unit)	Remove the SBU before lifting or setting off cars from the rear of the train.

6.5 Switching Restrictions and Precautions - Loads

Use the following table to identify switching restrictions for specific loads.
Refer to, Dangerous Goods, and, Dimensional Traffic, for additional restrictions when switching those kinds of loads.

Switching Restrictions – Types of Loads		
	Load	Restriction and Precautions
A	• **Transformers** • **Circuit Breakers** • **Traction Motors** • **Wheelsets**	Always switch with locomotive attached.
B	**CWR or Strings of bolted rail**	**Speed Restrictions – Strings Longer than 150 Feet** a) **Less than 16 strings -** Cars containing fewer than 16 strings of CWR or bolted rail may be moved in regular trains, or special trains, without speed restrictions providing: • CWR equipment is used; • the train consist includes a buffer car at each end of the rail; and • each string is secured.
C	**Trailers or Containers**	Trailers and containers should **not** be: • humped or cut off in motion; or • struck by a car moving under its own momentum. **Caution**: If these actions cannot be avoided, then ensure the movement, and following movements, are properly controlled.
D	**Bridge girders, pipe, poles**, or similar lading	When loaded on three or more flat or gondola cars: • Do **not** cut off in motion.
E	**Prone to shifting and subject to damage**	Use extreme care when switching commodities subject to damage, especially when cars are partly loaded or unloaded. (E.g., shed, team, or industrial tracks)

6.6 Spotting Multi-level Automobile Cars at Automobile Compound Ramps

A. Before placing the car against the stop block, stop the car between 12 and 6 feet from the stop block.
CAUTION: If required to align coupler heads, follow the steps in the transportation rules and procedure.
B. Set hand brakes on all cars.
C. Do **not** couple together multi-levels that have over 3 inches difference in deck heights

Use the following table to determine the distance between railcars.

Bridge plate length	Distance between railcars
53 inch	Position multi-level car with 38 to 46 inches between cars. Do not compress or extend cushioned couplers to attain this distance.
56 inch	Position multi-level car with 41 to 49 inches between cars. Do not compress or extend cushioned couplers to attain this distance.
Adjustable length	Position multi-level car with 38 to 56 inches between the centre point to centre point of the barrel rings on adjacent multi-level cars. Do not compress or extend cushioned couplers to attain this distance.

6.7 Spotting Cars Loaded with Trailers at Unloading Ramps

Complete the following actions when spotting cars loaded with trailers at unloading ramps.

- Stretch slack.
- Apply hand brakes.
- If there is a ramp coupler, test to ensure coupling is made to the ramp.

6.8 Loading Bridge Girders, Pipe, Poles, or Similar Lading on Ferries or Barges

- Load when the aprons are as level as possible.
- After loading, carefully examine blocking and tie down fastenings.

7.0 MARSHALLING RESTRICTIONS

7.1 Marshalling Restrictions – Equipment

	Equipment Type	Instructions to Marshall in FREIGHT TRAINS
A	**Multi-Level Autos – LOADED**	Marshalling loaded multi-level autos: Do NOT place immediately behind open top cars containing coal, sand, gravel, sulphur, or similar commodities. Separate from these open top cars by at least 1 closed type car, when practicable.
B	**Snowplows and Spreaders handled deadhead**	a) Marshall at the extreme rear of train, or immediately ahead of operating caboose (where provided). b) Run in the direction of travel. If not possible to run in the direction of travel: wings must remain properly secured; snow must not pack behind wings during movement; snow-plow or spreader must be turned at first available wye or turntable. c) Do not marshall "nose to nose" account limited clearance on curves. d) See Speed Restriction Chart, item 4.0.
C	**Cabooses**	Trailing car tonnage must not exceed 2500 tons.
D	*****BAD ORDER*****	A train receiving this Car Movement Restriction Message (CMRM) on any of the following documents: Work Order, Car Handling Report, Outbound Wheel Report or Tonnage Profile Indicates car(s) have Mechanical defect(s) and subject car(s) must not be lifted or moved *unless* instructions are received from the RTC that car(s) are safe to travel, these instructions may or may not include Restrictions or Special Handling information. In some cases, a Mechanical Services (MS) employee may provide the required handling instructions directly to the crew. In all instances, the train crew must record the handling information received from either the RTC or MS employee on the Crew information /brake status form.
E	**B/O, SAFE TO TRAVEL**	A train receiving this Car Movement Restriction Message (CMRM) has a Bad Order car that has been deemed safe to travel by Mechanical, h*andled*, in accordance with the CMR Messages received.
F	**Rotary Couplers**	When enroute, rotary couplers must not be coupled to each other, unless it is confirmed that one of the couplers has been secured to prevent it from turning.

7.2 Marshalling Restrictions – Loads

	Load Type	Instructions
A	**Loads prone to shifting** (E.g., pipe, timber, poles, metal rods, or other similar material.) Marshalling restrictions apply when lading is both: a) in an open: - top car, - trailer moving in piggyback service, or - container in the end position on the car; and b) not protected by end bulkheads extending to top of lading. Note: These loads are not prone to shifting: flat cars loaded with steel plates or machinery; bulkhead flats loaded with banded or packaged lumber that does not extend above the bulkhead by more than 50 percent.	On trains operating without a manned caboose, marshall loads prone to shifting not more than: 2000 feet from the leading locomotive (all other trains). Separate loads prone to shifting from occupied: cabooses, service equipment cars, and passenger cars, by at least two cars of any type, or by one: full sized steel box car, car loaded with one or more containers, or bulkhead type car the ends of which extend above the load being protected against. Separate loads prone to shifting from: a locomotive, a car containing livestock, an SBU (Sense and Braking Unit) by at least one car of any type.
B	**Special loads requiring observation**	Marshall as close as possible to leading locomotive, and not exceeding 2000 feet from the leading locomotive. Notification that a special load is in the train is given by: train consist, protection notice or General Manager.
C	**Transformers, or Circuit breakers**	Marshall at head-end of the train, no more than 15 car lengths (approximately 600 feet) from the locomotive, when practicable.
D	**Traction motors, or Locomotive wheelsets**	Marshall at head-end of the train to facilitate switching to shops, when practicable. (Do not delay trains to accommodate this instruction.)

8.0 SPECIFIC EQUIPMENT AND LOAD INSTRUCTIONS

8.1 Scale Test Cars

Speed Restrictions

Car Type	Car Numbers	When authorized freight train peed is:	Maximum speed with scale test cars is:
Two-axle	420926, 420928, 420932, 420939, 420941 CN 52104, CN 52108, CN 52109, CN 52257, CN 52258, CN 52274, CN 52277, GTW 52264, GTW 52265, MNWX 444, MNWX 555	30 MPH or over 25 MPH or less	30 MPH Authorized freight train speed
Short, four-axle	420927, 420930, 420934, 420935, 420936, 420938, CN 52280, CN 52281, CN 52284, CN 52285	50 MPH or over 45 MPH or less	45 MPH or less Authorized freight train speed
Unrestricted	420937, 420942, 420940 CN 52259, CN 52279CANX 61300, CANX 61301, MNWX 333	Any speed	Authorized freight train speed

8.2 Permission for Movement

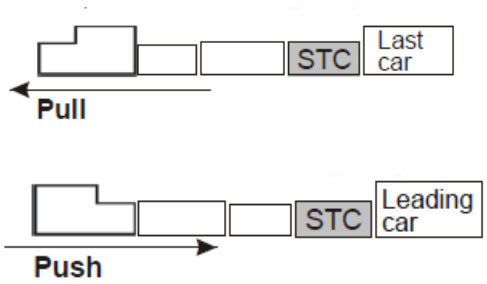
Before placing a scale test car in a train, the responsible Manager must give permission.

8.3 Switching Two-axle Scale Test Cars (STC)

A. Adjacent car(s) must **not** be longer than 55 feet outside length.

B. When pulling, marshall two-axle scale test car immediately in front of the last car in the direction of travel, unless handling only scale test car(s). Last car must not exceed 40 tons gross weight.

C. When pushing, marshall two-axle scale test car immediately behind the leading car in the direction of travel, unless handling only scale test car(s). Leading car must not exceed 40 tons gross weight.



8.4 Marshalling Two-axle Scale Test Cars

A. Marshall immediately ahead of:
- the operating caboose (where provided), or
- the rear car. (Maximum rear car weight is 40 gross tons.)

B. Adjacent car(s) must have:
- an outside length of 55 feet or less, and
- operative brakes.

C. Only one two-axle test car may be handled per train.

8.5 Marshalling Short Four-axle Scale Test Cars

Maximum length of adjacent car(s) is 80 feet (outside length).

9.0 BUSINESS CARS (RAILWAY) –PASSENGER COACHES

9.1 Business cars should be placed at the rear of train. Authority may be granted by message or by business car personnel to marshal the car at any other location in the train. DO NOT handle these cars while switching if handled in freight service. These cars must not be handled without air brake system charged. Extra precaution must be taken to secure this equipment when left standing. Cars equipped with diaphragms and striker plates must not be coupled to equipment with double shelf couplers. When handled in freight train consists, freight train speeds apply.

9.2. Passenger Coaches when handled in freight trains:
- Are not to be coupled to equipment with double shelf couplers (e.g. Tank Cars);
- Are restricted to no more than two (2) coaches per train;
- Unless otherwise directed, must be marshalled as the second (and third where applicable) from the last car on the train.

- DO NOT handle these cars while switching if handled in freight service. These cars must not be handled without air brake system charged. Extra precaution must be taken to secure this equipment when left standing.
- When handled in freight train consists, freight train speeds apply.

10.0 OPEN TOP EQUIPMENT

Dust Producing Commodities: Open top loads of dust producing commodities such as sand, coal, chips, ore concentrate, etc., must not be placed immediately ahead of other open top loads such as automobiles, mobile homes, camper trailers, trucks, farm machinery or transformers. At least one of the intervening cars when practicable, must be a closed top type car.

There is no restriction against handling such loads next to each other and trailers thus loaded may be handled on the same flat car.

11.0 GONDOLA CARS LOADED WITH PULPWOOD

A. The maximum height that pulpwood may be accepted when loaded in gondola cars is not to exceed the steel end doors or side stakes. Conductors will not pick up cars loaded in excess of this height and will advise shippers accordingly.

B. Before entering CTC or multitrack territory, after picking up such cars, inspection must be made of each individual car to ensure cars are in condition to continue movement to destination.

12.0 END DOORS

Cars with end doors must not be moved from a loading or unloading point until the end doors are closed and secured.

13.0 SIDE STAKES CARS (RACK FLAT)

Cars equipped with side stakes must not be moved until side stakes are placed in proper receptacles.

14.0 TIE DOWN CHAINS

Cars equipped with tie-down chains and/or cables must not be moved until chains and/or cables are properly secured.

15.0 ROTARY DUMPING EQUIPMENT

Rotary dumping equipment, air hoses must not be crossed under the couplers in the conventional manner, but must be connected in a straight line alongside the couplers. The double rotary car has dual angle cocks and air hoses at each end of the car to enable connecting hoses to be connected in a straight line. Hoses not used must have a dummy coupling applied.

Note: This instruction applicable to unit trains of other commodities (coke, sulphur, etc.) which consist of rotary dumping equipment and when moving blocks of this equipment in all freight trains.

16.0 MOVEMENTS NOT CONTROLLED BY THE LEAD LOCOMOTIVE, PILOTS

Except for snowplows, cab cars on commuter trains or other similar passenger equipment, movements not headed by the controlling locomotive must not exceed 25 MPH, **unless otherwise specified by CROR rule 115.**

If a locomotive is not equipped with a pilot in the direction of movement, that movement is restricted to 20MPH.

17.0 SERVICE EQUIPMENT CARS

17.1 Definition:

Service equipment refers to railway maintenance of way equipment, wrecking auxiliaries, rolling stock used to house employees at work sites and material cars used for railway company purposes if not used in revenue service.

17.2 Responsibilities

When occupied service equipment is placed in sidings, back tracks, or other tracks:

1. The conductor must advise the RTC of the location and track
2. The RTC will issue a GBO or DOB specifying the location of such equipment
3. The switches of back tracks and other tracks will be spiked or locked with special locks.
4. Where practicable, the switches of sidings will be spiked and locked with special locks

17.3 Switching Restrictions

The following instructions apply when switching occupied service equipment cars, or unoccupied service equipment cars equipped with stoves, propane ranges, or tables;

1. Do not couple to or move occupied service equipment cars, unless authorized by the person in charge.

2. Do not cut off in motion.
3. Do not cut off other cars in motion towards these cars.
4. Before coupling to or moving occupied service equipment:
   a) Stop between 12 and 6 feet from the cars to be coupled or moved. **CAUTION**: If required to align coupler heads, follow the steps in the transportation safety rules and procedures
   b) Notify persons in or about the cars.
   c) Check cars to ensure all cables, hoses, temporary ladders etc., have been removed.
   d) After receiving the proper signal, couple carefully to avoid shock.

Note: The conductor will be informed when these restrictions apply to unoccupied service equipment.

17.4 Marshalling Restrictions

A. Location:

Freight train: marshal at the rear of a freight train immediately ahead of operating caboose, where provided.

Mixed freight and passenger train: marshal immediately ahead of any passenger cars.

Where track configurations require extreme care in set-off movements, may be marshaled:
- directly behind the lead locomotive consist;
- at **speed not exceeding 20 MPH**;
- for distance not exceeding 20 miles.

Note: These location restrictions do not apply to flangers, snow plows, spreaders and test cars are exempted from this item.

B. Maximum number of cars - A train handling:

30 OR LESS occupied service equipment cars, is restricted to 60 cars in total.

MORE THAN 30 occupied service equipment cars is restricted to:
- 80 cars total, and
- service equipment cars only.

Unoccupied service equipment cars containing stoves, propane ranges, or tables is restricted to 80 cars in total.

C. Unoccupied service equipment: The conductor will be notified when these restrictions apply to unoccupied service equipment.

18.0 TRACK GEOMETRY – TRACK EVALUATION CARS

18.1 Track evaluation system cars (T.E.S.T. CONSIST)

A. Test Cars are in the charge of a system supervisor. The supervisor must be qualified in CROR and qualified to conduct the required air brake test and inspect such equipment in compliance with the applicable GOI air brake instructions. Testing can be performed in both forward and reverse movements. TEST cars are equipped with a pilot and should run in the forward direction whenever practicable.

B. Test cars should be placed at the rear of train, immediately ahead of the operating caboose, where provided, when handled in freight or work trains. They should be placed immediately ahead of passenger equipment when handled in mixed trains. Authority may be granted by TEST Car personnel to marshal the car at any other location in the train.

C. Test power box car is equipped with a pilot and should run in the forward direction only.

D. When testing, copies of all DOBs and TGBOs must be supplied to the Test supervisor, prior to departure.

E. Test consist equipment may operate at freight speed.

F. Authority for movement and marshalling instructions will be granted by MESSAGE and/or Test car personnel when testing and/or deadheading.

G. One train crew member may occupy test coach car to handle tail end operations. Test car movement will be as prescribed by the test car supervisor.

H. TEST cars must be handled with care at all times to protect sensitive equipment. An onboard impact detector measures and records all switching activities.

18.2 TEST cars are to be marshaled as follows:

On Work Trains
Locomotive, caboose (if any), box power car, coach; TEST on extreme rear.
On Freight Trains less than 30 cars:
TEST consist on extreme rear.
On Freight Trains, 30 or more cars:
TEST consist next to units.

Note: Only partial testing can be performed on freight trains.

Whenever possible, when handling TEST car on GWCI lines in "testing" mode, it should be handled with a work train.
One train crew member may occupy TEST coach car to handle tail end operations that are usually performed in the caboose. TEST car movement will be as prescribed by the TEST Supervisor.
Air brakes will remain cut-in unless otherwise requested by the TEST supervisor. Reference RTC Order No. 38352, authority has been granted by Transport Canada to cut-out brakes on the rear truck of the TEST coach as required to perform track evaluation.

Trains

Do not handle on freight trains, except under special circumstances when authorized by the TEC staff.

1. When deadheading, marshal directly behind the trailing locomotive.
   With Train Set 1, also add at least 4 cars with operative brakes to the TEC consist; because the instrumented truck on 424993 does not have air brakes.
2. When testing, marshal all cars in the set at the rear of the train.
   If the dedicated locomotive accompanies the TEC cars, marshal the locomotive at head end of the train.

Note: other types of track Geometry – Track evaluation cars may be use on GWCI, in all cases the system supervisor will give the required instructions.

19.0 RAIL CHANGE OUT

Movements handling continuous welded or end-bolted rail exceeding 82 feet in length are restricted:

- To a maximum permissible speed of 40 MPH, reducing to 10 MPH through turnouts except when signal indication permits a speed of 30 MPH or greater through turnouts, then speed must not exceed 20 MPH through such turnouts;
- To a total of 40 continuous welded/end-bolted rail cars when other equipment is handled in the train. The train must not exceed 6400 feet in total length (including locomotives) and rail cars must be marshalled within the front half of the train.
- To a total of 82 continuous welded/end-bolted rail cars including any required idler cars, when other equipment is not handled in the train.

20.0 HIGH AND SLOW SPEED CRANES

A. High Speed cranes with boom disconnected will be governed by speed restrictions indicated on train journals.

B. Slow Speed cranes with boom disconnected must be handled in a train with boom trailing, and at a maximum speed of 25 MPH. If attached, it may be handled with boom leading at a speed not exceeding 20 MPH, to the first point where it can be turned.

C. When handling High or Slow Speed cranes with boom and counterweight not detached, movement is restricted to 20 MPH. The crane operator must ride in the crane cab and have radio contact with the train and engine crew.

D. A car not exceeding 60 ft. in length must always be coupled to the end of the crane opposite from the boom car.

E. High and Slow Speed Cranes when moving in freight trains must be marshalled as close to the headend as possible with at least 5 cars (when possible) placed between the crane and the locomotive(s) handling the train. The air brakes on such cranes will be cut out by Work Equipment personnel and same will be indicated on a follower line on the train journal.

F. Unnecessary switching with High and Slow Speed cranes in the consist must be avoided whenever possible. When marshalling and switching of trains is required, cranes should be set out until switching is complete.

G. Fixed cab pile drivers, boom leading or trailing 25 MPH.

21.0 SPECIALIZED EQUIPMENT

21.1 Self-Propelled cars & Specialized Equipment

A. Permissible speeds

Rail defect detector cars when testing - 15 MPH.

Rail defect detector cars not testing - Time table passenger speed or 50 MPH whichever is less.

Rail grinding equipment - maximum freight train speed or specified speed for that type of equipment whichever is less.

Highway-Rail Wrecking Cranes - maximum rail speed 25 MPH, reverse 15 MPH, through turnouts and crossovers 5 MPH.

B. Protection when tied up

The switches governing movement to the tie-up track must be locked with special locks and lined against other movements. When it is not practicable to lock these switches the RTC must be notified. When so notified, the RTC will issue instructions to all trains affected that such equipment must not be coupled on to.

21.2 Service Equipment

Multi-Purpose Machine equipment:

The following Multi-Purpose Machine equipment (MPM) when handled in a freight train must be marshalled on the extreme tail-end:

- Herzog MPM consisting of power units in series HZGX 100 - 199, platform car series HZGX 1000 - 1999, and cab control unit HZGX 18900; or;
- Georgetown MPM in car series GREX 5000 - 5300.

Note: These MPM power units and cars have their operating levers secured and are considered as permanently coupled equipment. When handled in a freight train, SRS follower line generated will state: **"TAIL END CAR - MUST BE LAST CAR ON TRAIN"** When so indicated the term "LAST CAR" refers to the entire MPM consist.

21.3 Self-propelled Geometry

This car when not operating as a track unit, will be operated by qualified engineering employees under the following instructions:

- operate as a train under the direction of a conductor;
- must not exceed authorized freight speed;
- must not exceed 30 MPH:
- between the advance signal and, until the unit is entirely clear of any controlled or automatic interlocking;
- approaching all public crossings at grade equipped with automatic warning devices until such crossing is fully occupied
- Operating in CTC will be governed by the indication of all block and interlocking signals.

22.0 DIMENSIONAL LOADS

Classification

Dimensional traffic is classified according to width, based on shipment being loaded on a car less than 42 feet. This information will be included on the train consist in a "Instruction Message"

Classification Effective Width
W-00 : 10' 8' or less
W-01 or D-1: 10' 9" to 11' 0"
W-02 or D-2: 11' 1" to 11' 6"
W-03 or D-3: 11' 7" to 12' 0"
W-04 or D-4: 12' 1" to 12' 6"
W-05 or D-5: 12' 7" to 13' 0"
W-06 or D-6: 13' 1" to 13' 6"
W-07 or D-7: 13' 7" to 14' 0"
W-08 or D-8: 14' 1" to 14' 6"
W-09: 14' 7" to 15' 0"
D-9:14.7" wide and over (description generally used on CN)
W-10 15' 1" and over (description generally used on CP)

For overhanging shipments or shipments loaded on cars of 42 feet or longer, the effective Width" is reflected by a more restrictive classification.

Note: Classification W-00 refers to dimensional traffic that has an effective width of 10'8" or less. (e.g. shipment exceeds maximum weight or height standards but not maximum width standards).

Examples:
DL4011109 W-08 GENERAL RESTRICTIONS APPLY
or
RL4013099 W-05-07 GENERAL AND SPECIFIC RESTRICTIONS APPLY

A. File Number
- A file number commencing with "DL" indicates that General Restrictions apply.
- (e.g. DL4011109)
- A file number commencing with "RL" indicates General and Specific Restrictions apply. (e.g. RL4013099)

B. Restrictions
- "General Restrictions Apply," indicates that subsection (G) of the GOI applies.
- "General and Specific Restrictions Apply," indicates that SPECIFIC RESTRICTIONS of the protection notice also apply.

C. **Authorization:** All dimensional loads must be preauthorized for movement on line.

Prior to entering or fouling a main track, the train crew is responsible to inform the RTC of any Dimensional load in the W-01/D1 to W-10/D9 category on their train.

Dimensional loads handled in yards are the responsibility of the Train or Yard crew and Yard Coordinator (supervisor). The crew is responsible to inform the RTC prior to moving a dimensional load in the W-01/D1 to W-10/D9 category onto a non-main track which is adjacent to a main track.

To ensure that dimensional traffic is properly identified and protected, yard crews must advise the Supervisor - Transportation of all loads or cars that appear dimensional which are not identified as dimensional on a switch list, cut list or journal. This must be done promptly to ensure system special handling codes will be applied.

D. **Classification:** Dimensional Load classification will be based on their Height, Weight, and/or Width as follows:

Height: Loads classified as Dimensional for Height will be classified as DX and will be governed by restrictions contained in a dimensional message.

Weight: Loads classified as Dimensional for Weight will be classified as DW and will be governed by restrictions contained in a dimensional message.

Width: Loads classified as Dimensional for Width will be classified as W-01/D1 (over 10'8" in width) to D9 (over 14'7" in width) or W-10 (15.1" and over) will be governed by restrictions contained in a dimensional message.

E. **Dimensional Messages:** Except for those identified as "UNRESTRICTED", Operating crews must ensure that they are in possession of a Dimensional clearance message for all Dimensional loads handled on main track.

Operating crews and the RTC must observe and be governed by all general and specific restrictions contained in the dimensional message.

Note: Unrestricted dimensional may be present in the DX, D1, and D2 category and will be identified by the letter "U" i.e. DXU, D1U, D2U and have no specific restrictions.

F. **Marshalling:** Unless otherwise instructed, dimensional loads or cars identified by the letter "U" i.e. DXU, D1U, D2U and/or have no specific restrictions, may be marshalled anywhere on a train.

Unless otherwise instructed or stated in the message, restricted Dimensional equipment should be marshalled as close to the headend as possible so that they can be seen by the train or transfer crew. Marshalling instructions do not apply to trains primarily engaged in pick-up and/or set-off service and do not supersede other instructions which prohibit marshalling of certain cars next to the engine.

G. Meet/Pass Restrictions

Note: Crews on trains or transfers handling a Meet/Pass restricted load are responsible for the clearing of the restricted load when passing equipment on adjacent tracks other than sidings or main tracks.

Loads classified as DX or DW are to be treated as non-dimensional for meeting and passing.

Except for W-00 and W-10, loads identified by the D-X as the same meaning as W-X.

Unless further restricted by message, there are no meet/pass restrictions for trains handling dimensional traffic in category W-01/D1 to W-03/D3 when meeting/passing one another.

When the dimension requires special arrangements will be afforded by the RTC as per CROR rule 101 d).

When there is an option of speeds for the two trains at a meet/pass location, the RTC is to advise the trains which option is to be used in the meet/pass.

Neither train may proceed beyond the meeting nor passing point(s) given by the RTC until arrangements have been made between the trains required to meet/pass as follows:

Meet/Pass Instructions (Applicable until the restricted car(s) pass one another)

D4	
On adjacent Main tracks may meet/pass:	
D1, D2	No restrictions
D3:	When one movement is stopped, the other movement is unrestricted. When both are moving at meet/pass location, do not exceed 10 MPH.
D4	When one movement is stopped, the other movement not to exceed 10 MPH.
D5	Both movements must stop, then one movement must proceed on hand or radio signal.
D6+:	Must not meet/pass D6 or greater.
On single track at sidings may meet/pass:	
D1 to D6	No restrictions.
D7	When one movement is stopped, the other movement is unrestricted. When both are moving at meet/ pass location, do not exceed 10 MPH
D8:	When one movement is stopped, the other movement not to exceed 10 MPH.
D9+:	Must not meet/pass D9 or greater.

D5	
On adjacent Main tracks may meet/pass:	
D1:	No restrictions.
D2	When one movement is stopped, the other movement is unrestricted. When both are moving at meet/ pass location, do not exceed 10 MPH
D3	When one movement is stopped, the other movement not to exceed 10 MPH
D4	Both movements must stop, then one movement must proceed on hand or radio signal.
D5+:	Must not meet/pass D5 or greater.
On single track at sidings may meet/pass:	
D1 to D5	: No restrictions.

D6	When one movement is stopped, the other movement is unrestricted. When both are moving at meet/ pass location, do not exceed 10 MPH
D7	When one movement is stopped, the other movement not to exceed 10 MPH.
D8	Both movements must stop, then one movement must proceed on hand or radio signal.
D9+	Must not meet/pass D9 or greater

D6	
On adjacent Main tracks may meet/pass:	
Non-Dimensional and D1	When one movement is stopped, the other movement is unrestricted. When both are moving at meet/ pass location, do not exceed 10 MPH
D2	When one movement is stopped, the other movement not to exceed 10 MPH
D3	Both movements must stop, then one movement must proceed on hand or radio signal
D4+	Must not meet/pass D4 or greater
On single track at sidings may meet/pass:	
D1 to D4	No restrictions
D5	When one movement is stopped, the other movement is unrestricted. When both are moving at meet/ pass location, do not exceed 10 MPH
D6	When one movement is stopped, the other movement not to exceed 10 MPH
D7	Both movements must stop, then one movement must proceed on hand or radio signal
D8+:	Must not meet/pass D8 or greater.

D7	
On adjacent Main tracks may meet/pass	
Non-Dimensional	When one movement is stopped, the other movement is unrestricted. When both are moving at meet/ pass location, do not exceed 10 MPH
D1	When one movement is stopped, the other movement not to exceed 10 MPH
D2	Both movements must stop, then one movement must proceed on hand or radio signal
D3+:	Must not meet/pass D3 or greater
On single track at sidings may meet/pass	
Non-Dimensional and D1 to D3	No restrictions
D4	When one movement is stopped, the other movement is unrestricted. When both are moving at meet/ pass location, do not exceed 10 MPH
D5	When one movement is stopped, the other movement not to exceed 10 MPH
D6	Both movements must stop, then one movement must proceed on hand or radio signal
D7+:	Must not meet/pass D7 or greater.

D8	
On adjacent Main tracks may meet/pass:	
Non-Dimensional	When one movement is stopped, the other movement is not to exceed 10 MPH
D1	Both movements must stop, then one movement must proceed on hand or radio signal not exceeding 10 MPH
D2+	Must not meet/pass D2 or greater
On single track at sidings may meet/pass	
Non-Dimensional and D1 to D2	No restrictions.
D3	When one movement is stopped, the other movement is unrestricted. When both are moving at meet/pass location, do not exceed 10 MPH
D4	When one movement is stopped, the other movement not to exceed 10 MPH
D5	Both movements must stop, then one movement must proceed on hand or radio signal
D6+	Must not meet/pass D6 or greater

D9
All Main tracks and sidings. Be governed by message instructions.

SECTION 11 – TIBS

1.0 TRAINS OPERATING WITH TRAIN INFORMATION BRAKING SYSTEMS (TIBS)

1.1 The TIBS is composed mainly of two separate units as follows:

Note: When the term "display unit" is used in these instructions, it refers to CDU, IFD, ICE or FIRE

1.2 Sense and Braking Unit (SBU)
The SBU senses brake pipe pressure, motion and direction and transmits this information to the head-end of the train. The SBU is equipped with either a red reflectorized plaque or a highly visible marker (HVM).

Note: Further references in this section to the HVM do not apply unless the SBU is so equipped.

In addition, the SBU is equipped with an emergency braking feature.

1.3 Communications Display Unit (CDU)
The CDU accepts, analyzes and displays information relevant to the rear of the train. The CDU provides audible alerts and displays to the locomotive engineer.

1.4 Integrated Function Display (IFD), Integrated Cab Electronics (ICE) and Functionally Intergraded Railroad Electronics (FIRE)

The IFD is the menu driven operator's screen on GE AC locomotives; ICE or FIRE are the operator's screen on SD90MAC locomotives. IFD, ICE and FIRE accept and display information relevant to the rear of the train.

1.5 Procedure to Disconnect Head-End Display Unit
When necessary to disconnect the display unit, place the radio circuit breaker in the OFF position and then disconnect the twist lock connector. Once the twist lock connector is removed, it is to be placed in the dummy receptacle (where provided) and the display unit keyed to indicate the test ID code of 0000.

2.0 TIBS ARMING FEATURES

2.1 ARMING of TIBS is to be performed as follows:

1. Enter the ID Code of the SBU assigned to the train into the display unit, e.g. 80801.
2. During pre-departure testing, when the test button on the SBU is pressed, the display unit will sound an audible alert and display "ARM NOW" for five seconds.
3. To ARM the display unit, the COMM TEST button must be pressed within the five second interval in which the "ARM NOW" display is shown. This will cause the display unit to indicate "ARMED."
4. The COMM TEST button must not be pressed until the display indicates "ARM NOW." Pressing the button in advance of this display will cause the following:
   - an audible alarm will sound and the display will flash "NOT ARMED." Locomotives equipped with an IFD display "EOT EMERG STATUS DISABLED";
   - the display will revert to normal, with the exception that "U" will be displayed in the COMM field, or the NOT ARMED indicator will be illuminated, as a reminder that the display unit is not armed. Locomotives equipped with an IFD continue to display "EOT EMERG STATUS DISABLED."

2.2 Once TIBS is armed, if the display unit ID code is changed from that to which the system is armed, the display or light will flash NOT ARMD. After a brief period the system will revert to normal display

accompanied by "U" or "NOT ARMED" light as a reminder that the display unit is not armed to the ID code entered therein. Locomotives equipped with an IFD will display "EOT EMERG STATUS DISABLED."

2.3 IFD Arming Procedure

There are **two** varieties of IFD. Check EOT Status window. If it displays "Armed" you must disarm it before arming to a new SBU ID (See Disarm Procedure). If it does not display "Armed," continue with the arming process.
Select "EOT Setup" Screen • Press F7 'Accept'.

Arming Procedure continued...

- Personnel at end of train is instructed to press button on the SBU.
- EOT Status flashes "Arm Now." F7 flashes 'Arm Two Way.'
- **Press F7 immediately.** You have only 3 seconds to do this.
- If successful, EOT Status window reads 'Armed.'
- 'Rear' indicates air pressure at end of train.

3.0 SBU MODEL 6695

Test Button Operation

Note: The test button must be pressed and held until the display shows the feature desired.

Menu Items.

A. PRESSURE
Releasing the test button when the word "PRESSURE" appears allows you to read the brake pipe pressure.

B. ARM
ARMING: Releasing the test button when the word "ARM" appears will start the "ARMING" sequence.

C. TEST
Releasing the test button when the word "TEST" appears will start a self test. The SBU display will scroll the following items during the test.

D. PHOTOCELL
Releasing the test button when the word "PHOTOCELL" appears allows you to test the HVM operation. Pressing the test button again ends the test.

E. LITE
Releasing the test button when the word "LITE" appears will activate a feature where the HVM will continue to flash with no air pressure and light present.
If selected by mistake, lay the SBU gently on its side to deactivate.
During pre-installation and testing of the Model 6695 at locations not equipped with an air supply, the following pre-installation tests must be performed to verify the SBU is operating as intended:

1. Install fully charged batteries.
2. Depress the test button and release when the display indicates "TEST" and observe the test procedure.
3. Ensure the display indicates "Self -Test Good" and does not indicate "Battery O##," "Battery WEAK##," or "Battery REPLACE." Enhanced train consists will indicate when a train is equipped with a Model 6695 SBU.

4.0 OPERATION OF MODEL 6696 CDU

4.1 Functions which may be selected with "MENU UP" or "MENU DOWN" are:

- Change ID
- Change train length
- Odometer
- TL Distance
- Measured mile
- Disarm
- Change loudness
- Change brightness
- Self-test

4.2 Changing ID Code

1. **To change the ID code:**

   Press the MENU UP or MENU DOWN key until the function menu display reads “change ID #####”. The ID code is changed by using the [→] or [←] keys to select digits to be modified. The current active digit flashes. Use the [↑] or [↓] keys to increment or decrement the selected active digit.

2. **Once the ID code has been selected:**

   Press the SET key to store the new ID code.

3. **Function menu display will read:**

   “Saving...” followed by “Press SET.

4. **The alarm indicator will flash ON accompanied by 5 beeps from the sonalert and “ID Code Display” will show:**

   “ID = #####” alternating with “NOT ARMED”.

5. **The locomotive engineer then alerts the employee at the rear of the train** via

   voice radio to proceed with arming. The employee at the rear of the train momentarily presses the TEST button on the SBU.

6. **When the CDU receives the request to arm message, it prompts the locomotive engineer for a response.**

   The function menu display reads:

   “PRESS COMM/ARM TO ARM” for five seconds accompanied by beeps from the sound alert.

7. **If the locomotive engineer presses the SET key during the 5 second window, the system will arm and the CDU will then briefly display**:

   “SYSTEM IS NOW ARMED”

   The NOT ARMD alarm indication will turn off.

8. **If the SET key is not pressed during the 5 second window, or if the SBU doesn't respond as described above, the function menu display will briefly show:**

   “ARMING FAILED”. In this case, the process must be repeated from Step5 above.

5.0 USING THE TRAIN LENGTH DISTANCE FUNCTION

A. To use the Train Length Function:

1. Press the MENU UP or MENU DOWN key until the function menu display reads:
2. "TL Distance press SET". As the lead locomotive passes the initial starting
3. point, press SET and the displayed length will decrement accordingly. The
4. display will always indicate the distance to go before the end of the train is clear of the point to be passed.

B. Press CANCEL key to reset the train distance function.

5.1 Measuring Distance Travelled Using the Odometer

1. To use the Odometer: Press the **MENU UP** or **MENU DOWN** key until the function menu display reads: "Odometer press **SET**".
2. To measure distance: Press the **SET** key. The function menu display reads: "Odometer 00000 ft.". The 5-digit count is initially set to zero and, as train moves, it begins to count the distance.
3. Press the CANCEL key to reset the odometer function.

5.2 Calibrating the Odometer Using a Measured Mile

Calibration of the Odometer is used to compensate for locomotive wheel wear and differences in wheel diameter from one locomotive to another. The allowable range of locomotive wheel diameters is 34.00 inches through 46.00 inches. The CDU default is 38.1 inches.

1. **To calibrate using a measured mile:**
   Press the MENU UP or MENU DOWN key until the function menu display reads:
   "Measured Mile press SET".
   When the zero mile marker is passed:
   Press the SET key to begin the measurement.
   The function menu display reads:
   "Press SET at End of Mile ##### ft.".
2. **When the one mile marker is reached:**
   Press the SET key a second time to mark the end of the mile and to calculate the new wheel size.
3. If the measurement is such that the calculated wheel size falls within the permitted range the calibration passes and the sonalert will beep once to indicate that the measurement is completed.
   For example: If the function menu display reads: "4954 ft, corrected to 5280 ft".
4. However, if the measurement is such that the calculated wheel size falls outside of the permitted range, the calibration fails, the sonalert will beep once, and the Function menu display reads: Measured Mile FAILED".

6.0 EMERGENCY BRAKING FEATURE

To activate the emergency braking feature, lift the red safety cover located on the right side of the display unit and move the EMERGENCY toggle switch upwards. This will cause the EMERGENCY VALVE of the SBU to which the system is ARMED to be activated.

7.0 COMMUNICATIONS TEST

If communications problems are suspected, continuity may be tested by pressing the COMM TEST button. When the button is pressed a "+" or "reply pending light" will appear briefly. Disappearance of either of these indications verifies continuity of communications. Locomotives equipped with an IFD will display COMM TEST PASSED. If the "+" symbol, or "reply pending light" remain displayed, the COMM TEST button must be pressed three times in rapid succession. If this fails to overcome the problem the train should be moved one train length and the test repeated.

Model 6696 CDU

If communications problems are suspected, continuity may be tested by pressing the "COMM ARM" button. When the button is pressed a **"WAITING FOR REPLY"** message is briefly displayed on the "Function Menu Display," followed with brief message **"COMM TEST OK."**

If the "Function Menu Display" reads **"COMM TEST FAILED"** for 2 seconds, the "COMM ARM" button must be pressed three times in rapid succession. If
this fails to overcome the problem the train should be moved one train length and he test repeated.

Note: A manual COMM TEST must be performed at run through locations to verify TIBS is operating as intended.

8.0 PRE-DEPARTURE TESTING OF TIBS

Pre-departure testing of TIBS will only be performed at the location where the components of TIBS are initially installed on the train. Once a pre-departure test of TIBS has been performed, such test will not be repeated unless one of the components has been changed out.

Pre-departure test procedures for TIBS shall be conducted as follows:

A. The head-end crew or other qualified person, must enter the ID Code of the SBU assigned to that train into the display unit.

B. When the air pressure has been applied to the SBU it must be verified that pressure is shown on the display unit.

C. Depress the SBU test button and confirm that pressure is displayed in the viewing window.

D. As soon as the display unit indicates ARM NOW, the person performing the test shall depress the COMM TEST button or ARM 2-WAY switch and verify the display ARMED is given, indicating the display unit is authorized to the SBU assigned to that train.

E. Instruct person on the locomotive to perform a COMM TEST.

F. After the brake-pipe has been charged to not less than 48 psi., close the angle cock on the lead end of the rear car and verify that the display unit shows pressure.

Note: It is acceptable to leave rear car angle cock open, but for next step (G), verify emergency brake application propagates from SBU through to leading locomotive.

G. Instruct the person performing the test to activate the emergency feature and verify that the SBU initiates an emergency brake application on the rear car and that the display unit indicates 0 psi.

H. The EOT (SBU) pressure must remain at 0 PSI for at least 30 seconds before the emergency valve will close and allow the EOT to recover.

Failure to do this will result in a "VALVFAIL" message at the LCU (IDU). After creating the emergency brake application and all air is exhausted from the brake pipe, the solenoid valve on the SBU will reset (30 Seconds) and air may be reapplied. Open the angle cock on the rear car and confirm that the pressure is again being displayed on the display unit.

CAUTION: If 3 steps protection was applied in a state of false gradient, a undesired release may occur when the air is cut in.

I. Perform the required brake test.

J. At run-through points, pre-departure testing consisting of a COMM TEST, will be made by the outbound crew to verify TIBS is operating as intended.

9.0 DEFINITIONS & OPERATING PROCEDURES IN EVENT OF TIBS FAILURE AT A SCHEDULED CREW CHANGE LOCATION

A train operating without a manned caboose must not depart a scheduled crew change location if:

A. The display unit fails to display brake pipe pressure.

B. The emergency braking feature is inoperative.

C. The HVM is inoperative. (If so equipped)

D. The batteries are known to be weak.

E. The distance measuring device (DMD) is inoperative.

9.1 Enroute

Note: In this instruction, the words "inoperative enroute" or "TIBS fail" also include situations where an SBU falls off the rear car or is stolen and cannot be recovered or reinstalled.

If TIBS fails to display BRAKE PIPE PRESSURE and/or the EMERGENCY BRAKING FEATURE becomes inoperative enroute, trains *must* be governed as follows:

A. Should TIBS fail and the standard locomotive gauges and Air Flow Indicator indicate no loss of air pressure, the train may proceed at a speed not exceeding 25 MPH until the equipment resumes normal operation.

Should TIBS fail and the standard locomotive gauges and Air Flow Indicator indicate a loss of air pressure, the train crew is required to perform a Continuity Brake test. After completion of the Continuity test, the train may proceed at a speed not exceeding 25 MPH until the equipment resumes normal operation.

Note: If a successful Continuity test cannot be performed, the train must not proceed except to clear the main track, until the TIBS is repaired, resumes normal operation or a Continuity test is successfully completed.

B. Such movements shall be made only after appropriate measures have been taken to ensure safety of movement and then only to the nearest location where the main track may be cleared.

9.2 The EMERGENCY BRAKING FEATURE must be considered inoperative under the following circumstances:

A. The display of "VALV FAIL" or a "V" in the valve field or the IFD displays EOT VALVE.

B. A successful COMM TEST cannot be performed.

C. The display unit indicates a Front to Rear communications failure or the IFD displays EOT COMM.

D. The display unit indicates NOT ARMED.

E. During pre-departure testing of TIBS, activation of TIBS emergency feature will not cause an emergency brake application on the rear car.

SECTION 12- TRACK SIGNS

TRACK SIGNS DESCRIPTION

Signs illustrated in this section are in accordance with current standards. Signs of older types still in service convey the same meanings.

WHISTLE POST

Black letter W on reflective silver background

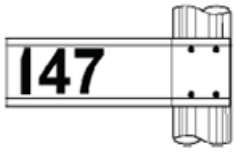
Located at least one-quarter (1/4) mile from the edge of all public crossings at grade, blind curves and tunnels.

PROHIBITED WHISTLE POST

Black letter W encircled in red with red diagonal bar, on reflective silver background

Located at least one-quarter (1/4) mile from the edge of every public crossing at grade, where engine whistle signal Rule 14 (l) is prohibited by special instruction.

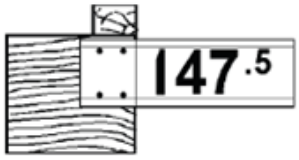
MILE POST



Black numerals on white background

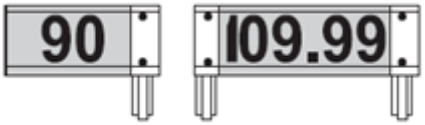
Located at one mile intervals to designate subdivision mileage.

STRUCTURE NUMBER SIGN



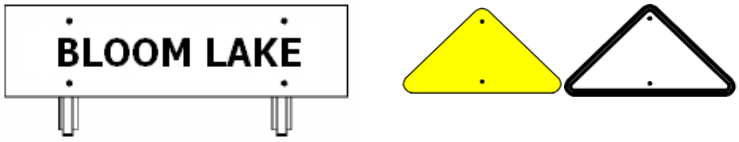
Black numerals on white background
To designate to nearest tenth of a mile the location of certain structures such as bridges, tunnels and snow sheds.

SWITCH MILE SIGN



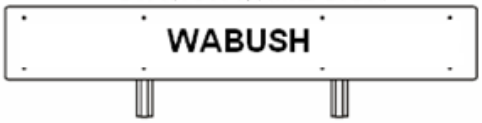
Black numerals on reflective silver background
Located opposite actual point of switch, to identify certain switches which are designated by mileage in Track Occupancy Permits or Clearances.

STATION ONE MILE SIGN



Black letters on white background
Located one mile from station, siding switch, first main track switch where trains can enter or leave yard tracks, designated switch, or junction switch, whichever is the most outlying in each direction.

STATION NAME SIGN



Black letters on white background
Located at mileage shown in time table, parallel to main track.

BEGIN HEAVY GRADE SIGN AND END HEAVY GRADE SIGN

Black letters on reflective silver background
Placed at locations indicated in special instructions or in time table footnotes to mark the beginning and end of a downgrade which exceeds 0.8%, but does not exceed 1.8%, for a distance of 2 miles or more.

ADVANCE SPEED SIGN

Black vertical arrow above black letters, on reflective yellow background
Located one mile in advance of a permissible speed sign marking the beginning of a zone of lower speed.

PERMISSIBLE SPEED SIGN

Black numerals on reflective yellow background

To mark the beginning of a speed zone specified in special instructions. When two speeds are shown on the sign, the upper speed applies to passenger trains and the lower speed to other trains and engines. When one speed is shown on the sign it applies to all trains and engines.

STOP SIGN

Black letters on reflective red background

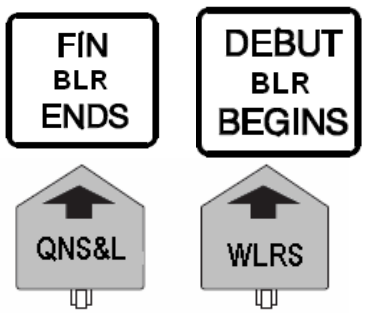
Located 500 feet, except where otherwise indicated, from non-interlocked railway crossings at grade, non-interlocked drawbridges, and at other locations where its use is required.

END OF TRACK SIGN

Black check on reflective yellow background

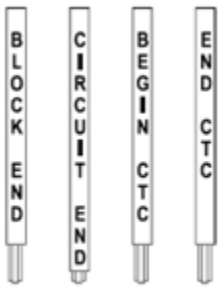
Located at the actual termination point of track, to indicate end of track.

BEGINNING OF RAILWAY (NAME) SIGN



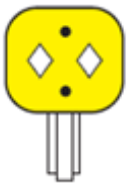
Black vertical arrow above black initials of railway, on reflective silver background
Located at actual point where the (named) railway authority begins.

BLOCK AND CIRCUIT END, BEGIN AND END CTC SIGNS



Black letters on white background
BLOCK END - Indicates end of track circuit controlling a block or interlocking signal.
CIRCUIT END - Indicates end of track circuit controlling automatic warning devices at locations specified in special instructions, or other designated devices.
BEGIN CTC - Indicates beginning of centralized traffic control system territory.
END CTC - Indicates end of centralized traffic control system territory.

RESTRICTED CLEARANCE SIGN

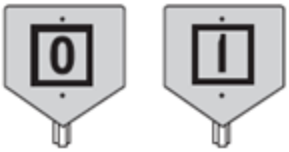


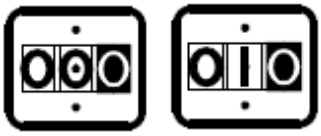
Two diamond shaped holes in yellow background
To call attention to restricted side or overhead clearance, or both, where employees must not ride sides or above the roof of a moving engine or car.

SNOW PLOW AND FLANGER SIGN

Black circles on reflective silver background
To call attention of snow plow and flanger operators to an obstruction to the operation of their snow removal equipment.

BEGIN MEASURED MILE SIGN AND END MEASURED MILE SIGN





A black numeral within a black hollow square on reflective silver background
Placed exactly one mile apart, and located where required, to permit crews to verify accuracy of the Locomotive Speed Indicator and/or the Distance Measuring Device.

ENGINE PROHIBITED BEYOND THIS POINT SIGN

Black engine symbol encircled in red with red diagonal bar on reflective yellow square
Located at actual point beyond which an engine is prohibited from moving.

SPOTTING OF EQUIPMENT PROHIBITED BEYOND THIS POINT SIGN

Black car symbol encircled in red with diagonal red bar and black arrow on white square
Located at sufficient distance from a road crossing, and to the outside of the outer track(s) to which it applies, in order to provide adequate sight distance of adjacent main track for vehicles using the road crossing.
Indication: Cars, engines or track units may not be left between the sign and the road crossing in the direction of the arrow.

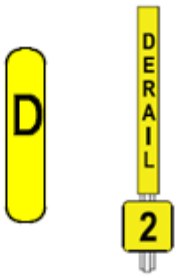
MAIN TRACK BEGIN SIGN

Black letters T over M symbol on reflective silver square
Located at the actual point where main track begins.

MAIN TRACK END SIGN

Black letters T over M symbol with black diagonal bar on reflective yellow square
Located at the actual point where main track ends.
Note: These signs need not be placed where the main track begins or ends at a switch.

DERAIL SIGN

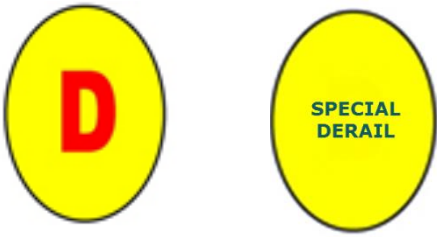


Black letters/numeral on reflective yellow background
DERAIL - Indicates location of derail.
DERAIL NUMBER - When added to DERAIL sign, indicates another derail, or other derails, on adjacent track(s) where derail signs cannot be installed because of clearance restrictions. Number refers to the total number of tracks having derails at the location marked by the derail sign.

DERAIL SWITCH SIGN

Black letters on reflective yellow background
Indicates location of a switch point derail

SPECIAL DERAIL:



A derail that may be left in the non-derailing position when no equipment is left on the track

OVERHEAD WIRE SIGN

Black letters, numeral, arrow and symbol on reflective yellow background
To call attention to crane operators that overhead wires are crossing the track.
Number indicates number of overhead wires.
Placed 200 feet in advance of the first overhead wire crossing the track on each approach.

LUBRICATOR LOCATION SIGN

Black letters on silver background
To indicate to snow plow operators the location of a rail lubricator mounted on track.

OCS BEGINS SIGN

Black letters on white reflective background

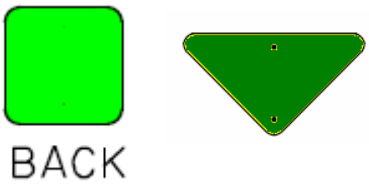
OCS END SIGN

Black letters with black diagonal on white reflective background

PERMANENT SLOW ORDER SPEED SIGN

Black diagonal on yellow reflective square (front of the sign)

RESUME SPEED SIGN

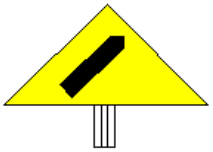


Inverted green triangle /Green reflective square (back of the sign)
Located at the end of a slow order, indicates that the movement can resume its authorized speed after the entire movement has pass the sign.

CROSSING CIRCUIT SIGN

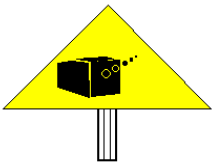
Black crossing circuit symbol on yellow reflective background

ADVANCE ONE MILE TO INTERLOCKING SIGN

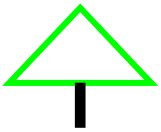


Indication: Proceed, prepare to stop at the interlocking signal. Note: this requirement does not apply when it is known that the track is to the interlocking signal and the indication of the signal is more favorable.

HOT BOX AND DRAGGING EQUIPMENT DETECTOR SIGN



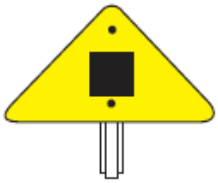
BROKEN RAIL SIGN



Temporary Rail Break signs will be reflectorized on both sides, and will be placed on one side of the track at the location of a temporary rail break to indicate its location. The location of the sign (side of the track) will be specified in the GBO issued. A temporary rail break sign remaining in place for more than one day must be equipped with warning flags in accordance with rule 43

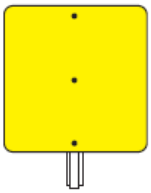
ADVANCE CAUTIONARY LIMIT SIGN

Black square on reflective yellow triangle
Placed at least one mile in advance of each cautionary limit sign.



CAUTIONARY LIMIT SIGN

Reflective Yellow Square
To define cautionary limits. Sign visible from both directions



RADIO ZONE SIGN

RADIO ZONE (Channel)

DANGER DO NOT ENTER SIGN

DANGER
DO NOT TREPASS
SIGN

Black and red writing on a white background with a « do not enter » sign located in the middle.

SECTION 13- DANGEROUS GOODS

DANGEROUS GOODS DESCRIPTION -DEFINITIONS

Regulation:
The transportation of dangerous goods is governed by Transport Canada's Transportation of Dangerous Goods Act and Regulations. Violation of these regulations can result in penalties and/or fines to the company and/or to individual employees.

Guidebook:
A copy of the NORTH AMERICAN EMERGENCY RESPONSE GUIDEBOOK must be accessible to each crew member while on duty. Refer to this book if required to reference applicable placard types, UN numbers, commodity names, and emergency procedures.

Definition:
Dangerous goods car - A loaded dangerous goods car or a car containing a residue of dangerous goods.

IH train:
An IH train is a train, other than a yard assignment, handling one or more placarded loaded tank cars designated as Poison Inhalation or Toxic Inhalation Hazards. The use of yard limit rules as the method of operation on the main track between yards or stations does not void the application of these guidelines.

"Key Train" means an engine with cars;

a) that includes one or more loaded tank cars of dangerous goods that are included in Class 2.3, Toxic Gases and of dangerous goods that are toxic by inhalation subject to Special Provision 23 of the Transport of Dangerous Goods Regulations (information on a shipping document); or

b) that includes 20 or more loaded tank cars or loaded intermodal portable tanks containing dangerous goods, as defined in the Transportation of Dangerous Goods Act, 1992 or any combination thereof that includes 20 or more loaded tank cars and loaded intermodal portable tanks.

"Key route" means any track on which, over a period of one year, is carried 10,000 or more loaded tank cars or loaded intermodal portable tanks containing dangerous goods, as defined in the Transportation of Dangerous Goods Act, 1992 or any combination thereof that includes 10,000 or more loaded tank cars and loaded intermodal portable tanks.

"Within Census Metropolitan Area" (CMA)
For the purpose of this instruction, A CMA means population centers defined by Statistics Canada as core (i.e., at least 50,000 persons) and secondary core (i.e., at least 10,000 persons) of CMAs listed in Appendix B. The list of CMAs will be amended should updates by Statistics Canada become available.

1.0 CAR INSPECTION BY TRAIN OR YARD CREWS

1.1 Shipper's Siding or Interchange

Before lifting a dangerous goods car from a shipper's siding or interchange:
Comply with Pre-departure Inspection Procedures in section 5.

A. Ensure the car:
(i) is not leaking;
(ii) is equipped with serviceable roller bearings and trucks;
(iii) is properly placarded (if required, as per item 2.1).

B. If the car is a tank car, also ensure it has:
(ii) double-shelf couplers;
(iii) dome cover, or man way cover closed;
(iv) bottom outlet cap and plugs applied;
(v) caps and plugs of all other visible openings in their proper places;
(vi) loading/unloading rack equipment is clear and secured.

Inspect tank car qualification dates;

A. Make sure the stencils describing the tank car specification (e.g. DOT 111A100W1) and qualification dates are legible (**see example below**). These stencils will appear on both sides of the tank car toward the end on the right as you face the car.

B. Make sure the tank car qualification dates for pressure relief devices (PRD), tank, and interior heater coils are current (a car is currently within the qualification date until the last day of the year shown) (**see example below)**.

Note: When the car is loaded before the end of the year, it may be transported for unloading purposes but must be requalified before reloading.

C. When the qualification date is overdue, do not load or accept loaded tank cars from the shipper.

D. When found enroute, car may proceed to destination after contacting the supervisor.

TANK CAR QUALIFICATION DATE (New Style Example)

	STATION STENCIL	QUALIFIED	DUE
TANK QUALIFICATION	ABC-1	2006	2016
THICKNESS TEST	ABC-1	2006	2016
SERVICE EQUIPMENT	ABC-1	2006	2016
PRD VALVE: 75 PSI	DEF-1	2006	2016
LINING	ABC-1	2006	2016
88.B.2 INSPECTION	ABC-1	2006	2016
STUBB SILL INSPECTION	ABC-1	2006	2016

TANK CAR QUALIFICATION DATE (Older Style Example)	
DOT 112J340W	
Safety Valve	280.5 LB
Tested 2006	Due 2016
Tank	340 LB
Tested 2006	Due 2016
Blt.	03/2006

Note: If a car does not meet all of these requirements, and the exception cannot be corrected, then do NOT lift the car. If you do not lift the car, notify the appropriate person.

E. Signs of tampering, such as suspicious items or items that do not belong, the presence of an "Improvised Explosive Device" (IED), and other signs that the security of the car may have been compromised. (This inspection must take place from the ground, at a close enough distance so that any problems can be readily identified, and must NOT be performed from a moving vehicle.)

Note: Where an indication of tampering or a foreign object is found, take the following actions:
Do not accept or move the rail car.

- Immediately move yourself and others to a safe location away from the rail car before using radios and cell phones to make notifications.
- For cars at a customer's facility, immediately contact local plant personnel. If local plant personnel are not available or cannot explain what you see, immediately contact the RTC, Supervisor or Yardmaster.
- For cars on interchange tracks or in the yard, immediately contact the RTC, Supervisor or Yardmaster.

1.2 In Transit or in a Yard

- Do not move, without authorization, a car found leaking in a yard or in transit.
- Follow the Emergency Procedures outlined for (Leaks and Spills).

2.0 SAFETY MARKS (E.G., PLACARDS)

2.1 Shipper's Siding or Interchange

Before lifting a placarded car from a shipper's siding or interchange, check the following:
Placards are:

- applied to both sides and both ends of the car, container, or trailer;
- the same in all locations;
- right-side up in the diamond position;
- clearly visible and legible from the ground; and
- in good condition.

UN/NA number is displayed on placards or orange panels, e.g., the same as indicated on the documents.

Notes:

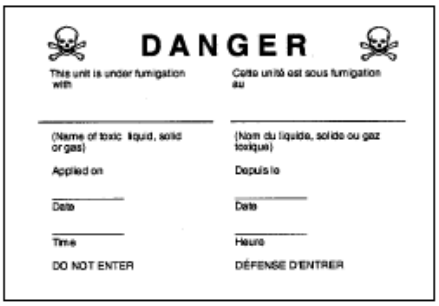
- Placarded shipments without the required documentation must not be lifted, as per item 3.1.
- Traffic originating from the U.S. or overseas may display placards with words.
- Mixed loads may display danger placards. These placards do not display UN numbers.

2.2 In Transit or in Yard

Placards or orange panels found missing, unreadable, or damaged in transit must be replaced: at locations where THAT train is given a standing train inspection by Mechanical Forces, and prior to being interchanged to another carrier.

2.3 Cars Under Fumigation

Do NOT Enter Cars under fumigation –
Cars under fumigation are marked with the following label.



3.0 DOCUMENTATION

3.1 Shipper's Siding or at Interchange

Before lifting a dangerous goods car from a shipper's siding or interchange, complete the following steps.

A. Obtain for each car:

- GWCI (Railway) supplied waybill, or
- Compressed waybill, or
- Foreign line waybill (interchange only).

B. Verify the following list outlines the information required on a shipping document.

1. Consignor's name and address
2. Date shipping document given to initial carrier
3. Car and initial number
4. Description of each of the dangerous goods

Sub-points i) to vii) must be listed in this order

i) UN Number (NA when originating in the USA)
ii) Shipping name
iii) Class
iv) Compatibility group when product is Class 1 – Explosive
v) Subsidiary class when product is one
vi) Packing group (when product has one)
vii) the words "toxic by inhalation" or "toxic – inhalation hazard" or "toxique par inhalation" or "toxicité par inhalation"

5. Quantity - weight or volume (originating from Canada/ metric system).
6. 24 hour telephone number for technical information about the dangerous good.
7. Residue information if the container contains residues of a dangerous good.
8. Consignor's certification (shipper)
9. Additional information

Emergency response assistance plan (when required)

The reference number of the emergency response assistance plan issued by Transport Canada preceded or followed by the letters "ERP" or "ERAP" or "PIU".

Description of required information

Consignor's name and address
The consignor must include the name and address of their place of business in Canada.
Shipping date
The shipping date is the date the consignor prepared the shipping document or first delivered it to the carrier.

Update the appropriate train documents to show the position of all placarded cars.

3.2 Radio Waybill (Required Documents Missing Enroute)

Dangerous goods cars cannot be moved without the required documentation. Occasionally, errors occur and dangerous goods cars depart the origin or crew change point without the required documentation. This error may be identified by the train crew, or by another employee.

Use the following process when a train has departed the train consist origin or crew change point without the required documents.

Documents Discovered Missing while Enroute		
Step	**Employee**	**Actions**
1.	Train crew, or other employee	Discovers documents are missing and **promptly** reports this to the RTC.
2.	RTC	• Obtains documents and relays the required information to the train crew; or • If unable to locate the documents, then advises train crew where to set off the car.
3.	Train crew	• Records information on "Dangerous/Hazardous Materials Radio Waybill;" or • Sets off car as per RTC instructions.
4.	Relief crew at next crew change point	Does not move the dangerous goods car until the radio waybill has been replaced by: • Compressed waybill, or • Proper shipping document.

Railway: _____

Dangerous Goods Radio Waybill			
1	Train number:		
2	Initial and car number: _____	Position in the train : _____ Load : ☐ Empty (Residue) : ☐	
3	Consignor's Name :		
4	Consignor's Address :		
5	Shipping date (initial):		
6	Consignee' Name :		
7	Consignee's Address :		
	Description : UN (NA) number = _____ Shipping Name = _____ Class = _____ Compatibility group (class 1 - explosive) = _____ Subsidiary class ( ) = _____ Packing Group = _____ The words " Toxic by inhalation" (TIH)= Yes : ☐ or No : ☐		
8	Weight or Volume / Quantity - lbs./kg/L :		
9	24 heures number :		
10	« PIU », ERP, ERAP number :		
11	Residue last contained : Yes : ☐ or No : ☐		
12	Special Dangerous Commodity : Yes : ☐ or No : ☐		
13	The words « Toxic par inhalation » (circle one): ZONE A ZONE B ZONE C ZONE D		
14	Consignor's certification (shipper):		
15	Marine Pollutant : P ☐ \ PP ☐		
16	Other information :		
	Filled by :	Date :	Time :

3.3 Custody or Control of Documents

Documents or copies must be in the custody or control of:

- The crew, when the shipment is part of a train or any other movement for delivery to customer or interchange.
- The responsible yard office, when the car is in a rail yard for other than repairs,
- The person in charge of a repair track, when the car is there.

In all other cases, the documentation must be at a location designated by the person in charge or RTC.

4.0 RECORD POSITION OF PLACARDED CARS

4.1 Position of Placarded Cars

Train crews shall have in their possession a document indicating the position of each placarded car in their movement. When the position of a dangerous goods car changes (e.g., cars lifted or set off), or a placarded car is placed in the train, update the document to indicate the change. A train consist, switch list, or other prepared document may be used to meet this requirement.

4.2 Information to Show

When using the train report or any other appropriate form to indicate cars lifted enroute, show the following information for **loads and residues**:

car initials and number,
product name (shipping name),
class,
UN/NA number,
position from locomotives, and
SPECIAL **dangerous** (if applicable).

5.0 SWITCHING OR COUPLING TO EQUIPMENT

Dangerous goods cars:

Must not be cut off in motion or, coupled onto by a car moving under its own momentum.

Instructions for coupling to dangerous goods cars

Before coupling placarded dangerous goods cars to other equipment, the following precautions must be taken:

A stop must be made not more than 12 feet and not less than 6 feet from the equipment to couple onto. Then, proceed with coupling with care to avoid jolts.

Any impact with a dangerous goods car suspected of having been made at a speed exceeding 6 mph must be promptly reported to the appropriate railway supervisor for furtherance.

The following policy applies to all cars containing materials with an Inhalation Hazard. Commodities historically handled that have Inhalation Hazards are:

Anhydrous Ammonia UN 1005
Chlorine UN 1017
Sulphur Dioxide UN 1079

Note: Even though large volumes of these commodities are not handled, the following restrictions must be observed:

Switching
Cars containing inhalation hazard materials must be set aside and not held onto unnecessarily during switching movements.

Delivery
These cars must be delivered to the customer or interchange point as soon as possible and are not to be stored on the property.

6.0 MARSHALLING

6.1 Application
These Marshalling restrictions apply to all placarded cars (loads & residues) on movements **exceeding 15 MPH**.

6.2 Check Train Consist Dangerous Commodities Marshalling
Check the train consist for any marshalling violations.
Verify and correct all violations.

6.3 General Marshalling Restrictions (Except Placarded Containers and Trailers Positioned on Flat Cars)
The following marshalling restrictions apply to all placarded dangerous goods cars.
Do **not** marshall a placarded Dangerous Goods car next to:

- An operating locomotive (unless all cars in the movement have a placard);
- Any occupied car (unless all other cars are either occupied or have a placard);
- A car equipped with a mechanical heating or cooling device or has a source of ignition, and is in operating mode;
- An open top car when lading protrudes beyond car or lading above car end is liable to shift lengthwise (except packaged and/or banded lumber on a bulkhead flat car provided the top packages do not exceed the bulkhead by more than 50%);
- A loaded flat car (except trailers or containers on flat cars, multi-level auto Transport cars, or any car specially equipped with tie down devices for handling vehicles).

Note: When a multi-platform car is used as a buffer car, each platform counts as one car.

Marshalling Chart

The following chart outlines additional restrictions for Placarded Dangerous Goods cars.

Dangerous Goods Cars in Group/Class:	Must not be placed next to:		
	Group A	Group B	Group C
Group A: Explosives Classes 1.1 & 1.2 		X	X(1)
Group B: (Infrequently handled. See list below.)	X	X(2)	X
Group C: Explosives Classes 1.3 to 1.6,  Classes 2, 3, 4, and 5. 	X(1)	X	
Group D: Classes 6, 7, 8, 9, and mixed loads 	Only general marshalling restrictions (item 6.3) apply.		

Notes: X "must not be next to" restriction
(1) not applicable to explosives in Classes 1.3 to 1.6.
(2) not applicable if the next car has the same UN number.

Group B Dangerous Goods (Infrequently handled)
UN 1008, CLASS 2.3 UN 1660, CLASS 2.3
UN 1026, CLASS 2.3 UN 1911, CLASS 2.3
UN 1051, CLASS 6.1 UN 1975, CLASS 2.3
UN 1067, CLASS 2.3 UN 2188, CLASS 2.3
UN 1076, CLASS 2.3 UN 2199, CLASS 2.3
UN 1589, CLASS 2.3 UN 2204, CLASS 2.3
UN 1614, CLASS 6.1 UN 3294, CLASS 6.1

6.4 Marshalling Plain Bearing Cars

Loaded Dangerous Goods in Caboose less Train Operations can be anywhere in the consist, subject to the marshalling restrictions indicated in this section, provided there are no plain bearings on the train ahead of a loaded dangerous goods car.

In addition to the other requirements outlined in items 6.3, loaded dangerous goods cars marshalled behind cars that have plain bearings:

must be marshalled within the first 2000 feet on trains 4000 feet or less, or;

must **not** be marshalled in the last 2000 feet on trains over 4000 feet.

7.0 EMERGENCY PROCEDURES

7.1 Accidents, Collisions, Derailments

Use these procedures (a to f) for incidents involving a car, container, or trailer that contains or last contained dangerous goods. The order in which the steps are completed depends on the incident. After the initial response and initial assessment, many actions are completed simultaneously.

Note: Emergency procedures for leaks and spills are described in item 7.2.

A. Protect and Communicate – Initial Response

- Protect train in accordance with CROR and/or Special Instructions.
- CROR Rule 125, Emergency Communication Procedures; or
- CROR Rule 35 Emergency Protection;
- CROR Rule 102, Emergency Stop Protection.
- Enroute, complete emergency call to the RTC.

The RTC immediately advises the designated manager, contact the responsible supervisor.

B. Assess Dangerous Goods Hazard

- Visually inspect the incident, from the cab of the locomotive if possible.
- Identify dangerous goods involved using the train documents:
  - Compressed waybill, or
  - Use the Emergency Response Guidebook to identify protective actions. To use the Guidebook:

C. Find the material's Guide number using the:

- UN Number (yellow-bordered pages), OR
- Shipping name (blue-bordered pages)
- Use the Guide number to find the "Public Safety" instructions in the orange-bordered pages.

(Note: The emergency response information in the train documents may be used as a supplement to the *Emergency Response Guidebook*.)

D. Assess Site Hazards

- If the dangerous goods hazard does **not** prevent you from approaching the derailed cars and it is necessary to approach the cars, then assess the site hazards.
  - **Physical**: slip, trip, fall, sharp objects, moving equipment, shifting loads, or shifting track material.
  - **Chemical**: from derailed cars, or damaged underground utility or pipeline.
  - **Electrical**: power lines (over-head or underground) and fiber optic cables.
  - **Other**: water, embankments, bridges, etc.

- Keep away from hazards to avoid injury.
- Avoid any unnecessary exposure to smoke or fumes.
- Keep all open flames, including fusees and smoking material, away from the incident scene.

E. Rescue and Secure

- If it can be done safely, rescue the injured and move them to a safe place. Apply first aid or secure medical assistance.
- Keep public well away from the scene. If necessary, secure help from police forces.
- If the locomotives are not directly involved in the accident, the train should be cut as close as safely possible and cars removed a safe distance

F. Communicate Details

Use the shipping document, compressed waybill, or the train consist to provide the following information for cars containing dangerous goods, or residue cars:

- location (Subdivision and mileage),
- number of cars involved and condition,
- car initials and number,
- weather conditions,
- any additional information, as requested

G. Documents

KEEP all documents until relieved of that responsibility by a supervisor.
When a public security official (e.g., police officer, fire fighter) arrives at the scene, attempt to contact the official and assist him/her in examining the supplied dangerous goods documents/shipping document(s), train consist, or other appropriate form, and Emergency Response Information.

7.2 Leaks and Spills

If you suspect a car containing dangerous goods is leaking, or you see a dangerous goods spill:
Get clear of the spill or leak immediately, upwind if possible. Avoid low-lying areas.
From a safe location, notify others in the area as soon as possible.
En Route, notify the RTC and use the shipping document, compressed waybill, or the train consist to provide the following information:

i) location,
ii) car initials and number,
iii) weather conditions,
iv) additional information requested.

In the yard, contact the responsible supervisor or the RTC.
Keep the area clear of all personnel except Emergency Responders.
Do **not** move, without authorization, a car found leaking in a yard or in transit.

7.3 Cars Under Fumigation

An accident, collision, derailment, spill or leak involving a car under fumigation does **not** require special considerations for dangerous goods. However, **ensure no one enters these cars.**

8.0 SPECIAL DANGEROUS COMMODITIES

8.1 Identifying SPECIAL Dangerous Commodities

To alert all concerned that a **SPECIAL dangerous** commodity is being handled, the load may be identified as follows:

- The compressed waybill and waybill displays "S**PECIAL DANGEROUS** COMMODITIES,"
- Train report indicates **SPECIAL DANGEROUS** lifted enroute.

8.2 Instructions – Reference.

A. A train carrying one or more full carloads or container loads or trailer loads of Special Dangerous commodities MUST, within one mile of the mileage shown by subdivision footnote at which this instruction applies,

- perform a pull-by or standing inspection,
- from the front of the train to and including 8 axles behind the last full carload, container load, or trailer load of a Special dangerous commodity.

B. The following references direct you to other instructions that apply when handling **SPECIAL DANGEROUS** commodities.
Speed restrictions, and Locations where inspection is required. Time Table footnotes,

9.0 PROTOCOL FOR HANDLING TOXIC INHALATION HAZARD MATERIALS

9.1 Protocol for Handling Toxic Inhalation Hazard Materials (IH)

An IH train is a train, other than a yard assignment, handling one or more placarded loaded tank cars designated as Poison Inhalation or Toxic Inhalation Hazards. The requirement of rules such as, Restricted Speed, Reduced Speed or Speed on Non-main track (CROR 105) between yards or stations does not void the application of these guidelines.
The following guidelines govern operating instructions, maintenance of routes, and qualifications of employees on all railways over which IH shipments are handled. These instructions will supplement any regulatory requirements for the protection of safe operations.

9.2 Qualifications of Employees

All engineers operating in other than yard service handling IH shipments must have a minimum of 1 year service as a qualified locomotive engineer or be authorized to handle IH by a supervisor of locomotive engineer (on-job trainer/DSLE). Every engineer/conductor must have successfully completed Hazardous Material (HazMat) Training and be currently certified in HM-1/TDG training. All employees in IH service must be trained and qualified in the Supplemental Hazardous Material Training Program. Employees entering IH service must be certified in both HM-1/TDG training and Supplemental Hazardous Material Training prior to performing IH service. Employees working in IH service must receive Supplemental Hazardous Material Training annually.
Locomotive engineers in other than yard service must pass a skills certification ride of at least 4 hours duration, annually as conducted by a qualified supervisor of locomotive engineer (on-job trainer/DSLE) or designated on-job trainer, in order to maintain qualifications for operating a train containing IH shipments.

9.3 Operating Practices

Speed: IH trains are restricted to a maximum speed of 30 mph/48 kph.
Train Placement: When practical, all IH shipments must be placed in a train no farther than 50 cars from locomotives and where possible, IH shipments must not be the last car in a train.

A. **Inspection:** All IH shipments will be inspected by a qualified crew member or mechanical inspector at interchange, or before being pulled from a customer facility to insure the equipment is in proper condition, and without unauthorized appurtenances. Before moving in a train, the location of each IH shipment must be ascertained, with placards and transportation documentation verified. All chain of custody and control requirements as set forth by Transportation of Dangerous Goods Act, 1992 (1992, c. 34) must be met.

B. **Exceptions or Delays:** When a train will be delayed or stopped at one location in a Census Metropolitan Area (CMAs) or other high risk area as defined by the railway's Security Plan required by Transport Canada, and when conditions permit, a member of the crew will make a physical inspection of the train including each IH shipment. Inspection results must be communicated to Rail Traffic Controller (RTC) or other authorized representative of the railway as soon as communication is available.

C. Train crews operating trains containing IH shipments must remain alert and vigilant for any potential activity which will disrupt the safe movement of the train. Any exceptions noted by crew members or delays enroute (as described above) must be promptly communicated with the RTC or other authorized representative of the railway, acknowledging train location, any unusual circumstances encountered enroute, or cause of any delays.

D. **Communication:** All trains must be equipped with effective working radio communication as required by Transport Canada which can include cell phones (where radio communication is unavailable). Each railway will develop an emergency response plan. Notification of emergency service outside the company will be the responsibility of the authorized representative of the railroad as indicated in the railway emergency response plan.

E. **Enroute Set-out:** Should it become necessary to set off a loaded IH at any unattended location along line of road, crew must immediately notify the RTC or other authorized representative of the railway who will arrange for 24/7 security until the car can be safely moved from set off location.

F. **Delivery:** All loaded IH cars should be scheduled for delivery to the customer within 24 hours after arriving in the serving yard. IH shipments standing unattended longer than 24 hours between scheduled services must be security inspected every 24 hours by an authorized representative of the railway for defects.

9.4 Track Inspection

All tracks over which loaded IH will travel must be inspected per the "Key Train" Inspection Protocol, which was made effective April 15, 2014 (revised for Canada August 27, 2015); document is attached as Appendix "A." Inspection records must be maintained, filed and retained per FRA or Transport Canada regulations.

9.5 Advance Planning

Regions regularly transporting loaded IH must have a least 1 manager attend and complete the AAR HazMat Specialist (First Responder) Training in Pueblo, CO or Equivalent training in Canada to train affected employees and facilitate communication with emergency response teams.
Regions regularly transporting loaded IH must develop a joint response plan with local, city, regional emergency teams. The joint response plan will consist of notification procedures, contacts, handling procedures, communication networks, and other plans as determined by the joint efforts.

9.6 Revisions

Modifications and revisions to these guidelines will be made as required to conform to final rules as established by the various regulatory agencies

APPENDIX "A"

"Key Train" Inspection Protocol

In effect - April 15, 2014, (revised for Canada August 27, 2015)

Restrictions: Canada

1. In order to comply with the speed restrictions for CMAs, unless a lower speed is specified, do exceed 40 MPH while operating a Key Train as well as a train containing at least one tank car or portable tank container in the car type DOT -111 tank cars include those that are CPC-1232 specification loaded with any of the dangerous goods listed below:

    - UN 1170 ETHANOL
    - UN 1202 DIESEL FUEL
    - UN 1203 GASOLINE
    - UN 1267 PETROLEUM CRUDE OIL
    - UN 1268 PETROLEUM DISTILLATES, N.O.S.
    - UN 1863 FUEL, AVIATION, TURBINE
    - UN 1993 FLAMMABLE LIQUID, N.O.S.
    - UN 3295 HYDROCARBONS, LIQUIDS, N.O.S.
    - UN 1987 ALCOHOLS N.O.S
    - UN 3494 PETROLEUM SOUR CRUDE OIL, FLAMMABLE, TOXIC
    - UN 3475 ETHANOL AND GASOLINE MIXTURE

    If unable to confirm if the car type is a DOT-111 including CPC-1232 specification, then comply with the speed restriction for the dangerous goods listed above.
    Note: Time Table "speed" restrictions under for Special Dangerous Commodities also apply to "Key trains".

2. Have "Key train" hold the main track at meeting or passing points unless the speed on the siding or the track to be used meets Transport Canada Class 2 requirements as per TC E-54 (operating speed not exceeding 25 MPH). In situations where the siding or track to be used does not meet this requirement above, the "Key train" may operate on the siding or track to be used at a speed not exceeding 10 MPH instead of holding the main track when it is operationally infeasible or the non-Key train is a passenger train.

3. Only cars equipped with roller bearings will be allowed in a "Key train".

4. Perform an inspection of any bearing on a "Key train" reported defective by a Wayside Defective Bearing Detector (HBD). If any such inspection confirms that a bearing on a car of a " Key train" is defective, set off that car from the " Key train" or operate the "Key train" at a safe speed not exceeding 10 MPH until the car with the defective bearing is set off. If the inspection performed on a bearing of a car of a "Key train" reported by a Wayside Defective Bearing Detector (HBD) fails to confirm a defect in a bearing, do not operate the "Key train" at a speed exceeding 25 MPH until the "Key train" as successfully passed next Wayside Defective Bearing Detector (HBD). If a defect in a bearing of the same car of a "Key train" is reported by two consecutive Wayside Defective Bearing Detectors (HBD), set off that car from the .Key

train" or operate the "Key train" at a safe speed not exceeding 10 MPH until the car with the defective bearing is set off.

5. In addition to the requirement to stop before coupling, do not exceed 4 MPH when coupling loaded thank cars of dangerous goods.

Conductor responsibility
The conductor must:

- Review the train consist and the sipping documents of all dangerous goods before departure and when cars are picked up en route to determine the "Key train" status.
- Before departure and when lifting en route, advise the RTC that the train status is or is not a "Key train".
- Ensure train documents are kept up to date.

Definitions: United States

"Key Train" – any train with loaded TIH / PIH cars in its consist, or any train with 20 or more loaded placarded cars of HazMat in its consist.

"Unit HazMat Trains" – any train that has in its consist 60 or more loads of a single hazardous material, transported in uniform cars of a single type. *Unit Oil Trains are considered Unit HazMat trains.*

"Route" – includes mainline track in and outside of Yard Limits, and industrial leads outside of Yard Limits.

Track Geometry Testing Requirements;

A minimum of one test per calendar year for all designated "Key Routes" / "Key train" routes (US).

Note: In situation where a heavy track geometry vehicle is unavailable, inspect any Key route main track on which a Key Train twice, with no more than 100 days between inspections, with light track geometry vehicle.

One additional test during the calendar year if one or more of the following apply:

- More than 50 "Key Train" movements containing TIH / PIH occur annually.
- Route operates Unit HazMat trains.
- Route has 90 lb. or smaller rail section.
- Route has sections with heavy curvature or grade. (Defined as any portion of 5 miles or greater of the route having more than 50% of the track curved and the majority of the curves 4 degrees or greater, or, track with 1.5% grade and above).

Internal Rail Flaw Defect Testing (Ultrasonically, and / or Induction);

A minimum of one test per calendar year for all designated "Key Train" routes.

One additional test during the calendar year if one or more of the following apply:

- Portions of the route have 90 lb. rail section or smaller (required to just test the smaller rail sections).
- More than 50 "Key Train" movements per year.

- A history of averaging more than 1.5 defective rails per track mile per year (only required to test the miles with over 1.5 defects per track mile per year, not the entire route).

4 tests per year (quarterly) are required on routes where more than 50 Unit HazMat trains operate per year, 3 tests per year on routes where between 50 and 25 Unit HazMat trains operate per year, and 2 tests per year on routes where less than 25 and more than 1 Unit HazMat trains operate per year.

- At locations where there are multiple tests each year, it is recommended that every other test include induction technology.

Loaded Unit HazMat Trains are restricted to 25 MPH;

Empty (residue) Unit HazMat trains can travel at timetable speed.
Empty (residue) Unit HazMat trains containing residual TIH / PIH cars are restricted to 25 MPH.

Track Inspection Requirements;

On Routes where over 50 "Key Train" operate per year a minimum of two inspections per week will be conducted with at least two days between inspections.

- In Advance of Movement (IAM) inspections are required ahead of all Unit HazMat Trains.
- Between the IAM inspection and the Unit HazMat train.
- IAM inspections are not required on tracks within Yard Limits where restricted speed is required.

Note: Special inspections for unusual events such as heavy rain, high winds, excessive hot or cold weather, etc. will occur in addition / as required

On Routes where over 50 "Key Train" operate per year the entire route requires an annual walking inspection. Inspection will focus on joint bars, gauge, switches, track alignment, drainage, and tie condition.

All Unit HazMat train routes will be "Hot Weather" readiness Certified.

- Regional VP Engineering will be responsible to review training records annually to verify CWR training for Engineering Employees has occurred within the last calendar year.
- Individual Railroad Engineering teams to review summary of hot weather requirements, procedures, for their specific railroad and validate they are in place and understood by team members.

Bridge Inspections & Requirements;

- In accordance with G&W Bridge Maintenance Program, all bridges are to be inspected once per calendar year by a qualified bridge inspector.
- If route carries more than 50 Unit HazMat trains annually, then;
  - A field review of most recent bridge inspection shall be performed by qualified bridge inspector within 4 to 8 months after the inspection; and
  - VP or AVP Structures to conduct a review of most recent bridge inspection reports each year.

Trains with loaded TIH / PIH cars in the consist passing through High Threat Urban Areas (HTUA) will reduce their authorized speed by one class of track (40 MPH to 25 MPH, or 25 MPH to 10 MPH), but no less than 10 MPH.

Note: When evaluating the type and volume of rail traffic on a route for applying these inspection protocols, evaluate the traffic that has passed over the route in the last 3 months and annualize the results. Include additions or deletions based on the anticipated traffic for the next 12 months.

Appendix "B"

Population of census metropolitan areas

St. John's (N.L).
Halifax (N.S.)
Moncton (N.B.)
Saint John (N.B.)
Saguenay (Que)
Québec (Que.)
Sherbrooke (Que.)
Trois-Rivières (Que.)
Montréal (Que.)
Ottawa-Gatineau (Ont.-Que)
Kingston (Ont.)
Peterborough (Ont.)
Oshawa (Ont.)
Toronto (Ont.)
Hamilton (Ont.)
St. Catharines-Níagara (Ont.)
Kitchener-Cambridge-Waterloo (Ont.)
Brantford (Ont.)
Guelph (Ont.)
London (Ont.)
Windsor (Ont.)
Barrie (Ont.)
Greater Sudbury (Ont.)
Thunder Bay (Ont.)
Winnipeg (Man.)
Regina (Sask.)
Saskatoon (Sask.)
Calgary (Alta.)
Edmonton (Alta.)
Kelowna (B.C.)
Abbotsford-Mission (B.C.)
Vancouver (B.C.)
Victoria (B.C.)

Source: Statistics Canada, CANSIM, Table 051-0056.
Last modified: 2015-02-11

SECTION 14 - PASSENGER TRAINS – EMERGENCY PROCEDURES

1.0 PASSENGER TRAIN EMERGENCY PROCEDURES - GENERAL

1.1 All on board passenger train employees must be trained and qualified in emergency communication procedures use of emergency equipment and supplies, and emergency response procedures.

1.2 All on board passenger train employees must make themselves familiar with the locations of emergency equipment and supplies, and with the operation of emergency exit windows and doors. These may differ with various car designs.

1.3 Every passenger train must have one employee designated as the "Person in Charge" who will have primary responsibility for the safety of the passengers and emergency response procedures. This would normally be the conductor, but it could be another designated on board employee. All on board employees must know who the Person in Charge is.

1.4 The Person in Charge, or other designated employee, must be trained and prepared to assist disabled persons on passenger trains when any car(s) are so equipped.

1.5 The Person in Charge, or other designated employee, must ensure that passengers are provided with appropriate safety briefing materials. Methods for accomplishing this include:

- on-board announcements
- video presentations
- strategically placed placards
- descriptive handouts or ticket stubs

2.0 MEDICAL EMERGENCY

2.1 Employees who have completed an accredited first-aid course and hold a current first-aid certificate are required to render emergency first-aid until arrival of medical help.

2.2 In the event of a medical emergency the following steps should be taken:

1. Assess hazards and make the area safe for yourself and others.
2. Identify yourself as a First Aider (if qualified).
3. Take charge of the situation and arrange for help (e.g. Conductor, Service Manager, Doctor etc.)
4. Assess the casualty for life-threatening conditions;
    - History (medical problems)
    - Signs (what you see)
    - Symptoms (how the casualty feels).
5. Establish priorities in the following order, and give first-aid for;
    - Stopped breathing
    - Severe bleeding
    - Shock & unconsciousness. (First-aid kits, stretchers are normally available on passenger trains, oxygen kits are available some trains.)
6. Request medical aid if required.

2.3 Once the medical condition is assessed and a need is established for external medical resources, the person in charge, or other on board employee, using correct radio procedures, must immediately contact the RTC and relay the following information:

1. Type of assistance required (ambulance, doctor etc.)
2. State of the person (conscious or unconscious.)
3. Gender.
4. Age (approximate.)
5. Condition of the person (bleeding, suspected heart attack etc.)
6. Location of the train. (If possible nearest intersecting street or known landmark as well as railway mileage. THIS INFORMATION IS VITAL FOR AMBULANCE AND EMERGENCY PERSONNEL.)
7. Location within train (car number and position in consist.)

2.4 The RTC will arrange for the medical assistance and will relay the information to the train. The RTC will also arrange to inform the appropriate officials of the emergency.

3.0 ON-BOARD FIRE

3.1 In the event of a fire, the protection of life must be of main concern to all employees working on the train.

3.2 If a fire is seen, smoke smelled or if a passenger reports a fire, the following steps must be taken:

1. STOP may be required. Remember, continued movement of the train may make the fire worse.
2. Turn off the car's blower system, to prevent the spread of smoke to other parts of the car.
3. Notify other employees on the train that a serious problem exists and assistance is required. (The exact words "IMMEDIATE ASSISTANCE" must be used. This is a code to alert all employees on the train that an emergency exists without alarming the passengers.)
4. IMMEDIATELY RELOCATE the passengers to an adjacent car, preferably toward the locomotive. (Evacuation requiring movement of the passengers onto the roadbed must be avoided unless no other means of evacuation is possible.)
5. The person in charge should proceed immediately to the affected car to coordinate the activities.
6. Conduct a quick search of the car, including lavatories, to ensure all passengers have left.
7. If the fire appears controllable, use the nearest appropriate fire extinguisher to extinguish the fire.
8. If the fire appears to be out of control and it is unlikely it can be controlled, separate the train so as to isolate the affected car.
9. Contact the RTC immediately, giving particulars of the situation and the action being taken. The RTC will first arrange to protect the train, and then arrange for the local fire department to assist.

3.3 Portable Fire Extinguisher Operating Instructions

1. Locate and remove fire extinguisher from its housing
2. Verify by gauge that it is charged (do not proceed unless needle is at 12:00 o'clock)
3. Approach fire at a close, but safe distance. Ensure you have an escape route behind you. Remove safety pin.
4. Crouch down to better see the flames.
5. Aim nozzle at base of fire and activate the extinguisher.
6. Spray in side to side motion until fire is extinguished (average discharge time is 8 seconds).
7. If fire is not readily controllable, leave car immediately.
8. Report discharge of extinguisher on appropriate defect form.

4.0 BOMB OR CBRN WEAPONS THREAT

Bomb or Chemical, Biological, Radiological, or Nuclear (CBRN) weapons threats can be divided into two categories, specific and nonspecific. Specific threats contain more detailed information, whereas non-specific threats contain little information.

4.1 Specific Threat

When the conductor or person in charge receives a radio transmission from the RTC Office stating "I HAVE A SECURITY MESSAGE FOR THE CONDUCTOR," he will isolate himself from the passengers and reply "I AM READY TO RECEIVE THE SECURITY MESSAGE." Once informed of the threat, the conductor will:

1. With the assistance of the RTC and the locomotive engineer, arrange to have the train stopped at a safe location.
2. Initiate evacuation procedures (refer to subsection 6.0) ensuring that passengers bring their personal belongings with them.
3. Use the following announcement to initiate the emergency:
   "Attention passengers: A security alert has been received. Passengers must not use any electronic device until further advised. We will be stopping at (or returning to)_____upon arrival, ALL passengers are requested to leave the train, taking all personal belongings with them. Passengers are requested to stay well clear of the train, clear of adjacent tracks and off the right of way". (When conditions or terrain will permit, passengers should be requested to move away from the railway to a point not less than 1000 feet from the line of railway.)
4. Arrange to have all available employees assist in an orderly and safe evacuation.
5. After all passengers have detrained and provided CROR rules permit, arrange to either pull the train ahead or move backward to clear the area.
6. Upon clearing the area, detrain and stand clear of the train but in a position to stop any passengers from returning and await the appropriate Law Enforcement Agency beforeconducting a thorough search of the train.
7. Should a suspect device or package be found prior to the arrival of Police
   - DO NOT TOUCH IT.
   - SECURE THE AREA AND BE PREPARED TO DIRECT POLICE TO ITS LOCATION. (Refer to item 4.3 for additional information)
   - DO NOT USE YOUR RADIO OR CELLULAR PHONE UNLESS AT LEAST 300 FEET FROM THE OBJECT.
   - DO NOT USE AN ENGINE OR CONTROL CAB RADIO UNLESS AT LEAST 300 FEET FROM THE OBJECT.
8. Assist Law Enforcement Officers by establishing a safe route when the object is being removed from the site.
9. After the train has been searched and declared safe, make the following announcement cancelling the emergency:
   "Attention passengers: The train has been searched and the security alert no longer exists. All passengers may reboard the train."
10. Advise the attending Police Agency and RTC of any passenger who refuses to reboard the train and the reason for the refusal.

Train Doors

During the search of a train, doors should be left open to help minimize the possible effects of an explosion.

Restrictions in Use of Radio
Some explosive devices are activated by radio transmissions. While searching, radio usage must be kept to a minimum. If a suspected package is found, the minimum safe distance for portable radio or cellular phone or engine or control (cab) car radio use is 300 feet.

Communication
Maintain communication with the RTC at all times.

4.2 Non-Specific Threat
Once the conductor has been informed of a NON-SPECIFIC bomb threat, he will initiate a discreet search of the train as follows. (Stopping of the train may not be required.)

Where to Search
The search should begin in the area or car identified by the caller or, if the caller does not give an exact location, in those areas which are uncontrolled or not monitored and to which the public has free access. Special attention should be given to:
- washrooms,
- vestibules,
- baggage racks,
- waste baskets,
- under seats.

The search
Prior to entering the car, conduct a visual examination of the interior for clouds of smoke, mist, gas, or vapour. Also look for signs of passengers being incapacitated or other unusual activity. If the car appears to be safe to enter, do so and conduct a visual examination of the area for anything suspicious, then:
1. Stand at opposite ends of the car and try to detect any unusual or ticking noise. (This will only be effective if the car is stopped and empty.)
2. DO NOT ACTIVATE ANY ELECTRICAL SWITCHES UNLESS ABSOLUTELY NECESSARY
3. If nothing is detected, begin the visual examination in the following manner:
    - floor to waist level, then
    - waist level to top of head, then
    - from top of head to and including the ceiling. (All compartments in the car should be checked to ensure they are secure and not tampered with.)
    - If a suspicious object is found, it must not be assumed that the remaining area is clear. Refer to item 4.3

What to look for
Materials or objects which are foreign to the area being searched, such as:
1. a backpack, briefcase or suitcase left in a washroom or other unsecured or unattended area,
2. a hidden or abandoned box or parcel,
3. an object emitting an unusual or ticking sound,
4. an object emitting a peculiar odour, mist, gas or vapour.

4.3 What to do if a suspicious object is found

1. DO NOT TOUCH IT.
2. DO NOT USE YOUR RADIO TRANSMITTER, UNLESS AT THE ESTABLISHED SAFE DISTANCE (300 feet for portable radios or cellular phones and for engine or control (cab) car radios).
3. Attempt to determine if a passenger in the immediate area has any knowledge of the item.
4 If ownership of the suspect item is not established;
   - isolate the area by preventing further access;
   - evacuate all passengers to other cars;
   - instruct all remaining personnel to evacuate the area;
   - inform the RTC of location and description of the article found. The RTC will inform the Law Enforcement Agencies of your discovery;
   - be governed by instructions from the RTC;
   - be prepared to implement guidelines contained in item 4.1 Specific Threat.

5.0 DERAILMENT

Each derailment presents a different and unique situation. The conductor will decide on the safest method of evacuation if evacuation is necessary. If the cars remain upright, the safest location for the passengers may be inside the cars. If the car is on its side, or in a dangerous location, evacuation will be necessary.

Remember:

1. Remain calm.
2. The conductor will coordinate the evacuation.
3. Notify other employees that a serious situation exists by using the words "IMMEDIATE ASSISTANCE" and give the specific location.
4. Inform passengers of the emergency and explain the evacuation plan.
5. Assist in the evacuation of the passengers.
6. Double check that all passengers have vacated the equipment.

6.0 PASSENGER EVACUATION GUIDELINES

The following information pertaining to evacuation guidelines has been prepared to familiarize employees with methods of quickly and efficiently evacuating rail passenger cars in the event of an emergency.

Note: All emergencies cannot be covered in these guidelines, therefore, the sequence of evacuation procedures and method of handling may have to be changed to suit the situation. Railway companies may issue special instructions where relevant, e.g. tunnels, bridges. These procedures are in addition to all other requirements defined in the Operating Rules, Time Tables, and General Operating Instructions, which must be adhered to at all times by operating personnel regardless of the nature of the emergency.

6.1 It is important that both the conductor and locomotive engineer be advised as quickly as possible of the nature of the emergency which may make it necessary to evacuate the train.
This is of prime importance so that the conductor can decide whether evacuation is necessary and so that the locomotive engineer can bring the train to a stop at a location where evacuation can safely take place.

6.2 Provide Emergency Stop Protection (CROR, Rule 102) so that necessary steps can immediately be taken by the RTC and crews of other trains to afford the distressed train full protection and provide assistance.

6.3 While these emergency procedures identify certain responsibility with the conductor, it may be necessary because of injury or other extenuating circumstances, for the locomotive engineer or Train Service Employees to assume the role of the conductor in coordinating the evacuation.

6.4 The method of evacuation chosen must be one offering maximum passenger safety and minimum passenger inconvenience.

- Priority of methods for evacuation
- From car to another car
- From train to station platform
- From train to public or private grade crossing
- From train to another train
- From train to roadbed

6.5 Since the location of emergency equipment and emergency exits can differ depending on the type of equipment, location of these emergency features must be checked by crew members as soon as possible after reporting for duty.

6.6 In order to recall the appropriate response to an emergency, and to minimize passenger panic, it is essential that crew members remain calm.

Stopping Locations
The locomotive engineer, in consultation with the RTC and the Person in Charge, will decide on the best location to stop, based on the urgency of the situation and the immediate safety of all passengers. If the nature of the emergency and the opportunity permit, the train should be stopped at a location which will allow passengers to detrain safely and quickly move away from the immediate area.

- Priority of locations for detraining passengers
- a station platform,
- a road crossing at grade, or
- an open area away from the roadbed. Locomotive engineer should **avoid** stopping
- in a tunnel,
- in a deep cut,
- along side a sharply sloping embankment, or
- on a bridge.

6.7 Evacuation Procedure

When the decision has been made to stop the train, the conductor must

1. Ensure that all necessary steps are/will be taken to protect the train.
2. Ensure that any closely approaching trains or engines on adjacent tracks are contacted so as not to endanger the evacuation. This protection will be arranged in cooperation with the locomotive engineer, using radio contact when possible. Both must be sure that protection has been arranged.
3. When the decision has been made to evacuate the passengers, make the announcement, briefly advising the passengers of the nature of the emergency and directions for the method of evacuation. When it is necessary to evacuate more cars than the crew members can reasonably handle, the conductor should request assistance from passengers.
4. Advise all passengers to stay well clear of adjacent tracks and off the railway right of way.

All announcements should be made slowly and distinctly in a manner which will dispel anxiety.

Notes

GWCI ENGINEERING RESPONSE TO EARTHQUAKE AND WEATHER ALERTS POLICY

EI – 1.006: Engineering Response to Earthquake and Weather Alerts Policy

Effective January 1, 2017

PURPOSE: To provide uniform guidelines for protecting track, structures and roadbed during Earthquake and Weather Alerts.

SAFETY: Observe all applicable safety and operating rules and regulations, and FRA requirements. Inspections must be documented on G&W Track Inspection form MW-001 or in Digital Track Notebook (DTN) as a "Special" inspection.

LOCATION: This policy has been adopted by all North American subsidiaries of Genesee & Wyoming, Inc.

PRIORITY: High: Earthquakes and Severe weather has the potential to weaken or damage the railroad infrastructure which can result in derailments if not first detected through track inspection. This document establishes minimum Engineering responses to various types of serve weather alerts. Local knowledge of the weather conditions, topography and operations must be taken into consideration to determine if a more restrictive response is required.

PROCEDURE: Upon receipt of a severe weather notification, the Roadmaster or designee will take appropriate action that may include the inspection of track roadbed and/or structures. The Roadmaster or designee should use available local resources to obtain further details on the severity of the weather and the potential for impact to railroad infrastructure. Priority shall be given to tracks:

a) which have passenger/commuter trains traffic,

b) tracks handling hazardous materials,

c) tracks known to be susceptible to drainage, flood, and /or slide problems.

d) other high priority tracks.

The track inspections will be performed periodically until the severe weather conditions have passed or before the next train in situations where trains are not operating. Temporary speed restrictions, taking the track out of service and other appropriate measures will be used, as necessary, to protect trains operations.

The Roadmaster or designee will monitor local weather conditions and will update the Train Dispatcher on weather conditions including any local weather conditions concerning their respective territory.

The Roadmaster or designee will be responsible for notifying the Train Dispatcher when the track and structures have been inspected and are safe for normal train operations.

The Train Dispatching Center will cancel the Severe Weather Warning after notification from both the following:

- Weather Monitoring Service that severe weather conditions will no longer adversely affect the railroad, and
- Roadmaster or designee that the track and structures are safe for normal train operations.

Weather Alert Condition: Tornadoes

Action Plan: Determine path of storm and effected area. Coordinate with Transportation Department and take appropriate action with trains operating across territory (proceed at restricted speed, stop and tie down, shelter in place, etc.). When safe to do so, inspect track (and crossing warning devices) before operation of trains being prepared to deal with down trees and damaged crossing gates. Two man track inspection teams are preferred due to the likelihood of down trees requiring the use of a chain saw.

Weather Alert Condition: Winds of 50 mph and greater (except for 60 mph for the BPRR, CSOR, MSTR, NECR, RSR, SB, WCOR and none for the RCPE)

Action Plan: Based on existing weather or ground saturation conditions, coordinate with Transportation Department and take appropriate action with trains operating across territory (proceed at restricted speed, stop and tie down, shelter in place, etc.). Inspect track ahead of trains being prepared to deal with down trees and damaged crossing gates. If given enough advanced notice, secure crossing gates (issue applicable train bulletins as necessary) as applicable.

Weather Alert Condition: Heavy Rain / Flash Flooding

Action Plan: Immediately verify the affected area through local sources and coordinate with Transportation Department and take appropriate action with trains operating across territory (proceed at restricted speed, stop and tie down, shelter in place, etc.). Inspect the track ahead of trains in affected territory paying particular attention to scour susceptible bridges (shallow foundation, etc.) and culverts and bridges where the water course takes a bend or a change in slope near the track. Further close attention should be paid in areas with prior washout history, culverts and bridges and locations subject to the accumulation of drift. At bridges pay particular attention to flow of water to gauge the potential for scour damage to the piers. Always exercise caution when in the area of rapidly flowing water to avoid falling in. If the track is found under water do not hi-rail through the water when the stability of the track is unknown.

Weather Alert Condition: 4” of snow or more in 12 hours

Action Plan: Put the region/railroad winter contingency plan into effect as appropriate.

Weather Alert Condition: Blizzard

Action Plan: Put the region/railroad winter contingency plan into effect as appropriate. Inspect track as necessary for down trees and other storm related issues.

Weather Alert Condition: Any Ice Accumulation

Action Plan: Monitor bridges for ice dams and drift ice damaging substructure. Inspect road crossings and other track appliances for ice blocking the flangeways. When an ice storm is forecast, coordinate with Transportation Department and take appropriate action with trains operating across territory (proceed at restricted speed, stop and tie down, shelter in place, etc.). Inspect track ahead of trains and insuring flangeways are clear, be prepared to deal with down trees and be prepared to protect active warning devices with generators or other action as required.

Weather Alert Condition: Hurricane Forecasts

Action Plan: Activate the Region's hurricane plan.

Weather Alert Condition: Temperature changes of 50 degrees or more in 24 hrs. or less (regardless of temperature)

Action Plan: Inspect track ahead of trains at the time of day approaching the extreme of temperature or prior to the operation of trains and comply with the G&W Procedures for the Installation, Adjustment, Maintenance and Inspection of CWR as appropriate.

Weather Alert Condition: Temperatures of 90 degrees or higher north of a line from Richmond, VA, to just south of Evansville, IN, to the KS/NE line to Salt Lake City, UT to Eureka, CA. South of this line we will alert temperatures for 100 degrees or higher. The Arizona and California Rail have now been changed to 110 degrees

Action Plan: Inspect CWR track ahead of trains during the heat of the day (12:00 to 20:00 hours) or before the next train in the case where trains are not operating at the time of the alert, and complying with the G&W Procedures for the Installation, Adjustment, Maintenance and Inspection of CWR as appropriate. Inspected jointed main track as necessary based on prior experience and recent track disturbances.

Weather Alert Condition: Temperatures of -10 degrees or colder

Action Plan: Inspect all main line track ahead of trains and complying with the G&W Procedures for the Installation, Adjustment, Maintenance and Inspection of CWR as appropriate. Be

prepared for dealing with broken rails and pull-aparts. Monitor curves with a history of chording to the inside of the curve as necessary.

Weather Alert Condition: Earthquakes of 5.0 or Greater, details are in the chart below

Action Plan: Stop all trains and inspect all track and bridges in the affected area as required by the Bridge Management Plan. Comply with the G&W System Wide Structures Inspection Standards.

* *Note: Flash flood warning should be issued for 1"/hr. rates or greater between Guion and Mount Olive on the MNA. They have problems with rock slides.*
* *Note: The following railroads in the Northeast United States will receive warnings for 6 inches of snow instead of the usual 4, and will receive warnings for 60 mph winds instead of the usual 50 mph. These short lines are: BPRR, CSOR, MSTR, NECR, RSR, SB and WCOR.*
* Note: The New England Central Railway across portions of New England will now receive temperature alerts when temperatures hit zero degrees, and temperature warnings when temperatures hit -5 degrees. There is no lead time expected with these low temperature notifications.
* *Note: In the event that GWRR's main dispatching center goes offline, they will notify us that they are enacting their Disaster Recovery Center. We will in-turn need to contact the on call AES IT person to have them set up the GWRR Dispatcher's email (ARDC-Dispatchers@gwrr.com) for email acknowledgment.*

GWCI - PERIODIC MAINTENANCE WORK PACKET FOR LOCOMOTIVE - 1 YEAR INSPECTION

Genesee & Wyoming Canada Inc.

CANADA REGION

PERIODIC MAINTENANCE WORK PACKET FOR LOCOMOTIVE NUMBER

TYPE OF INSPECTION
1 YEAR

DATE 11/13/2014

RRR:04-12-11

FOR INTERNAL USE ONLY

CANADA REGION

Quarterly Inbound Inspection Report
Reference Maintenance Item #3020

Locomotive No: _____ **Date: 11/13/2014** **PM Type:** _____

CODE	DESCRIPTION	SIGNATURE
1.0	Check operation of low water detector.	
2.0	Check low oil warning light.	
3.0	Check operation of emergency fuel cutoffs.	
4.0	Check No Voltage Relay.	
5.0	Check Ground Relay operation and reset.	
6.0	Check Wheel Slip operation.	
7.0	Check Traction Motor Cut-Out Switch - If equipped.	
8.0	Check Aux Gen voltage, 74 volts + or -1 volt. Idle thru run 8	
9.0	Throttle sequence: forward and reverse.	
10.0	Check dynamic brake setup and loading.	
11.0	Verify DBI function.	
12.0	Check dynamic brake cooling fan operation.	
13.0	Verify radiator cooling fan operation and rotation.	
14.0	Check compressor control settings, (130 to 140 PSI).	
15.0	Check inertial blower rotation.	
16.0	With engine running check for air, oil, water and exhaust leaks, note defects	
17.0	Check attendant call-bell operator.	
18.0	Verify operation of sanders, horn, and bell and windshield wipers, note defects	
19.0	Take engine oil sample and complete paper work.	
20.0	Listen to air comp. ...note any unusual noise or oil leak.	
21.0	Check cab heater operation.	
22.0	Check safety circuits PCS and ESS.	
23.0	Units equipped with self load test: Load engine up to run 8 for 5 minutes, observe for defects, domument H.P.	
24.0	Test event recorder functions./Set time and date Record event recorder model _____	
26.0	check toilet operatoin and piping repair as needed	
57.0	Calibrate air flow meter	

Note items needing attention, sign off on all tests.

Event Recorder Operation Test Sheet

COMPLETE THIS WORKSHEET BY INITIALING EACH FUNCTION AS YOU PERFORM THE TEST.

Locomotive No. **Date: 11/13/2014** **Pm Type: 1 YEAR**

INITIALS

HORN: (HRN) BLOW HORN, DOES IT REGISTER? _____

BELL: (BEL) RING BELL, DOES IT REGISTER? _____

AUTO BRAKE: COMPARE READINGS. _____

INDEPENDENT BRAKE: COMPARE READINGS. _____

SPEED: MOVE LOCOMOTIVE, DOES THE SPEED REGISTER? _____

LOAD AMMETER: DO THE AMPS REGISTER? _____

DIRECTION: FORWARD AND REVERSE. _____

DYNAMIC BRAKE: (DB) DOES READING APPEAR? _____

THROTTLE SEQUENCE: COMPARE THROUGH NOTCHES. _____

EIE: MOVE AUTO BRAKE TO EMERGENCY, DOES EIE REGISTER? _____

PCS: PCS TRIPPED, DOES IT REGISTER? _____

TIME: CHECK AND SET TIME AS NECESSARY. _____

DATE: CHECK AND SET DATE AS NECESSARY. _____

ARROW TO EXIT AND HIT ENTER. YOU MAY NOW DISCONNECT THE LAPTOP.

NOTE ANY DEFECTS ON LOCOMOTIVE REPAIR SHEETS. ALL DEFECTS MUST BE REPAIRED BEFORE LOCOMOTIVE IS RELEASED TO SERVICE.

KEEP THIS FORM IN LOCOMOTIVE FILE WITH OTHER FORM INFORMATION.

RRR:01-01-00

STANDARD LOAD TEST FORM

Locomotive No: _____ **Date:** 11/13/2014 **Load Box Type:** 1 YEAR

LOCOMOTIVE TO BE LOAD TESTED IN #8 THROTTLE FOR ONE HOUR.

CODE	DESCRIPTION		SIGNATURE
5.0	Check all fluid levels prior to starting Load Test.		
10.0	Check and record Auxiliary Generator Voltage: Idle _____ #8 _____ Adjust to 74V +/- 1V if necessary.		
15.0	Observe exhaust emissions at the stack. Note any unusual conditions such as heavy black smoke, etc.		
17.0	Note any unusual noises or vibrations.		
20.0	Check and record the following in the 8th notch:	Voltage _____	
		Amperage _____	
	Calculate Horsepower (Voltage X Amperage)/700	Horsepower _____	
22.0	Record the following from the DID Panel in the 8th notch:		
		Voltage _____	
		Amperage _____	
		Horsepower _____	
24.0	Monitor the following parameters on the DID Panel.		
	2008 - Power Piston Gap	Idle _____ #8 _____	
	2028 - Battery Volts	Idle _____ #8 _____	
	3001 - Turbo Pressure	Idle _____ #8 _____	
	3003 - Water Temperature	Idle _____ #8 _____	
	3004 - Lube Oil Temperature	Idle _____ #8 _____	
30.0	Governor Rack Setting (Balance) per gov. rack indicator	Idle _____ #8 _____	
40.0	Engine Speeds	Idle _____ #8 _____	
45.0	Check and record overspeed trip setting	_____ RPM	
50.0	Fuel Sight Glass	Idle _____ #8 _____	
60.0	Lube Oil Pressure	Idle _____ #8 _____	
70.0	Lube Oil Temperature (Suction Box)	Idle _____ #8 _____	
80.0	Lube Oil Temperature Into Cooler	Idle _____ #8 _____	
90.0	Lube Oil Temperature Out of Oil Cooler	Idle _____ #8 _____	

CODE	DESCRIPTION			SIGNATURE
100.0	Engine Water Temperature	Idle _____ #8 _____		_____
110.0	Temperature Switch Operation	Pickup	Drop Out	_____
	#1	_____	_____	
	#2	_____	_____	
	#3	_____	_____	
	Hot Engine	_____	_____	
	Shutter Operation (Open/Close)	_____	_____	
115.0	Inspect radiators for leaks.			_____
117.0	Inspect radiators for leaks during cooling cycle, when the radiators are full.			_____
120.0	Ambient Temperature		_____	_____
130.0	Water Sight Glass Level	Start_____	Finish _____	_____

Remarks: _____

_____

Workman: _____ **Supervisor:** _____

CANADA REGION

Periodic Maintenance Work Sheets

Locomotive No: **Date: 11/13/2014** **PM Type: 1 YEAR**

ITEM #	DESCRIPTION	
520.0	Winterization - Check doors and windows for proper weather stripping and insulation	Signature
525.0	Winterization - Check cab heaters for proper operation. Blow out cab heater cores.	Signature
1006.0	Inspect all cab door handles to insure they are horizontal to the door.	Signature
1007.0	Locomotive Cab Seat Safety Inspection Inspect seat cushion,retaining pins, stops,repair and lubricate as necesssary	Signature
1008.0	Inspect and lubericate wall mounted seat rails	Signature
1010.0	Before Locomotive enters shop, make inbound inspection, complete inbound inspection sheet. Note items requiring repairs.	Signature
1020.0	Take Engine Oil Sample	Signature
1030.0	Complete wheel condition report including couplers and draft gears. Notify supervisor if any defects are present such as thin flanges, rims or defective draft gears.	Signature
1035.0	Inspect MU valve springs and lubricate valve handles, ensure for proper operations Repair as necessary (use WD-40 type lubricant)	Signature
1040.0	Inspect cases and gear case bolts for tightness and defective conditions.	Signature
1050.0	Inspect support bearing cap bolts for tightness and ensure they are lock wired. Inspect and verify security of wick cap screws. Check support bearings for signs of overheating.	Signature
1060.0	Check journal box and support cap oil level, add all weather car oil as needed.	Signature
1070.0	Check and replenish traction motor gear grease,add grease per local instructions. Note unusual conditions of bull gear	Signature
1071.0	Replace worn brake shoes and adjust pull rods as necessary.	Signature
1081.0	Inspect traction motors, check brushes, insulation, clean paint and re-gasket as necessary.	Signature

#1_____ #2_____ #3_____

#4_____ #5_____ #6_____

ITEM #	DESCRIPTION	
1090.0	Inspect steps & support brackets, railing, stanchions, uncoupling levers, pilots, side bearings,. Check for loose fasteners, inspect doors and door latches, correct defects. Paint handrails as needed. Handholds and bottom step leading edge must be painted a contrasting color.	Signature
1091.0	Inspect all steps and support brackets, repair as necessary	Signature
1092.0	Inspect Reflective tape sheeting and replace as necessary	Signature
1093.0	Install door locks to Firemans and Engineers doors. Check all window locks and repair as needed	Signature
1100.0	Pressurize fuel system and inspect top deck for fuel leaks.	Signature
1101.0	Clean fuel sight glass	Signature
1102.0	Move Lay Shaft to check for stuck injector or faulty linkage	Signature
1110.0	Hydro test cooling system at 15 PSI, with cooling system pressurized bar over engine and inspect for water leaks, observe all engine components for unusual conditions.	Signature
1120.0	Qualify engine protector, crankcase detector trip test. Ensure detector trips using vacum test instrument.	Signature
1130.0	Correct all diesel engine repairs noted on inbound sheet and correct defects found during fuel test and bar over inspection.	Signature
1152.0	Renew turbo oil filter. Record part number and quantity replaced. PN:_____ Qty:_____	Signature
1160.0	Lubricate center castings	Signature
1170.0	Change all fuel oil filters.	Signature
1171.0	Fuel Suction Strainer clean or replace filter	Signature
1174.0	Install Quick Disconnect Fitting in Main Bearing Oil Pump For Oil Sample	Signature
1175.0	Change lube oil filters including turbo and soak back filter if equiped. Dispose of filters properly. Drain michiana tank while oil is hot, allow filters to drain at least 12 hours before removal. Remove and drain all spin-on style filters for 24 hours before disposal. Clean any oil or fuel spilled during change out proceedures.	Signature
1176.0	Check baggy type air filters. If equipped, renew as needed.	Signature
1180.0	Clean eductor tube, or replace with cleaned tube.	Signature

ITEM #	DESCRIPTION	
1181.0	Clean lube oil separator	Signature
1190.0	Verify torque of exhaust manifold base bolts 130 ft lbs, inspect exhaust manifold expansion joint gaskets for leaks	Signature
1200.0	Inspect engine and air compressor base bolts and dowel pins for tightness.	Signature
1210.0	Ensure all carbody, generator and engine sump drains are clear and free of debris.	Signature
1220.0	Lubricate and verify operation of handbrake. Stencil test and inspection date Inspection date_____	Signature
1221.0	Inspect Handbrake Sheave Wheel and Pin Renew as needed	Signature
1230.0	Inspect and replace fire extinguishers if they are spent or if test date will be over 1 year by next inspection.	Signature
1250.0	Test air gauges, apply quick connect test fittings as required (2 lb max variance.)	Signature
1251.0	Calibrate Air Flow Indicators	Signature
1260.0	Clean cab, including walls, floors, and windows.	Signature
1261.0	Clean and sanitize refrigerator, check operation, drain condensate from water separator.	Signature
1270.0	Supply cab with crew packs, spare fuses, non compliance tags, and engineers work reports. Replenish first aid kits, current emergency response guidebook	Signature
1280.0	Prior to release, inspect all wheel flanges for proper contour, true or cut flanges as needed. Do not allow sharp flanges to be dispatched	Signature
1290.0	Perform shop air brake test per instructions	Signature
1300.0	Wash locomotive. Steam and wash engine and engine room. Wash compressor room, car body and trucks.	Signature
1303.0	Steam out toilet room	Signature
1310.0	Clean and service toilet, winterize with antifreeze from October 1st thru March 31st. Add 3 gallons of R.V. antifreeze per unit.	Signature
1320.0	Ensure locomotive has the following emergency items: 1-wreck chain or cable, 1-E, 1-F knuckle, 1-knuckle pin, 2 spare air hoses, chisel, wrench, hammer, 1 broom.	Signature
1323.0	Inspect horn covers, apply as necessary.	Signature

ITEM #	DESCRIPTION	
1326.0	Lubricate all cab door latches and hinge assemblies.	Signature
1340.0	Inspect all components in electric locker. Blow out electrical cabinet with 30 lbs of compressed air or vacum cabinet as necessary.	Signature
1350.0	Inspect all visible insulation, connections, receptacles, and related wiring.	Signature
1360.0	Check electrolyte level in batteries. Clean compartment and batteries with soda and water.Check specific gravity of cells.	Signature
1370.0	Inspect and clean trainline receptacles	Signature
1372.0	Check operation of turbo soakback pump.	Signature
1380.0	Inspect and service control stand, changing bulbs and switches as necessary.	Signature
1381.0	Check throttle & reverser lock for proper operation.	Signature
1390.0	Check operation and calibration of electronic speed indicator.	Signature
	Wheel Diameter_____	
1391.0	Verify operation of event recorder functions per work sheet	Signature
1400.0	Check following circuits for grounds:	Signature
	High voltage (power) _____	
	Low voltage (control) _____	
	A. C. voltage _____	
1410.0	Check all lights to ensure they are operative.	Signature
1420.0	Ensure all access panels, doors covers and hatches to electric equipment and cabinets are in place and secure. Ensure they all have proper warning decals applied.	Signature
1429.0	Check fuses in AR10 & clean windows.	Signature
1430.0	Check brushes in the following rotation equipment, for proper brush wear, renew brushes as needed, reapply all covers and secure:Verify all brushes are free in brush box.	Signature
	Main generator _____ Aux. generator _____	
	Fuel pump _____ Starter motor . _____	
	Cab heater _____	

ITEM #	DESCRIPTION	
1436.0	Check brushes for proper brush wear in the following rotation equipment, reapply all covers and secure. Record Part number & quantity of replaced brushes: Verify all brushers are free in brush box. Slip Ring _____ aux. generator _____ fuel pump _____ D/B fan motor _____ cab heater _____ turbo pump motor _____	_____ Signature
1440.0	Continue checking brushes,renew as needed in: Verify all brushes are free in brush box. Turbo lube pump motor _____ Load regulator _____ Dyn. brake fan motor _____ Slip ring brushes _____	_____ Signature
1442.0	Self load unit, if equipped, complete and sign load test form. Run in notch 8 if not equipped. Inspect prime mover for oil, water and fuel leaks. Check unit for proper operation.corect as necessary	_____ Signature
2550.0	Change lube oil filters including turbo and soak back filter if equipped. Dispose of filters properly. Drain michiana tank while oil is hot, allow filters to drain at least 12 hours before removal. Remove and drain all spin-on style filters for 24 hours before disposal. Clean any oil or fuel spilled during change out proceedures.	_____ Signature
2555.0	Change baggy type air filters if equipped	_____ Signature
3010.0	Perform engine bar over inspection, including inspection of rings, liners, pistons, and document findings.	_____ Signature
3011.0	Clean lube oil seperator	_____ Signature
3012.0	Inspect top ring and document land clearance. High H.P. .026 Low H.P. .032 maximum	_____ Signature
3013.0	Replace dynacell air filters if equipped	_____ Signature
3015.0	Set valves and injectors.	_____ Signature
3016.0	Clean right and left air boxes.	_____ Signature
3017.0	Set rack with engine at operating temperature.	_____ Signature
3020.0	Torque all crab nuts, head bolts, basket bolt and exhaust manifold bolts. Crab bolts - 2000 ft lbs Cyl heads - 240 ft lbs Basket bolts top - 190 ft lbs Bottom - 75 ft lbs Exhaust manifolds - 130 ft lbs	_____ Signature
3040.0	Change main reservoir, air filters and dirt collector elements. Change air compressor intake filters. Change electrical cabinet air intake filters if unit is so equipped. (GP40)	_____ Signature
3050.0	Renew M.U. hoses and gaskets as necessary.	_____ Signature

ITEM #	DESCRIPTION	
3060.0	Clean and test Main Resevoir and Filter automatic drain valves.	Signature
3070.0	Renew bell cartidge.	Signature
3090.0	Ensure brake pipe leakage does not exceed 2 lb per minute. Correct defects as necessary.	Signature
3100.0	Inspect cab weatherstripping, replace as necessary.	Signature
3110.0	Flush out air compressor heads with water.	Signature
3119.0	Renew Generator Field Switch	Signature
3120.0	Check all ammeters and load indicators per FRA 368 day inspection procedures. Sign off on cab blue form.	Signature
3130.0	Load test engine. Complete all checks and tests listed on load box test sheets. COMPLETE LOAD BOX TEST FORMS COMPLETELY!	Signature

CANADA REGION

LOCOMOTIVE WHEEL INSPECTION REPORT

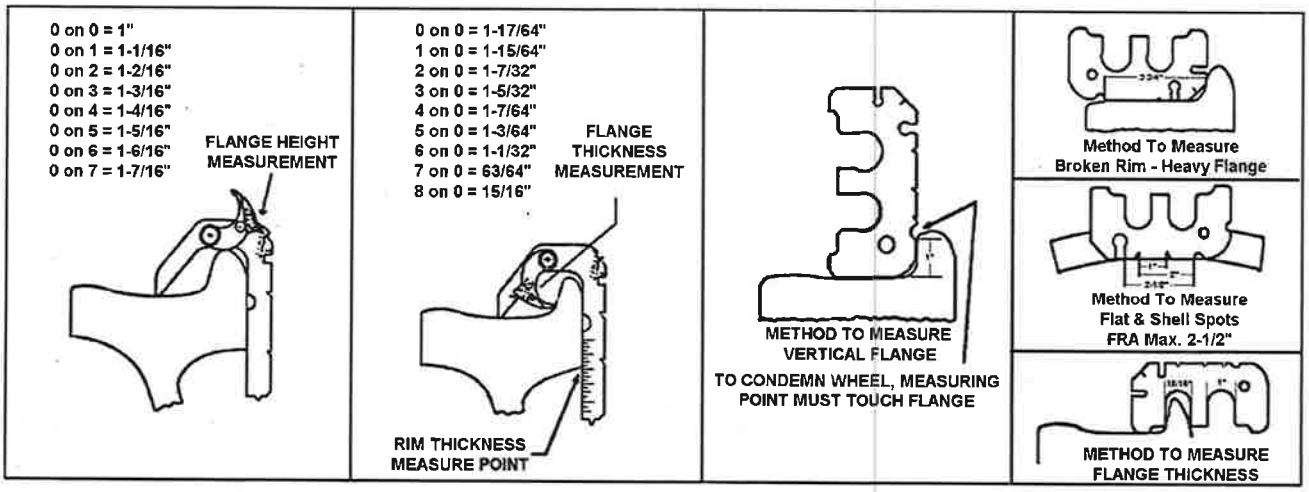
LOCO. NUMBER _____ LOCATION _____ DATE 11/13/2014

REASON FOR INSPECTION 1 YEAR DIRECTION _____

Position	Flange Height	Flange Thickness	Rim Thickness	Brake Rigging	Spring Condition Coil	Spring Condition Leaf	Side Bearing Clearance
R 1						R Front	R Front
R 2							
R 3							
R 4						R Rear	R Rear
R 5							
R 6							
L 1						L Front	L Front
L 2							
L 3							
L 4						L Rear	L Rear
L 5							
L 6							

	Front	Rear	FRA Clearance Limits
Drawbar Height (From Top of Rail)			Maximum All Locomotives 34-1/2" Minimum All Locomotives (Except Pass.) 31-1/2" Minimum Passenger Locomotives32-1/2"
Snowplow/Pilot Height (From Top of Rail)			Maximum All Locomotives 6" Minimum All Locomotives 3"
Coupler Slack			Maximum All Locomotives 1/2"
Check All Metal Components (Brake Rigging, Sand Pipes, Etc.) Must Be Minimum of 2-1/2" Above Rail			

Inspected By _____ Supervisor _____



RRR:03-25-00

Locomotive Repairs

Locomotive Number: **Date:** 11/13/2014

Comments:				
Line No.	**Symptom / Defect**	**Matl. Used**	**Action**	**Repaired By**
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

The above work has been performed except as noted. **Signature:** _____

Title: _____ **Date:** _____ RRR

RRR:01-01-00

GWCI - PERIODIC MAINTENANCE WORK PACKET FOR LOCOMOTIVE - 92 DAY INSPECTION

Genesee & Wyoming Canada Inc.

CANADA REGION

PERIODIC MAINTENANCE WORK PACKET FOR LOCOMOTIVE NUMBER

TYPE OF INSPECTION
92 DAY

DATE 11/13/2014

RRR:04-12-11

FOR INTERNAL USE ONLY

CANADA REGION

Quarterly Inbound Inspection Report
Reference Maintenance Item #3020

Locomotive No: _____ **Date: 11/13/2014** **PM Type: 92 DAY**

CODE	DESCRIPTION	SIGNATURE
1.0	Check operation of low water detector.	
2.0	Check low oil warning light.	
3.0	Check operation of emergency fuel cutoffs.	
4.0	Check No Voltage Relay.	
5.0	Check Ground Relay operation and reset.	
6.0	Check Wheel Slip operation.	
7.0	Check Traction Motor Cut-Out Switch - If equipped.	
8.0	Check Aux Gen voltage, 74 volts + or -1 volt. Idle thru run 8	
9.0	Throttle sequence: forward and reverse.	
10.0	Check dynamic brake setup and loading.	
11.0	Verify DBI function.	
12.0	Check dynamic brake cooling fan operation.	
13.0	Verify radiator cooling fan operation and rotation.	
14.0	Check compressor control settings, (130 to 140 PSI).	
15.0	Check inertial blower rotation.	
16.0	With engine running check for air, oil, water and exhaust leaks, note defects	
17.0	Check attendant call-bell operator.	
18.0	Verify operation of sanders, horn, and bell and windshield wipers, note defects	
19.0	Take engine oil sample and complete paper work.	
20.0	Listen to air comp. ...note any unusual noise or oil leak.	
21.0	Check cab heater operation.	
22.0	Check safety circuits PCS and ESS.	
23.0	Units equipped with self load test: Load engine up to run 8 for 5 minutes, observe for defects, domument H.P.	
24.0	Test event recorder functions./Set time and date Record event recorder model _____	
26.0	check toilet operatoin and piping repair as needed	
57.0	Calibrate air flow meter	

Note items needing attention, sign off on all tests.

HLCX 7172

Event Recorder Operation Test Sheet

COMPLETE THIS WORKSHEET BY INITIALING EACH FUNCTION AS YOU PERFORM THE TEST.

Locomotive No. **Date: 11/13/2014** **Pm Type: 92 DAY**

	INITIALS
HORN: (HRN) BLOW HORN, DOES IT REGISTER?	_____
BELL: (BEL) RING BELL, DOES IT REGISTER?	_____
AUTO BRAKE: COMPARE READINGS.	_____
INDEPENDENT BRAKE: COMPARE READINGS.	_____
SPEED: MOVE LOCOMOTIVE, DOES THE SPEED REGISTER?	_____
LOAD AMMETER: DO THE AMPS REGISTER?	_____
DIRECTION: FORWARD AND REVERSE.	_____
DYNAMIC BRAKE: (DB) DOES READING APPEAR?	_____
THROTTLE SEQUENCE: COMPARE THROUGH NOTCHES.	_____
EIE: MOVE AUTO BRAKE TO EMERGENCY, DOES EIE REGISTER?	_____
PCS: PCS TRIPPED, DOES IT REGISTER?	_____
TIME: CHECK AND SET TIME AS NECESSARY.	_____
DATE: CHECK AND SET DATE AS NECESSARY.	_____

ARROW TO EXIT AND HIT ENTER. YOU MAY NOW DISCONNECT THE LAPTOP.

NOTE ANY DEFECTS ON LOCOMOTIVE REPAIR SHEETS. ALL DEFECTS MUST BE REPAIRED BEFORE LOCOMOTIVE IS RELEASED TO SERVICE.

KEEP THIS FORM IN LOCOMOTIVE FILE WITH OTHER FORM INFORMATION.

RRR:01-01-00

CANADA REGION

Periodic Maintenance Work Sheets

Locomotive No: **Date: 11/13/2014** **PM Type: 92 DAY**

ITEM #	DESCRIPTION	
520.0	Winterization - Check doors and windows for proper weather stripping and insulation	Signature
525.0	Winterization - Check cab heaters for proper operation. Blow out cab heater cores.	Signature
1006.0	Inspect all cab door handles to insure they are horizontal to the door.	Signature
1007.0	Locomotive Cab Seat Safety Inspection Inspect seat cushion,retaining pins, stops,repair and lubricate as necesssary	Signature
1008.0	Inspect and lubericate wall mounted seat rails	Signature
1010.0	Before Locomotive enters shop, make inbound inspection, complete inbound inspection sheet. Note items requiring repairs.	Signature
1020.0	Take Engine Oil Sample	Signature
1030.0	Complete wheel condition report including couplers and draft gears. Notify supervisor if any defects are present such as thin flanges, rims or defective draft gears.	Signature
1035.0	Inspect MU valve springs and lubricate valve handles, ensure for proper operations Repair as necessary (use WD-40 type lubricant)	Signature
1040.0	Inspect cases and gear case bolts for tightness and defective conditions.	Signature
1050.0	Inspect support bearing cap bolts for tightness and ensure they are lock wired. Inspect and verify security of wick cap screws. Check support bearings for signs of overheating.	Signature
1060.0	Check journal box and support cap oil level, add all weather car oil as needed.	Signature
1070.0	Check and replenish traction motor gear grease,add grease per local instructions. Note unusual conditions of bull gear	Signature
1071.0	Replace worn brake shoes and adjust pull rods as necessary.	Signature
1081.0	Inspect traction motors, check brushes, insulation, clean paint and re-gasket as necessary.	Signature

#1_____ #2_____ #3_____

#4_____ #5_____ #6_____

ITEM #	DESCRIPTION	
1090.0	Inspect steps & support brackets, railing, stanchions, uncoupling levers, pilots, side bearings,. Check for loose fasteners, inspect doors and door latches, correct defects. Paint handrails as needed. Handholds and bottom step leading edge must be painted a contrasting color.	Signature
1091.0	Inspect all steps and support brackets, repair as necessary	Signature
1092.0	Inspect Reflective tape sheeting and replace as necessary	Signature
1093.0	Install door locks to Firemans and Engineers doors. Check all window locks and repair as needed	Signature
1100.0	Pressurize fuel system and inspect top deck for fuel leaks.	Signature
1101.0	Clean fuel sight glass	Signature
1102.0	Move Lay Shaft to check for stuck injector or faulty linkage	Signature
1110.0	Hydro test cooling system at 15 PSI, with cooling system pressurized bar over engine and inspect for water leaks, observe all engine components for unusual conditions.	Signature
1120.0	Qualify engine protector, crankcase detector trip test. Ensure detector trips using vacum test instrument.	Signature
1130.0	Correct all diesel engine repairs noted on inbound sheet and correct defects found during fuel test and bar over inspection.	Signature
1152.0	Renew turbo oil filter. Record part number and quantity replaced. PN:_____ Qty:____	Signature
1160.0	Lubricate center castings	Signature
1170.0	Change all fuel oil filters.	Signature
1171.0	Fuel Suction Strainer clean or replace filter	Signature
1174.0	Install Quick Disconnect Fitting in Main Bearing Oil Pump For Oil Sample	Signature
1175.0	Change lube oil filters including turbo and soak back filter if equiped. Dispose of filters properly. Drain michiana tank while oil is hot, allow filters to drain at least 12 hours before removal. Remove and drain all spin-on style filters for 24 hours before disposal. Clean any oil or fuel spilled during change out proceedures.	Signature
1176.0	Check baggy type air filters. If equipped, renew as needed.	Signature
1180.0	Clean eductor tube, or replace with cleaned tube.	Signature

ITEM #	DESCRIPTION	
1181.0	Clean lube oil separator	Signature
1190.0	Verify torque of exhaust manifold base bolts 130 ft lbs, inspect exhaust manifold expansion joint gaskets for leaks	Signature
1200.0	Inspect engine and air compressor base bolts and dowel pins for tightness.	Signature
1210.0	Ensure all carbody, generator and engine sump drains are clear and free of debris.	Signature
1220.0	Lubricate and verify operation of handbrake. Stencil test and inspection date Inspection date_____	Signature
1221.0	Inspect Handbrake Sheave Wheel and Pin Renew as needed	Signature
1230.0	Inspect and replace fire extinguishers if they are spent or if test date will be over 1 year by next inspection.	Signature
1250.0	Test air gauges, apply quick connect test fittings as required (2 lb max variance.)	Signature
1251.0	Calibrate Air Flow Indicators	Signature
1260.0	Clean cab, including walls, floors, and windows.	Signature
1261.0	Clean and sanitize refrigerator, check operation, drain condensate from water separator.	Signature
1270.0	Supply cab with crew packs, spare fuses, non compliance tags, and engineers work reports. Replenish first aid kits, current emergency response guidebook	Signature
1280.0	Prior to release, inspect all wheel flanges for proper contour, true or cut flanges as needed. Do not allow sharp flanges to be dispatched	Signature
1290.0	Perform shop air brake test per instructions	Signature
1300.0	Wash locomotive. Steam and wash engine and engine room. Wash compressor room, car body and trucks.	Signature
1303.0	Steam out toilet room	Signature
1310.0	Clean and service toilet, winterize with antifreeze from October 1st thru March 31st. Add 3 gallons of R.V, antifreeze per unit.	Signature
1320.0	Ensure locomotive has the following emergency items: 1-wreck chain or cable, 1-E, 1-F knuckle, 1-knuckle pin, 2 spare air hoses, chisel, wrench, hammer, 1 broom.	Signature
1323.0	Inspect horn covers, apply as necessary.	Signature

ITEM #	DESCRIPTION	
1326.0	Lubricate all cab door latches and hinge assemblies.	_____ Signature
1340.0	Inspect all components in electric locker. Blow out electrical cabinet with 30 lbs of compressed air or vacum cabinet as necessary.	_____ Signature
1350.0	Inspect all visible insulation, connections, receptacles, and related wiring.	_____ Signature
1360.0	Check electrolyte level in batteries. Clean compartment and batteries with soda and water.Check specific gravity of cells.	_____ Signature
1370.0	Inspect and clean trainline receptacles	_____ Signature
1372.0	Check operation of turbo soakback pump.	_____ Signature
1380.0	Inspect and service control stand, changing bulbs and switches as necessary.	_____ Signature
1381.0	Check throttle & reverser lock for proper operation.	_____ Signature
1390.0	Check operation and calibration of electronic speed indicator.	_____ Signature
	Wheel Diameter_____	
1391.0	Verify operation of event recorder functions per work sheet	_____ Signature
1400.0	Check following circuits for grounds:	_____ Signature
	High voltage (power) _____	
	Low voltage (control) _____	
	A. C. voltage _____	
1410.0	Check all lights to ensure they are operative.	_____ Signature
1420.0	Ensure all access panels, doors covers and hatches to electric equipment and cabinets are in place and secure. Ensure they all have proper warning decals applied.	_____ Signature
1429.0	Check fuses in AR10 & clean windows.	_____ Signature
1430.0	Check brushes in the following rotation equipment, for proper brush wear, renew brushes as needed, reapply all covers and secure:Verify all brushes are free in brush box.	_____ Signature
	Main generator _____ Aux. generator _____	
	Fuel pump _____ Starter motor _____	
	Cab heater _____	

ITEM #	DESCRIPTION	
1436.0	Check brushes for proper brush wear in the following rotation equipment, reapply all covers and secure. Record Part number & quantity of replaced brushes: Verify all brushers are free in brush box. Slip Ring _____ aux. generator _____ fuel pump _____ D/B fan motor _____ cab heater _____ turbo pump motor _____	_____ Signature
1440.0	Continue checking brushes,renew as needed in: Verify all brushes are free in brush box. Turbo lube pump motor _____ Load regulator _____ Dyn. brake fan motor _____ Slip ring brushes _____	_____ Signature
1442.0	Self load unit, if equipped, complete and sign load test form. Run in notch 8 if not equipped. Inspect prime mover for oil, water and fuel leaks. Check unit for proper operation.corect as necessary	_____ Signature

CANADA REGION

LOCOMOTIVE WHEEL INSPECTION REPORT

LOCO. NUMBER _____ **LOCATION** _____ **DATE** 11/13/2014

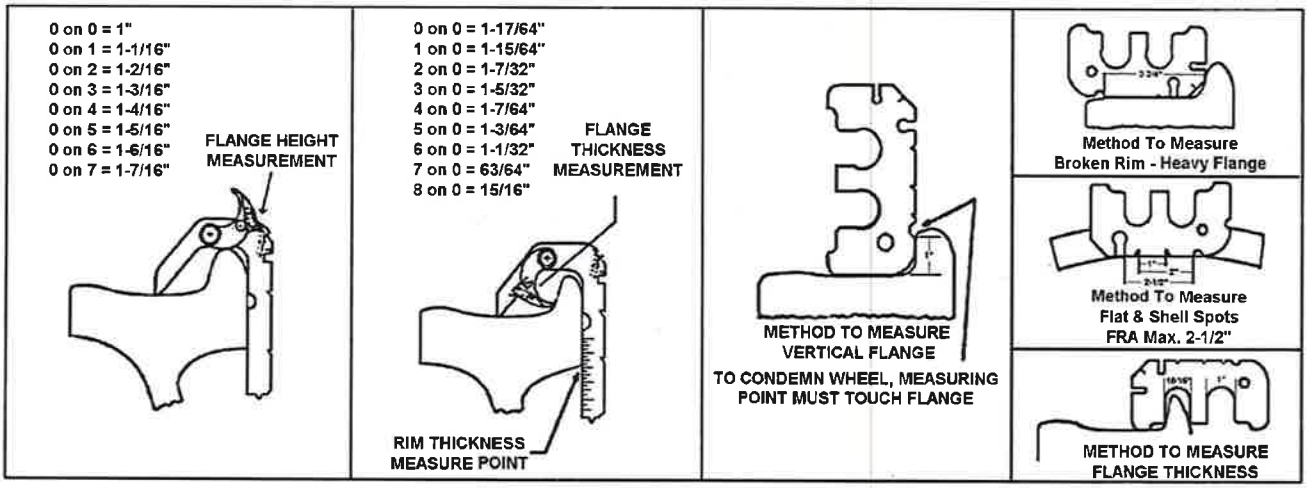
REASON FOR INSPECTION 92 DAY _____ **DIRECTION** _____

Position	Flange Height	Flange Thickness	Rim Thickness	Brake Rigging	Spring Condition Coil	Spring Condition Leaf	Side Bearing Clearance
R 1						R Front	R Front
R 2							
R 3							
R 4						R Rear	R Rear
R 5							
R 6							
L 1						L Front	L Front
L 2							
L 3							
L 4						L Rear	L Rear
L 5							
L 6							

	Front	Rear	FRA Clearance Limits	
Drawbar Height (From Top of Rail)			Maximum All Locomotives Minimum All Locomotives (Except Pass.) Minimum Passenger Locomotives	34-1/2" 31-1/2" 32-1/2"
Snowplow/Pilot Height (From Top of Rail)			Maximum All Locomotives Minimum All Locomotives	6" 3"
Coupler Slack			Maximum All Locomotives	1/2"

Check All Metal Components (Brake Rigging, Sand Pipes, Etc.) Must Be Minimum of 2-1/2" Above Rail

Inspected By _____ **Supervisor** _____



RRR:03-25-00

Locomotive Repairs

Locomotive Number: **Date:** 11/13/2014

Comments:				
Line No.	**Symptom / Defect**	**Matl. Used**	**Action**	**Repaired By**
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

The above work has been performed except as noted. **Signature:** _____

Title: _____ **Date:** _____ RRR

RRR:01-01-00

GWCI - PERIODIC MAINTENANCE WORK PACKET FOR LOCOMOTIVE - AIR BRAKE 3 YEAR INSPECTION

Genesee & Wyoming Canada Inc.

CANADA REGION

PERIODIC MAINTENANCE WORK PACKET FOR LOCOMOTIVE NUMBER

TYPE OF INSPECTION
AIR BRAKE
3 Yr Mech

DATE 11/13/2014

RRR:04-12-11

FOR INTERNAL USE ONLY

CANADA REGION

Quarterly Inbound Inspection Report
Reference Maintenance Item #3020

Locomotive No: _____ **Date: 11/13/2014** **PM Type:** _____

CODE	DESCRIPTION	SIGNATURE
1.0	Check operation of low water detector.	
2.0	Check low oil warning light.	
3.0	Check operation of emergency fuel cutoffs.	
4.0	Check No Voltage Relay.	
5.0	Check Ground Relay operation and reset.	
6.0	Check Wheel Slip operation.	
7.0	Check Traction Motor Cut-Out Switch - If equipped.	
8.0	Check Aux Gen voltage, 74 volts + or -1 volt. Idle thru run 8	
9.0	Throttle sequence: forward and reverse.	
10.0	Check dynamic brake setup and loading.	
11.0	Verify DBI function.	
12.0	Check dynamic brake cooling fan operation.	
13.0	Verify radiator cooling fan operation and rotation.	
14.0	Check compressor control settings, (130 to 140 PSI).	
15.0	Check inertial blower rotation.	
16.0	With engine running check for air, oil, water and exhaust leaks, note defects	
17.0	Check attendant call-bell operator.	
18.0	Verify operation of sanders, horn, and bell and windshield wipers, note defects	
19.0	Take engine oil sample and complete paper work.	
20.0	Listen to air comp. ...note any unusual noise or oil leak.	
21.0	Check cab heater operation.	
22.0	Check safety circuits PCS and ESS.	
23.0	Units equipped with self load test: Load engine up to run 8 for 5 minutes, observe for defects, domument H.P.	
24.0	Test event recorder functions./Set time and date Record event recorder model _____	
26.0	check toilet operatoin and piping repair as needed	
57.0	Calibrate air flow meter	

Note items needing attention, sign off on all tests.

Event Recorder Operation Test Sheet

COMPLETE THIS WORKSHEET BY INITIALING EACH FUNCTION AS YOU PERFORM THE TEST.

Locomotive No. **Date: 11/13/2014** **Pm Type: AIR BRAKI**

INITIALS

HORN: (HRN) BLOW HORN, DOES IT REGISTER? _____

BELL: (BEL) RING BELL, DOES IT REGISTER? _____

AUTO BRAKE: COMPARE READINGS. _____

INDEPENDENT BRAKE: COMPARE READINGS. _____

SPEED: MOVE LOCOMOTIVE, DOES THE SPEED REGISTER? _____

LOAD AMMETER: DO THE AMPS REGISTER? _____

DIRECTION: FORWARD AND REVERSE. _____

DYNAMIC BRAKE: (DB) DOES READING APPEAR? _____

THROTTLE SEQUENCE: COMPARE THROUGH NOTCHES. _____

EIE: MOVE AUTO BRAKE TO EMERGENCY, DOES EIE REGISTER? _____

PCS: PCS TRIPPED, DOES IT REGISTER? _____

TIME: CHECK AND SET TIME AS NECESSARY. _____

DATE: CHECK AND SET DATE AS NECESSARY. _____

ARROW TO EXIT AND HIT ENTER. YOU MAY NOW DISCONNECT THE LAPTOP.

NOTE ANY DEFECTS ON LOCOMOTIVE REPAIR SHEETS. ALL DEFECTS MUST BE REPAIRED BEFORE LOCOMOTIVE IS RELEASED TO SERVICE.

KEEP THIS FORM IN LOCOMOTIVE FILE WITH OTHER FORM INFORMATION.

RRR:01-01-00

STANDARD LOAD TEST FORM

Locomotive No: _____ **Date:** 11/13/2014 **Load Box Type:** AIR BRAKE

LOCOMOTIVE TO BE LOAD TESTED IN #8 THROTTLE FOR ONE HOUR.

CODE	DESCRIPTION		SIGNATURE
5.0	Check all fluid levels prior to starting Load Test.		
10.0	Check and record Auxiliary Generator Voltage: Idle _____ #8 _____ Adjust to 74V +/- 1V if necessary.		
15.0	Observe exhaust emissions at the stack. Note any unusual conditions such as heavy black smoke, etc.		
17.0	Note any unusual noises or vibrations.		
20.0	Check and record the following in the 8th notch:	Voltage _____	
		Amperage _____	
	Calculate Horsepower (Voltage X Amperage)/700	Horsepower _____	
22.0	Record the following from the DID Panel in the 8th notch:	Voltage _____	
		Amperage _____	
		Horsepower _____	
24.0	Monitor the following parameters on the DID Panel.		
	2008 - Power Piston Gap	Idle _____ #8 _____	
	2028 - Battery Volts	Idle _____ #8 _____	
	3001 - Turbo Pressure	Idle _____ #8 _____	
	3003 - Water Temperature	Idle _____ #8 _____	
	3004 - Lube Oil Temperature	Idle _____ #8 _____	
30.0	Governor Rack Setting (Balance) per gov. rack indicator	Idle _____ #8 _____	
40.0	Engine Speeds	Idle _____ #8 _____	
45.0	Check and record overspeed trip setting	_____ RPM	
50.0	Fuel Sight Glass	Idle _____ #8 _____	
60.0	Lube Oil Pressure	Idle _____ #8 _____	
70.0	Lube Oil Temperature (Suction Box)	Idle _____ #8 _____	
80.0	Lube Oil Temperature Into Cooler	Idle _____ #8 _____	
90.0	Lube Oil Temperature Out of Oil Cooler	Idle _____ #8 _____	

CODE	DESCRIPTION			SIGNATURE
100.0	Engine Water Temperature	Idle _____ #8 _____		_____
110.0	Temperature Switch Operation	Pickup	Drop Out	_____
	#1	_____	_____	
	#2	_____	_____	
	#3	_____	_____	
	Hot Engine	_____	_____	
	Shutter Operation (Open/Close)	_____	_____	
115.0	Inspect radiators for leaks.			_____
117.0	Inspect radiators for leaks during cooling cycle, when the radiators are full.			_____
120.0	Ambient Temperature		_____	_____
130.0	Water Sight Glass Level	Start_____	Finish _____	_____

Remarks: _____

_____

Workman: _____ **Supervisor:** _____

CANADA REGION

Periodic Maintenance Work Sheets

Locomotive No: **Date: 11/13/2014** **PM Type: AIR BRAKE**

ITEM #	DESCRIPTION	
520.0	Winterization - Check doors and windows for proper weather stripping and insulation	Signature
525.0	Winterization - Check cab heaters for proper operation. Blow out cab heater cores.	Signature
1006.0	Inspect all cab door handles to insure they are horizontal to the door.	Signature
1007.0	Locomotive Cab Seat Safety Inspection Inspect seat cushion,retaining pins, stops,repair and lubricate as necesssary	Signature
1008.0	Inspect and lubericate wall mounted seat rails	Signature
1010.0	Before Locomotive enters shop, make inbound inspection, complete inbound inspection sheet. Note items requiring repairs.	Signature
1020.0	Take Engine Oil Sample	Signature
1030.0	Complete wheel condition report including couplers and draft gears. Notify supervisor if any defects are present such as thin flanges, rims or defective draft gears.	Signature
1035.0	Inspect MU valve springs and lubricate valve handles, ensure for proper operations Repair as necessary (use WD-40 type lubricant)	Signature
1040.0	Inspect cases and gear case bolts for tightness and defective conditions.	Signature
1050.0	Inspect support bearing cap bolts for tightness and ensure they are lock wired. Inspect and verify security of wick cap screws. Check support bearings for signs of overheating.	Signature
1060.0	Check journal box and support cap oil level, add all weather car oil as needed.	Signature
1070.0	Check and replenish traction motor gear grease,add grease per local instructions. Note unusual conditions of bull gear	Signature
1071.0	Replace worn brake shoes and adjust pull rods as necessary.	Signature
1081.0	Inspect traction motors, check brushes, insulation, clean paint and re-gasket as necessary.	Signature

#1_____ #2_____ #3_____

#4_____ #5_____ #6_____

ITEM #	DESCRIPTION	
1090.0	Inspect steps & support brackets, railing, stanchions, uncoupling levers, pilots, side bearings,. Check for loose fasteners, inspect doors and door latches, correct defects. Paint handrails as needed. Handholds and bottom step leading edge must be painted a contrasting color.	Signature
1091.0	Inspect all steps and support brackets, repair as necessary	Signature
1092.0	Inspect Reflective tape sheeting and replace as necessary	Signature
1093.0	Install door locks to Firemans and Engineers doors. Check all window locks and repair as needed	Signature
1100.0	Pressurize fuel system and inspect top deck for fuel leaks.	Signature
1101.0	Clean fuel sight glass	Signature
1102.0	Move Lay Shaft to check for stuck injector or faulty linkage	Signature
1110.0	Hydro test cooling system at 15 PSI, with cooling system pressurized bar over engine and inspect for water leaks, observe all engine components for unusual conditions.	Signature
1120.0	Qualify engine protector, crankcase detector trip test. Ensure detector trips using vacum test instrument.	Signature
1130.0	Correct all diesel engine repairs noted on inbound sheet and correct defects found during fuel test and bar over inspection.	Signature
1152.0	Renew turbo oil filter. Record part number and quantity replaced. PN:_____ Qty:_____	Signature
1160.0	Lubricate center castings	Signature
1170.0	Change all fuel oil filters.	Signature
1171.0	Fuel Suction Strainer clean or replace filter	Signature
1174.0	Install Quick Disconnect Fitting in Main Bearing Oil Pump For Oil Sample	Signature
1175.0	Change lube oil filters including turbo and soak back filter if equiped. Dispose of filters properly. Drain michiana tank while oil is hot, allow filters to drain at least 12 hours before removal. Remove and drain all spin-on style filters for 24 hours before disposal. Clean any oil or fuel spilled during change out proceedures.	Signature
1176.0	Check baggy type air filters. If equipped, renew as needed.	Signature
1180.0	Clean eductor tube, or replace with cleaned tube.	Signature

ITEM #	DESCRIPTION	
1181.0	Clean lube oil separator	Signature
1190.0	Verify torque of exhaust manifold base bolts 130 ft lbs, inspect exhaust manifold expansion joint gaskets for leaks	Signature
1200.0	Inspect engine and air compressor base bolts and dowel pins for tightness.	Signature
1210.0	Ensure all carbody, generator and engine sump drains are clear and free of debris.	Signature
1220.0	Lubricate and verify operation of handbrake. Stencil test and inspection date Inspection date_____	Signature
1221.0	Inspect Handbrake Sheave Wheel and Pin Renew as needed	Signature
1230.0	Inspect and replace fire extinguishers if they are spent or if test date will be over 1 year by next inspection.	Signature
1250.0	Test air gauges, apply quick connect test fittings as required (2 lb max variance.)	Signature
1251.0	Calibrate Air Flow Indicators	Signature
1260.0	Clean cab, including walls, floors, and windows.	Signature
1261.0	Clean and sanitize refrigerator, check operation, drain condensate from water separator.	Signature
1270.0	Supply cab with crew packs, spare fuses, non compliance tags, and engineers work reports. Replenish first aid kits, current emergency response guidebook	Signature
1280.0	Prior to release, inspect all wheel flanges for proper contour, true or cut flanges as needed. Do not allow sharp flanges to be dispatched	Signature
1290.0	Perform shop air brake test per instructions	Signature
1300.0	Wash locomotive. Steam and wash engine and engine room. Wash compressor room, car body and trucks.	Signature
1303.0	Steam out toilet room	Signature
1310.0	Clean and service toilet, winterize with antifreeze from October 1st thru March 31st. Add 3 gallons of R.V. antifreeze per unit.	Signature
1320.0	Ensure locomotive has the following emergency items: 1-wreck chain or cable, 1-E, 1-F knuckle, 1-knuckle pin, 2 spare air hoses, chisel, wrench, hammer, 1 broom.	Signature
1323.0	Inspect horn covers, apply as necessary.	Signature

ITEM #	DESCRIPTION	
1326.0	Lubricate all cab door latches and hinge assemblies.	Signature
1340.0	Inspect all components in electric locker. Blow out electrical cabinet with 30 lbs of compressed air or vacum cabinet as necessary.	Signature
1350.0	Inspect all visible insulation, connections, receptacles, and related wiring.	Signature
1360.0	Check electrolyte level in batteries. Clean compartment and batteries with soda and water.Check specific gravity of cells.	Signature
1370.0	Inspect and clean trainline receptacles	Signature
1372.0	Check operation of turbo soakback pump.	Signature
1380.0	Inspect and service control stand, changing bulbs and switches as necessary.	Signature
1381.0	Check throttle & reverser lock for proper operation.	Signature
1390.0	Check operation and calibration of electronic speed indicator. Wheel Diameter_____	Signature
1391.0	Verify operation of event recorder functions per work sheet	Signature
1400.0	Check following circuits for grounds: High voltage (power) _____ Low voltage (control) _____ A. C. voltage _____	Signature
1410.0	Check all lights to ensure they are operative.	Signature
1420.0	Ensure all access panels, doors covers and hatches to electric equipment and cabinets are in place and secure. Ensure they all have proper warning decals applied.	Signature
1429.0	Check fuses in AR10 & clean windows.	Signature
1430.0	Check brushes in the following rotation equipment, for proper brush wear, renew brushes as needed, reapply all covers and secure:Verify all brushes are free in brush box. Main generator _____ Aux. generator _____ Fuel pump _____ Starter motor _____ Cab heater _____	Signature

ITEM #	DESCRIPTION	
1436.0	Check brushes for proper brush wear in the following rotation equipment, reapply all covers and secure. Record Part number & quantity of replaced brushes: Verify all brushers are free in brush box. Slip Ring _____ aux. generator _____ fuel pump _____ D/B fan motor _____ cab heater _____ turbo pump motor _____	_____ Signature
1440.0	Continue checking brushes,renew as needed in: Verify all brushes are free in brush box. Turbo lube pump motor _____ Load regulator _____ Dyn. brake fan motor _____ Slip ring brushes _____	_____ Signature
1442.0	Self load unit, if equipped, complete and sign load test form. Run in notch 8 if not equipped. Inspect prime mover for oil, water and fuel leaks. Check unit for proper operation.corect as necessary	_____ Signature
2550.0	Change lube oil filters including turbo and soak back filter if equipped. Dispose of filters properly. Drain michiana tank while oil is hot, allow filters to drain at least 12 hours before removal. Remove and drain all spin-on style filters for 24 hours before disposal. Clean any oil or fuel spilled during change out proceedures.	_____ Signature
2555.0	Change baggy type air filters if equipped	_____ Signature
3010.0	Perform engine bar over inspection, including inspection of rings, liners, pistons, and document findings.	_____ Signature
3011.0	Clean lube oil seperator	_____ Signature
3012.0	Inspect top ring and document land clearance. High H.P. .026 Low H.P. .032 maximum	_____ Signature
3013.0	Replace dynacell air filters if equipped	_____ Signature
3015.0	Set valves and injectors.	_____ Signature
3016.0	Clean right and left air boxes.	_____ Signature
3017.0	Set rack with engine at operating temperature.	_____ Signature
3020.0	Torque all crab nuts, head bolts, basket bolt and exhaust manifold bolts. Crab bolts - 2000 ft lbs Cyl heads - 240 ft lbs Basket bolts top - 190 ft lbs Bottom - 75 ft lbs Exhaust manifolds - 130 ft lbs	_____ Signature
3040.0	Change main reservoir, air filters and dirt collector elements. Change air compressor intake filters. Change electrical cabinet air intake filters if unit is so equipped. (GP40)	_____ Signature
3050.0	Renew M.U. hoses and gaskets as necessary.	_____ Signature

ITEM #	DESCRIPTION	
3060.0	Clean and test Main Resevoir and Filter automatic drain valves.	Signature
3070.0	Renew bell cartidge.	Signature
3090.0	Ensure brake pipe leakage does not exceed 2 lb per minute. Correct defects as necessary.	Signature
3100.0	Inspect cab weatherstripping, replace as necessary.	Signature
3110.0	Flush out air compressor heads with water.	Signature
3119.0	Renew Generator Field Switch	Signature
3120.0	Check all ammeters and load indicators per FRA 368 day inspection procedures. Sign off on cab blue form.	Signature
3130.0	Load test engine. Complete all checks and tests listed on load box test sheets. COMPLETE LOAD BOX TEST FORMS COMPLETELY!	Signature
4029.0	Remove and inspect traction motor support bearing wicks for excessive wear and brass particles. Replace wicks as necessary. Drain water if any out of bottom drain plug. Add 4 oz. of MT-10 metal treatment to each support cap. Top off support cap reservoirs with car oil.	Signature
4030.0	Perform 1104 day air brake service. (26-L) Change the following components. 26C brake valve SA26 valve MU2A valve #8 vent valve 26F control valve J relay valve	Signature
4031.0	A-1 Charging cutoff pilot valve F-1 Selector valve P2A application valve H5A relay valve Main res. safety pop valve Air compressor safety valve MR & EQ check valves	Signature
4032.0	Mr. 1 way check valve. Rebuild or renew all 599, 596, 26A, DT-3, check valves. Rebuild all solenoid, relay and magnet valves (595, 585, 500, 500BS, GWS-250, DBI, DDMV, SHMV, A/C MV.	Signature
4033.0	Inspect clean, lubricate and repair truck mounted brake cylinders as necessary	Signature
4036.0	Renew Fuel Prime-Engine Start Switch EMD Part # 8441983 BP Part # swit 1230	Signature

CANADA REGION

LOCOMOTIVE WHEEL INSPECTION REPORT

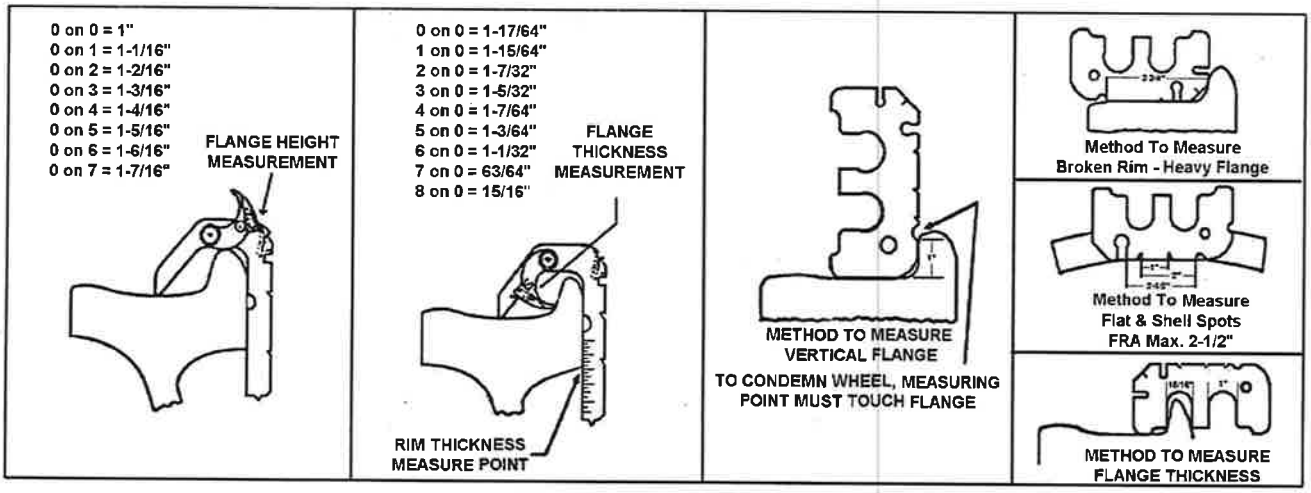
LOCO. NUMBER _____ **LOCATION** _____ **DATE** 11/13/2014

REASON FOR INSPECTION AIR BRAKE **DIRECTION** _____

Position	Flange Height	Flange Thickness	Rim Thickness	Brake Rigging	Spring Condition Coil	Spring Condition Leaf	Side Bearing Clearance
R 1						R Front	R Front
R 2							
R 3							
R 4						R Rear	R Rear
R 5							
R 6							
L 1						L Front	L Front
L 2							
L 3							
L 4						L Rear	L Rear
L 5							
L 6							

	Front	Rear	FRA Clearance Limits	
Drawbar Height (From Top of Rail)			Maximum All Locomotives Minimum All Locomotives (Except Pass.) Minimum Passenger Locomotives	34-1/2" 31-1/2" 32-1/2"
Snowplow/Pilot Height (From Top of Rail)			Maximum All Locomotives Minimum All Locomotives	6" 3"
Coupler Slack			Maximum All Locomotives	1/2"
Check All Metal Components (Brake Rigging, Sand Pipes, Etc.) Must Be Minimum of 2-1/2" Above Rail				

Inspected By _____ **Supervisor** _____



RRR:03-25-00

Locomotive Repairs

Locomotive Number: **Date:** 11/13/2014

Comments:				
Line No.	**Symptom / Defect**	**Matl. Used**	**Action**	**Repaired By**
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

The above work has been performed except as noted. **Signature:** _____

Title: _____ **Date:** _____ RRR

RRR:01-01-00

GWCI - LOCOMOTIVE INSPECTION REQUIREMENTS

PART III - LOCOMOTIVE INSPECTION REQUIREMENTS

21. BRAKE SYSTEM

21.1 The brake system and all related components, including the handbrake, must be tested and maintained in operative condition, as per procedures issued by the railway company and filed with the Department. Dynamic brake must be tested and maintained in operative condition on the number of locomotives required to be equipped with dynamic brake on trains operating, or destined for operation, in the territory filed under subsection 21.2. Locomotives that have not been previously tested cannot be set out and placed on a train requiring use of their dynamic brake feature until they have been tested at a locomotive safety inspection location.

21.2 A railway company shall file with the Department all territories on which locomotives with dynamic brake are required, as well as related instructions. This information shall be filed with the Department no later than ninety days from the approval of these rules.

21.3 All new freight locomotives, except yard locomotives, ordered after December 31, 2010 intended to operate in territory as set out in subsection 21.2, shall be equipped with dynamic brake and dynamic brake holding feature, and shall be designed to conduct an electrical integrity test of the dynamic brake to determine if electrical current is being received at the grids on the system.

21.4 All existing freight locomotives intended to operate in territory as set out in subsection 21.2 shall be modified prior to *December 31, 2010* to incorporate a dynamic brake holding feature if not already equipped.

21.5 (a) Dynamic brake is considered a supplemental braking system however company instructions and procedures shall ensure that the friction brakes are sufficient by themselves, without the aid of dynamic brakes, to stop the train safely under all operating conditions.

(b) Except when operating pursuant to subsection 21.2 a locomotive may be operated with inoperative dynamic brake.

(c) Should the dynamic brake become inoperative enroute while operating pursuant to subsection 21.2, the defective locomotive should be repaired, remarshalled, set off, or the train handled in accordance with the railroad companies instructions as filed with the Department.

22. TRUCKS

22.1 A railway company shall not place, or continue in service, a locomotive with any of the following truck related defects:

(a) truck frames, swing hangers, swing hanger pins or equalizers cracked or broken;

(b) suspension components such as coil or rubber springs, elliptic springs, snubbers and dampers must not be missing, cracked, broken or out of place and must be properly secured.

22.2 All components attached to the truck frames must be properly secured.

22.3 The bolster side bearing and pedestal clearances shall be maintained within manufacturer's specifications.

22.4 The truck frame, brake rigging and associated components of locomotives shall be kept free from accumulation of oil, grease and other combustible materials.

23. WHEELS AND AXLES

23.1 A railway company shall not place, or continue in service, a locomotive with any of the following wheel defects:

(a) flange thickness of 7/8 inches (22.2 mm) or less;

(b) vertical flange of 1 inch (25.4 mm) or more;

(c) a flange height of 1 ½ inches (38.1 mm) or more measured from tread to the top of the flange;

(d) i) a curved plate wheel with a rim thickness of 1 inch (25.4 mm) or less;

ii) a straight plate wheel with a rim thickness of 1 inch (25.4 mm) or less;

iii) a straight or curved plate wheel with a rim thickness of 3/4 inch (19.0 mm) or less, on locomotives used in yard services

(e) a flat spot of 2 ½ inches (63.5 mm) or more in length or, in the case of multiple flat spots, 2 inches (50.8 mm) or more in length;

(f) a gouge or chip in the flange that is more than 1 ½ inches (38.1 mm) in length and ½ inch (12.7 mm) in width;

(g) a shell of 2 ½ inches (63.5 mm) or more in length or, in the case of multiple shells, 2 inches (50.8 mm) or more in length;

(h) tread worn hollow 5/16 inch (7.9 mm) or more;

(i) a crack in the rim, plate or hub;

(j) a loose wheel;

(k) the variation in the circumference of wheels may not exceed ¼ " or 2 tapes on the same axle when applied or threaded.

23.2 A railway company shall not place or continue in service a locomotive with a traction motor support bearing that shows evidence of:

(a) signs of overheating;

(b) loose or missing bolts;

(c) oil leaking from reservoir;

(d) missing or defective reservoir filler cup, or drain plug not properly secured.

23.3 A railway company shall not place or continue in service a locomotive with any of the following journal bearing safety defects:

(a) a loose or damaged seal;

(b) loose or missing end cap bolt;

(c) signs of over heating; and

(d) a missing or defective gasket or drain plug not properly secured.

24. DRAFT SYSTEMS

24.1 A railway company shall not place or continue in service a locomotive with any of the following coupler related defects:

(a) a coupler shank that is bent out of alignment to the extent that the coupler will not couple automatically;

(b) a coupler knuckle that is broken or cracked on the inside pulling face of the knuckle, except that shrinkage cracks or hot tears that do not significantly reduce the strength of the knuckle shall not be considered cracked;

(c) a knuckle pin or thrower that is missing or inoperative;

(d) a coupler retaining pin lock that is missing or broken;

(e) a coupler with an inoperative lock lift or a coupler assembly that does not have anticreep protection to prevent unintentional unlocking of the coupler lock; locomotives in passenger service must be equipped with a device that locks the lock lift assembly to ensure prevention of unintentional uncoupling;

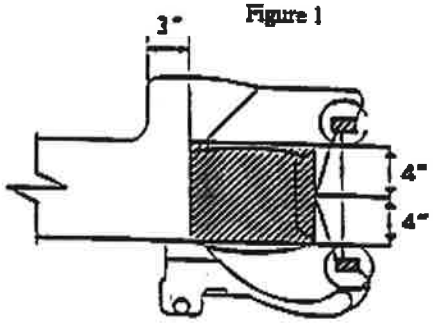
(f) a coupler lock that is missing, inoperative, bent, cracked or broken;

(g) a coupler not falling within the following heights above the rails, (except those by design and of which specifications will be filed with the Department):

minimum height: 31 ½ inches (800 mm);
maximum height: 34 ½ inches (876 mm);

(h) a coupler that has a crack in the area of the shank or head represented by the unshaded portion of figure 1, except that shrinkage cracks or hot tears that do not significantly reduce the strength of the coupler shall not be considered cracked;

Figure 1



(i) an inoperative uncoupling device.

24.2 A railway company shall not place or continue in service a locomotive with a draft arrangement that shows evidence of:

(a) a draft gear that is inoperative;

(b) a cracked or broken yoke;

(c) a vertical coupler pin retainer that is missing or defective

(d) a draft gear carrier plate that is missing or has more than 25% of the fasteners loose or missing;

(e) a draft stop that is missing or broken to the extent that it no longer performs its design function.

25. FUEL TANKS

25.1 Exterior of fuel tanks of the locomotive shall be kept free from accumulation of oil, grease and other combustible material.

25.2 Fuel tanks, filling adapters, pumps, piping, valves and connections shall be kept free from leaks, properly secured and in operative condition.

25.3 The fuel tank vent must be kept clear of obstructions.

26. INTERNAL COMBUSTION ENGINES

26.1 The engine and engine room shall be kept free from accumulation of oil, grease, fuel oil, and other combustible material. Pollution control tanks shall be kept free from leakage and/or from overflow.

26.2 Locomotives operated in service during the fire season, shall have exhaust passages on the discharge side of spark arresting devices or turbo-chargers kept free of oil accumulation and carbonaceous deposits in excess of 1/8 inch (3 mm) in thickness.

27. RAIL CLEARANCE

27.1 No part or appliance of a locomotive, excepting wheels and flexible non metallic sand pipe extension tips, shall be less than 2 ½ inches (63 mm) above the top of the rail.

28. WINDOWS

28.1 Windows on controlling locomotives, shall be kept clean and free from cracks or obstructions. All related components, on controlling locomotives, such as wipers, sun visors and defrosters shall be kept in operative condition.

29. SAFETY CONTROL EQUIPMENT

29.1 A controlling locomotive shall not be placed in service other than in designated and/or yard service, without an operative reset safety control.

29.2 A controlling locomotive in designated and/or yard service which is not equipped with a reset safety control shall have an operative safety control foot pedal.

30. SAFETY APPLIANCES

30.1 All safety appliances, as described in General Order No. O-10, "Regulations Respecting Railway Safety Appliance Standards" shall be kept in a safe and operative condition.

31. SPEED INDICATOR

31.1 A controlling locomotive shall not be placed in service other than in designated service without operative speed indicator(s).

32. EVENT RECORDER

32.1 A controlling locomotive shall not be placed in service other than in designated and/or yard service without an operative event recorder.

33. AUDIBLE SIGNALS

33.1 All audible signal equipment on controlling locomotives shall be in operative condition.

34. ILLUMINATING DEVICES

34.1 All illuminating devices shall be secured and be in operative condition.

GWCI - SAFETY DEFECTS INSPECTION

PART II – SAFETY DEFECTS

Part II contains those safety defects which, when present, prohibit a railway company from placing or continuing a freight car in service.

9. WHEELS

9.1 A railway company shall not place or continue a car in service if:

(a) a wheel rim, flange, plate or hub area has a crack or break. Heat checks or chips in a wheel rim are not considered to be cracks or breaks;
(b) a wheel has a chip or gouge in the flange more than 1 ½ inches (38.10 mm) in length and ½ inch (12.70 mm) in width;
(c) a wheel has a shelled spot that is more than 1 ¼ inch (31.75 mm) in width and 1 ½ inches (38.10 mm) in length;
(d) a wheel has a slid flat spot that is more than 2 ½ inches (63.50 mm) in length or two adjoining flat spots each of which is more than 2 inches (50.80 mm);
(e) a wheel shows evidence of being loose;
(f) a wheel flange is worn to a thickness of 7/8 inches (22.22 mm) or less at a point 3/8 inches (9.52 mm) above the tread of the wheel;
(g) the height of a wheel flange from the tread to the top of the flange is more than 1 ½ inches (38.10 mm);
(h) the thickness of a wheel rim is 11/16 inches (17.4 mm) or less;
(i) a straight plate wheel has:

i. a blue or reddish brown discoloration on the front and back face of the plate that extends more than four inches (101.60 mm) into the plate;
ii. a combination of heat discoloration on the rim and plate with a rim thickness of 1 ¼ inches (31.75 mm) or less;
iii. any visible tread defects with a rim thickness of 1 ¼ inches (31.75 mm) or less; or
iv. 1 inch (25.40 mm) or less of rim thickness); or

(j) a wheel is the wrong size.

10. AXLES

10.1 A railway company shall not place or continue a car in service if:

(a) an axle has a crack or is bent or broken;
(b) a journal shows evidence of overheating;
(c) a plain bearing axle has:
  i. a cracked or broken end collar; or
  ii. a groove, pitting, rusting or etching on the surface of the journal; or
(d) an axle is the wrong size.

11. ROLLER BEARINGS and ADAPTORS

11.1 A railway company shall not place or continue a car in service if:

(a) a roller bearing shows signs of having been overheated;

(b) a roller bearing has damaged external parts that are visibly cracked, broken or bent;

(c) a freight car involved in a derailment has not had its bearings inspected according to the procedures outlined in the latest edition of the Field Manual of the AAR Interchange Rules;

(d) a roller bearing has:

i. missing or loose cap screw;

ii. a broken, missing or improperly applied locking plate; or

iii. a backing ring that is loose or damaged when car is on a repair track;

(e) a roller bearing is the wrong size; or

(f) a roller bearing is losing grease to the extent that fresh grease is spread across the truck side frame and the seal is loose, cocked or damaged.

11.2 A railway company shall not place or continue a car in service if a roller bearing adapter is missing, cracked, broken, out of place or the wrong size.

12. PLAIN BEARINGS

12.1 A railway company shall not place or continue a car in service if:

(a) a journal bearing lubrication system has any of the following conditions:

i. a journal bearing box has no visible free oil;

ii. a journal bearing box contains foreign matter that can damage the bearing or affect the lubrication of the journal and the bearing;

iii. a journal bearing box lid is missing;

iv. a lubricating pad is missing, not in contact with the journal or the wrong size;

v. a lubricating pad is scorched, burnt or glazed;

vi. a lubricating pad contains fabric in such a condition that it impairs proper lubrication of the pad; or

vii. A lubricating pad has metal parts contacting the journal;

(b) a journal bearing:

i. is missing, broken, out of place or wrong size;

ii. has a crack in the back or lug portion;

iii. on which the lining is loose, has a piece broken off; or

iv. is overheated, as evidenced by melted lining; or

(c) a journal wedge is missing, broken, out of place, or the wrong size.

13. TRUCKS

13.1 A railway company shall not place or continue a car in service if:

(a) a side frame or bolster:

i. is broken;

ii. has a crack of ¼ inch (6.3 mm) or more in the transverse direction of a tension member, except that shrinkage cracks or hot tears that do not significantly reduce the strength of the bolster or side frame shall not be considered cracked;

(b) a truck is equipped with an ineffective damping mechanism as indicated by:

i. a side frame column wear plate missing (except by design), or broken to the extent that it no longer performs it design function;

ii. a broken or missing activating side spring;

iii. truck springs that show evidence of not maintaining travel or load;

iv. hydraulic snubbers with an accumulation of wet fluid and fluid is not visible in the sight glass if so equipped;

v. truck springs compressed solid;

vi. truck springs on which more than one of the outer springs in any spring cluster are broken, out of place or missing; or

vii. a friction wedge is missing, broken to the extent that it becomes non functional or worn beyond the wear indicator.

(c) the truck side bearings:

i. have part of the assembly missing, out of place or broken;

ii. are in contact with the body side bearing on both sides at one end of the car, unless intended by design;

iii while on level track, are in contact with the body side bearings at diagonally opposite sides of the car, unless intended by design;

iv. at one end of the car have a total clearance from the body side bearing of more than ¾ inches (19.05 mm); or

v. at diagonally opposite sides of the car, have a total clearance from the body side bearing of more than ¾ inches (19.05 mm); or

vi. when more than one constant contact side bearing is not making contact.

(d) there is interference between the truck bolster and the centre plate, or the body bolster and the truck side frame, which prevents proper truck rotation;

(e) a brake beam support is worn to the extent that it does not support the brake beam; or

(f) a truck is designed with a spring plank, but the spring plank is missing, broken, bent to the extent that it no longer performs its design function or incorrectly installed.

14. CAR BODIES

14.1 A railway company shall not place or continue a car in service if:

(a) any portion of the freight car body, truck or their appurtenances (except wheels) has less than 2 ½ inches (63.50 mm) clearance from the top of the rail;

(b) the car centre sill or stub sill is:
  i. broken;
  ii. cracked more than 6 inches (152.40 mm); or
  iii. permanently bent or buckled more than 2 ½ inches (63.50 mm) in any 6 foot (1.83 m) length;

(c) the car has a stub sill attachment with a crack greater than 6 inches;

(d) the tank car stub sill:
  i. is broken
  ii. has any crack in the parent metal;
  iii. has a transverse weld that is cracked more than 3 inches (76.2 mm) or is missing;
  iv. has a longitudinal weld that is cracked more than 6 inches (152.40 mm) or is missing; or
  v. has a weld that is cracked or missing, where the total length cannot be measured;
  vi is bulged; more than 1 1/2 inch in any 3 foot length.

(e) the car has a side sill cracked more than 6 inches (152.40 mm) when the car is not equipped with a full centre sill;

(f) the car has a broken cross bearer or body bolster;

(g) the car has a coupler carrier that is:
  i. broken;
  ii. missing; or
  iii. non-resilient, and the coupler has a type F head;

(h) the car body has been improperly positioned on the truck;

(i) it has a centre plate that:
  i. is improperly secured, with more than 25% of the fasteners missing and/or the centre plate observed to have moved;
  ii. is broken; or
  iii. has two or more cracks through its cross section thickness at the edge of the plate extending into the portion of the plate that is obstructed from view while the truck is in place;

(j) it is a box car which has:
  i. more than one door stop missing or broken per door;
  ii. safety hangers missing or inoperative on sliding or plug doors so equipped;
  iii. a sliding or plug type doors off the rails;
  iv. a plug type door not closed;

14. CAR BODIES (Cont'd)

v. a plug type door with not less than 60% of the locks fully engaged; or
vi. door rail supports cracked or broken to the extent that they do not perform their design function;

(k) it is a hopper car which has a bottom gate off the track or unsecured such that it could fall off;

(l) it is a loaded car with lading restraining devices worn or damaged to the extent that those devices will not restrain the load;

(m) an object extends from the side of a car body except by design;

(n) a car is not loaded in accordance with the prevailing "AAR General Rules Governing the Loading of Commodities on Open Top Cars", or a circular of the Railway Association of Canada; or

(o) the car has any object which is not secured and could fall off.

15. COUPLERS and DRAWBARS

15.1 A railway company shall not place or continue a car in service if:

(a) the car is equipped with a coupler shank that is bent out of alignment to the extent that the coupler will not couple automatically;

(b) the car has a coupler knuckle that is broken or cracked on the inside pulling face of the knuckle, except that shrinkage cracks or hot tears that do not significantly reduce the strength of the knuckle shall not be considered cracked;

(c) the car has a knuckle pin that is missing or broken;

(d) the car has a thrower that is inoperative;

(e) the car has a coupler retaining pin lock that is missing or broken;

(f) the car has a coupler with an inoperative lock lift or a coupler assembly that does not have anti-creep protection to prevent unintentional unlocking of the coupler lock;

(g) the coupler lock is missing, inoperative, bent, cracked or broken;

(h) the car has a coupler that has a crack as identified in the latest edition of the Field Manual of AAR Interchange Rules , except that shrinkage cracks or hot tears that do not significantly reduce the strength of the coupler shall not be considered cracked;

(i) the coupler heights between two adjacent freight cars vary in excess of 4 inches (101.6 mm);

(j) it is equipped with a solid drawbar:
i. that is cracked more than 2 inches or;
ii. that has a missing pocket casting support or;
iii. that has a missing or broken primary pin.

(k) it is equipped with an articulated car connector:
i. attachment weld cracked greater than 4";
ii. casting crack greater than 2";
iii. primary pin tipped, broken or not properly seated;
iv. retaining pin broken, missing or not engaging primary pin;
v. retaining pin securement missing; or
vi. wedge retaining bolts broken or missing.

16. DRAFT ARRANGEMENTS

16.1 A railway company shall not place or continue a car in service if:

(a) the car has a draft gear that is inoperative;

(b) the car has a broken yoke;

(c) a vertical coupler pin retainer plate:

i. is missing (unless intended by design); or

ii. has more than 25% of the fasteners either loose or missing;

(d) the car has a draft key or draft key retainer that is:

i. inoperative;

ii. missing; or

iii. broken;

(e) the car has a follower plate missing or broken to the extent that it no longer performs its design function;

(f) the draft gear carrier plate is missing or has more than 25% of the fasteners loose or missing;

(g) a draft stop is missing or broken to the extent that it no longer performs its design function; or

(h) a car cushioning unit is broken, inoperative, or missing a part, except where its sliding parts have been effectively immobilized.

GWCI GENERAL OPERATING INSTRUCTIONS FOR EQUIPMENT INSPECTION

Genesee & Wyoming Canada Inc.

General Operating Instructions (GOI)
Genesee & Wyoming Canada Inc.
Applicable to All Canada region Railways

Effective October 14, 2015

SECTION 5- EQUIPMENT INSPECTION

Note: In this section the word train also apply to transfer

1.0 INSPECTING SPECIAL DANGEROUS COMMODITIES

1.1 A train or transfer carrying one or more full carloads, container loads or trailer loads of SPECIAL dangerous commodities MUST, within one of the mileage shown by subdivision footnote at which this instruction applies:

- Perform a pull-by or a standing inspection,
- From the front of the train to and including 8 axles behind the last full carload, container loads or trailer loads of a SPECIAL dangerous commodity.

2.0 USE OF PORTABLE RADIOS WHEN MAKING TRAIN INSPECTION

When portable radios are available they must be carried by crew members when making train inspections.

3.0 PRE-DEPARTURE INSPECTION PROCEDURES (BY OTHER THAN A CERTIFIED CAR INSPECTOR)

3.1 Hazardous Conditions

At each location where a freight car is placed in a train and a Certified Car Inspector is not on duty for the purpose of inspecting freight cars, the freight car must, as a minimum requirement, be inspected for these hazardous conditions:

- Car body leaning or listing to the side,
- Car body sagging downward,
- Car body positioned improperly on the truck,
- Object dragging below the car body,
- Object extending from the side of the car body,
- Plug door open or any door out of guide,
- Broken or missing safety appliance (e.g. handhold, ladder, sill step),
- Insecure coupling,
- Brake that fails to release,
- Missing “end cap bolt” on a roller bearing,
- Overheated wheel or journal,
- Broken or cracked wheel,
- Any other apparent safety hazard likely to cause an accident or casualty before the train arrives at its destination,
- Lading leaking from a placarded dangerous goods car,
- Suspicious or dangerous objects, including Improvised Explosive Devices (IED’s),
- Obvious leakage or spillage from grain cars.

3.2 Performing the Pre-departure Inspection

- Inspect both sides of each car.
- Perform a standing inspection on both sides, or a standing inspection on one side, then a roll-by inspection on the other.
- The roll-by inspection must not exceed 5 MPH.

Note: A pre-departure inspection may be made before or after the car(s) is added to the train.

3.3 Hazardous Condition Found

If any hazardous condition is found during the pre-departure inspection, then:

- Report it to the proper authority and if safe to do so:
- Correct the condition, or
- Remove the defective car from the train, or
- Move the car to another location, taking whatever actions necessary to ensure the safe operation of the train and the safety of the employees (e.g., reduce speed).

3.4 Train Inspection Intervals

No train may be operated in excess of 60 miles, or move past 2 consecutive non-operational hot box detectors without having been inspected on each side of the entire train. These inspections must be performed by:

- Hot Box detectors; or
- Pull-by inspection by crew members of the train; or
- Passing train inspection by:
- Wayside employees, or
- Crew members of other trains.

Note: Passing train inspections must be conducted by 2 employees on opposite sides of the train, within 1 train length of each other. The inspection results must be conveyed to the train crew to be considered an inspection.

3.5 Locomotive Engineers Inspecting Passing Trains

In the application of CROR Rule 110 the Locomotive Engineer must complete a full service brake pipe reduction before vacating the cab of the locomotive. In the application of this instruction, the Locomotive engineer must remain in close proximity of the locomotive and on the same side.

4.0 CREW CHANGE PULL-BY INSPECTIONS

4.1 Trains operating WITHOUT a caboose must perform a crew change pull-by inspection if the train meets ANY of the following three conditions:

A. It is known or suspected that the train contains loads prone to shifting.

- Loads prone to shifting include:
  Lengthwise loads of pipe, timber, poles, metal rods or other similar material, that are not protected by end bulkhead to top of lading.

Note: Loads NOT prone to shifting include:

- Flat cars loaded with steel plates or machinery, and
- Bulkhead flats loaded with banded or packaged lumber which does not extend above the bulkhead by more than 50 percent.

B. The train contains one or more cars containing dangerous goods (including residue cars) for which an Emergency Response Assistance Plan (ERAP) is required as identified by consist.

Note: For cars lifted enroute, Compressed Waybill and/or Shipping Document will indicate an ERAP/ERP number if applicable

4.2 Trains entering Canada from the USA

All trains entering Canada from the United States must receive a pull-by inspection at the first crew change location encountered in Canada.

Note: Trains that receive a pull-by inspection at border locations comply with this instruction.

5.0 PULL-BY INSPECTION PROCEDURE

5.1 Performing pull-by inspection (for other than meeting the purposes of the air brake test and procedures)

Both sides of the train must be inspected.

Position a crew member (or other qualified person) on each side of the track close to the moving train.

If only one crew member is available, then a standing inspection or combination standing/pull-by inspection is permitted.

Movement must not exceed 15 MPH. Inspect for defects and dangerous conditions.

Positioned employees must inspect for defects and dangerous conditions, including indications of:

1. Sticking brakes,
2. Skidded wheels,
3. Damaged or derailed equipment, and
4. Any apparent condition deemed unsafe for continued movement.

5.2 Inspection results at crew change points.

At crew changes, the outbound crew must be given the results of the pull-by inspection:

- Verbally (in person, or by radio), or
- By the Crew information/ Brake status form (when the outbound crew does not take over control directly from the inbound crew).

Note: Whenever a train receives a pull-by or standing inspection – the name of the crew members, or any other employee, performing the inspection, and the side they are on- must be recorded on the Crew information /Brake status form.
If the outbound crew does not receive the inspection results, then an outbound pull-by inspection must be performed.

6.0 INSPECTION WHEN EQUIPMENT IS STOPPED ON A BRIDGE.

A. On a bridge without catwalks, where types of railway equipment permit, or where the bridge structure itself permits:
- Crews may use these to gain access to the trouble area or traverse the bridge;
- Employees must not put their personal safety in jeopardy;
- Employees must not walk on tops of cars with running boards removed.

B. Car(s) stopped on a bridge requiring replacement of air hoses or knuckles may be pulled off the bridge with brakes applied provided:
- Sufficient brakes on the remaining cars on the train can be released to permit movement without the use of excessive force.

C. Where car(s) stopped on a bridge have more serious defects, or where the train cannot be moved account insufficient brakes released;
- The RTC or Operating department must be contacted for assistance.

7.0 DEFECT SUSPECTED - IMPORTANT

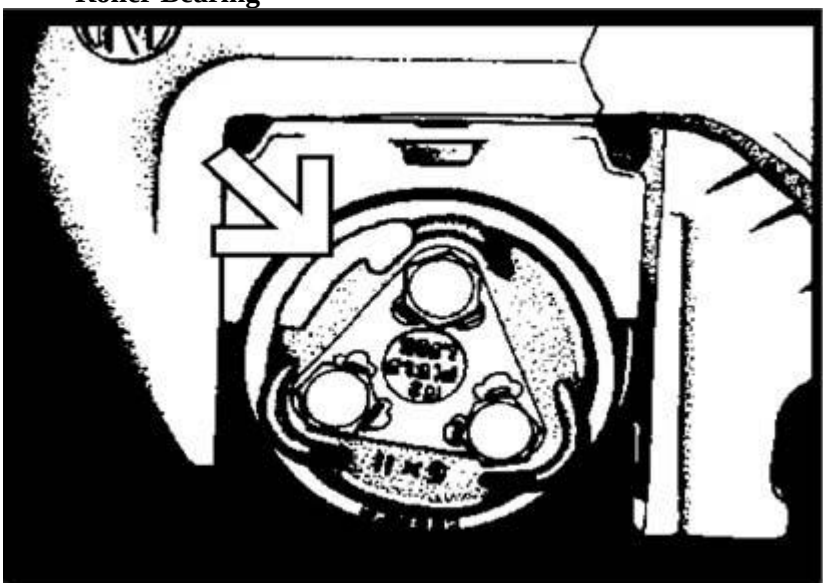
When, an overheated bearing or other defect is suspected :
- Stop the train immediately, and
- Make a close inspection.

8.0 OVERHEATED BEARINGS

8.1 Testing for Overheated Bearings

Roller bearings - apply a temperature indicating crayon to the face or side of the outer ring (cup) of the roller bearing.

Roller Bearing



8.2 Bearing Inspection Using the Back of the Bare Hand and Temperature Indicating Crayon (150ºF):

CAUTION: When using the back of the hand, **do not** physically touch the bearing housing if excessive heat is felt as your hand approaches the bearing housing or axle.

A. Required Equipment:

- All crew members, other than locomotive engineers, of each movement must be in possession of a temperature indicating crayon (150ºF).

B. Crayon Application:

- Use crayon as per illustrations in item 8.1
- Crayon may not melt at or below freezing.

C. Crayon Results:

- Wax-like, shiny smear indicates overheated bearing.
- Thin, colored line indicates the metal is not overheated (i.e., metal is below the temperature indicated on the crayon).

D. Inspection Procedure:

- Inspection for suspected overheating must include feeling the roller bearing housing using the back of the bare hand and use of the temperature indicating crayon.
- When using the temperature crayon, the employee performing the duties must mark the bearing housing and end bolt(s) with sufficient force with the crayon to make an identifiable mark to indicate that it has been checked. (8.1).
- In all cases, inspection must be as instructed and requires an inspection of 8 axles in both directions, both sides from a defect that is found and 16 axles in both direction, both sides if no **defect is found.**

8.3 Overheated Bearing Confirmed

If a bearing has overheated, then:

- Set-out the car at the first available location, or location designated by the Time Table,
- Complete defect report, and notify the RTC.

9.0 WHEEL DEFECTS; OVERHEATED, HOT, SKIDDED, AND SHELLED

9.1 Overheated Wheels (Pre-departure Inspection/En route)

This applies to trains detecting hot wheels en route, or at any location where a freight car is to be placed in a train and a certified car inspector is not on duty to conduct inspections.

Safety Defect:

- Heat discoloration on any type of wheel which extends more than 4 inches from the rim into the plate, on both the front face and back face.

Actions to be taken:

- Set off car with safety defect at first available location;
- Do not place a car with a safety defect in the train;
- Complete defect report, and notify RTC.

9.2 Hot Wheels (En route)

A. Detection/Description:

- Trains required to stop and inspect for a hot wheel condition;
- Usually caused by sticking brakes or set hand brakes.

B. Safety Defect:

- Brakes that cannot be released.

C. Actions to be taken:
1. Check for sticking air brakes and set hand brakes. (Refer to item 10.0, Sticking Brakes, for cause and release of sticking brakes.) 2. If the brakes are successfully released, then perform a pull-by inspection of the car to ensure: • Wheels are turning freely and • All skids and shells are detected. 3. If the brakes cannot be released, then the car must be set off at the first available location. 4. Complete defect report notify RTC.

9.3 Skidded and Shelled Wheels

A. Detection/Description:

- Detected by observing or being advised of pounding wheels.
- Skidded wheel - a wheel that has flat spots.

Shelled Wheel

- Shelled wheel - a wheel tread defect where portions of the tread surface are missing.

Skidded Wheel

B. Safety Defects:

- A skid measuring more than 2 ½ inches in length.
- Two adjoining skids each measuring more than 2 inches in length.
- A shell spot that is more than 1 ¼ inches in width and 1 ½ inches in length.

C. Actions to be taken:
1. Proceed at 10 MPH to the first location where an inspection for skidded and shelled wheels can be made. 2. Closely inspect for skids and shell spots, measuring to determine if safety defects exist. 3. Check for sticking air brakes and set hand brakes. (Refer to item 10.0, Sticking Brakes, for cause and release of sticking brakes.) 4. If the brakes are released, then perform a pull-by inspection of the car to ensure: • wheels are turning freely, and • all skids and shells are detected. 5. If any safety defects exist, then the car must be set off at the first available location. 6. Complete defect report, and notify RTC.

10.0 STICKING BRAKES

Sticking brakes refers to brake shoes that are against the wheel (applied position) when they should be clear of the wheel (released position).

10.1 Indications of sticking brakes:

- **A.** A defect indicated by wayside inspection.
- **B.** Brake cylinder piston in applied position.
- **C.** Hand brake chain tight.
- **D.** Noise of brake shoes against rotating wheels.
- **E.** Odor of hot metal or burning oil.
- **F.** Smoke, sparks or fire around wheels and brake shoes.
- **G.** Sliding wheels.

10.2 Causes of sticking brakes:

- **A.** An insufficient brake pipe reduction to ensure proper release.
- **B.** Hand brake not fully released.
- **C.** Retaining valve not in direct exhaust position.
- **D.** Defective automatic slack adjuster.
- **E.** Binding or fouled brake rigging.
- **F.** Overcharged air brake systems.
- **G.** Excessive brake pipe leakage.
- **H.** Defective control valve.

10.3 To release a suspected sticking brake:

- **A.** Ensure the hand brake is fully released.
- **B.** Ensure the retainer is set to direct exhaust.
- **C.** If the brake cylinder is in the applied position, then request the locomotive engineer to make a full service brake application and then release.
  - If the brakes release on the affected car, then do NOT cut out the car brakes. Proceed.
  - If the brakes do not release on the affected car, then cut out the car brakes and bleed the air system.
- **D.** If the brake cylinder is in the release position, and the brake rigging indicates the brake is applied, then attempt to release by applying the hand brake fully and releasing several times.
  - If sticking continues the car must be set out at the nearest available point.

11.0 CUTTING OUT CAR AIR BRAKES

Car air brakes must NOT be cut out except when:

- Any portion of the rigging has failed.
- There is a continual blow at the control valve exhaust or at the pressure retaining valve.
- When pipes are broken beyond the branch pipe cut out cock.

Note: When a brake is cut out at the branch pipe, the combined auxiliary and emergency reservoirs must be completely drained.

12.0 INSPECTION REQUIRED FOLLOWING AN EMERGENCY BRAKE APPLICATION WHILE MOVING

12.1 Passenger Trains Stopped by an Emergency Brake Application

Before the movement resumes:

- Each car must be inspected to ensure all brakes are released,
- A pull-by inspection of the train must also be made - without exception.

12.2 All other trains stopped by an Emergency Brake Application

A. Complete a pull-by inspection (on at least one side of the train), watching in particular for:

- skidded wheels,
- applied brakes, and
- evidence of derailment.

If a pull-by inspection cannot be made due to terrain, proceed at 10 MPH speed to the first location where a pull-by inspection can be made.

B. If there is evidence of derailed equipment or unusual train action, then stop the train immediately and determine the cause.

C. Record, on the **Crew information/Brake status form**, the:

- location the emergency brake application occurred, and
- results of the pull-by inspection.

Exception: A pull-by inspection of the entire train is NOT required if ALL of the following conditions are met:

1. A pull-by inspection was performed for a previous emergency brake application and documented on the Crew information/brake status form;
2. Train tonnage is:
   - less than 6,000 tons; or
   - 6,000 tons or more, and each car (except a caboose marshalled as the last car) exceeds 100 gross tons.
3. Speed at time of the emergency brake application was greater than 25 MPH;
4. The emergency brake application occurred within 15 seconds of initiating a service brake application;
5. No unusual slack action was noted during the stop;
6. When the brakes are released, the air flow indicator and rear car brake pipe pressure readings indicate no loss of air pressure; and
7. The train is NOT carrying SPECIAL dangerous commodities.
   - If conditions 1 through 6 have been met, **but** the train is carrying SPECIAL dangerous commodities, then complete a pull-by inspection from the leading locomotive to the last car containing SPECIAL dangerous commodities.

12.3 Employees Performing Emergency Brake Application Pull-by Inspection

This pull-by inspection may be made by:

- Crew members of the train itself;
- Crew members of a stopped train;
- Other wayside employees.

The person making the inspection must have a portable radio and be informed of the situation.

13.0 REPORTING DETENTION OR DEFECTS

13.1 The conductor must complete the defect report when:

- A train is stopped for unscheduled inspection,
- A train crew makes repairs enroute to any car (e.g. replacing knuckles, air hoses, etc.),
- Brakes are cut out,
- Any wayside (HBD) detector information is provided, except "No Alarm"
- A wayside (HBD) detector appears to be operative

13.2 Defect report form.

A. Conductor must:

- Transmit defect report information to the RTC verbally, at first opportunity:
- car or engine number of the defective or suspected defective equipment;
- condition found;
- type of defective bearing (e.g., plain or roller);
- action taken.
- Leave a copy on the train (for the relieving conductor at run-through terminals, the Mechanical Officer at final destination).
- Fax the original copy of the defect report form to the supervisor.

B. RTC must advise the mechanical department of all details of defective equipment, including:

- Set off location,
- Nature of temporary repairs, and
- Other actions taken (e.g., brakes cut out).

14.0 CREW INFORMATION/BRAKE STATUS FORM

The Crew information / brake status form provides each relieving crew with information regarding the condition of the train, including:

- Wayside (HBD) detector information and details of inspections, including whether a defect was found;
- Emergency brake application inspection report;
- Results of inbound train inspection;
- Location of all hand brakes applied;
- Details of any brakes cut out (including reservoirs drained);
- Details of any defective cars being moved in the train (including actions taken to move them safely);
- Locomotive defects.

A copy of the Crew information/brake status form remains on the train destination.

15.0 WAYSIDE (HOT BOX) DETECTOR AND WILD INSTRUCTIONS

15.1 CROR Rules 110 and 111

These instructions are in addition to the requirements of CROR Rules 110 and 111.

15.2 Definition – "Train"

Where the term "train" appears herein, it also applies to a transfer and/or engine.

16.0 WAYSIDE DETECTOR (HBD) EQUIPMENT DESCRIPTION

16.1 Wayside Hot Box Detectors (HBD) Description

HBD's operate for trains in either direction on the track in which they are installed.
HBD's detect the following:

- **Dragging Equipment:** Detects equipment dragging between or near the rails.
  Hot Box: Detects overheated journals by measuring the temperature of the heat radiated from the journal box. Hot Box alarms can also be caused by overheated traction motor suspension bearings and sticking brakes.
- **Hot Wheel:** Detects sticking or dragging brakes, and set hand brakes by measuring the temperature of the heat radiated from the wheel rim.
- **Temperature:** Measure outside temperature and report it after the entire train passes the HBD. Temperature is used in the application of Hot and Cold Weather Temperature Speed Zones.

Some HBD's also detect:

- **Dimensional Shipment**: Detect shipments exceeding acceptable dimensions. A dimensional shipment may be loaded or empty, i.e. leaning car body, sagging car body, improper positioning on trucks or shifted load, etc. When the train is passing, a tone is transmitted without an announcement. The final results message specifies dimensional equipment. Time table footnotes indicate locations equipped with dimensional shipment detectors.

Note: Double asterisks (**) mean; when identified, wayside / hot box detector identified in the Time Table subdivision footnotes, refer to item 25.0. (HBD mandatory inspections)

17.0 WAYSIDE DETECTOR (HBD) TALKER DESCRIPTION

HBD's have a "talker" that transmits, by train radio, a recorded voice message of alarm data. Alarms are announced as the train passes, and are repeated after the entire train passes the HBD location.

There are different models of HBD's in use GWCI, the older systems will repeat the results message twice while the new model only announces the result message once, and a DTMF code must be entered to have the HBD repeat the message. DTMF codes for each HBD will be indicated in the Time Table or by Special Instruction.

Hot box detectors equipped with a bilingual talker transmit a message in French and repeat the message in English.

17.1 No Alarms – Final Results Messages

If there are no alarms the talker transmits one of the following messages immediately after the rear of the train passes the HBD.

- **Older Model HBD:** After a two second pause, the message is repeated once, followed by "Message complete; detector out."

- **New model HBD:** No automatic repeat and no post message. DTMF code may be used to repeat last message. Repeated message is preceded by the word "Repeat". ("Message complete; detector out" will not be announced on the repeat.)

17.2 Alarm Announcements While Passing HBD

As the train passes the HBD, the talker transmits a one second alert tone and announcement for each alarm. The following table summarizes the announcements.

Alarm Announcements while Passing HBD			
Situation	**Older Model HBD Announcement**	**New model HBD Announcement**	**Repeat**
Dragging Equipment	Tone + "dragging equipment"	Tone + "dragging equipment"	None
Hot Box	Tone + "hot box"	Tone + "hot box"	None
Hot Wheel	Tone + "hot wheel"	Tone + "hot wheel"	None
Dimensional Shipment	Tone + "hot wheel"	Tone + "Dimensional Shipment"	None

17.3 Alarms - Final Results Message

If there are alarms, the talker transmits a two-second tone followed by a final results message. This message is in addition to the alarm announcements and tones while a defect passes the HBD.

The final results message lists defects sequentially, starting with the defect nearest the head-end. Location is given by axle number from the front of the train, including locomotive axles.

- **Older Model HBD**: After a two second pause, the message is repeated once, followed by "Message complete; detector out."

- **New model HBD**: No automatic repeat and no post message. DTMF code may be used to repeat last message. Repeated message is preceded by the word "Repeat". ("Message complete; detector out" will not be announced on the repeat.)

18.0 PROCEDURES – APPROACHING AND PASSING OVER WAYSIDE DETECTOR'S (HBDS)

18.1 Approaching HBDs

When approaching a HBD		
Step	**Responsible Employee(s)**	**Action**
1	Locomotive engineer	Brakes – Avoid prolonged use of train brakes where practicable, until the entire train passes the HBD. (This prevents false hot wheel and hot box alarms.)
2	Crew members	Radio - Ensure the train radio is on the correct standby channel.

18.2 Passing over HBDs

When the train reaches the HBD…		
Step	**Step Responsible Employee(s)**	**Action**
1	Locomotive engineer	DMD (Distance Measuring Device) – Set the DMD as soon as the movement reaches the HBD location. (Distance helps identify defect location and identify when to expect the final results message. Axle count is unavailable until the rear of the train passes over the HBD.)
2	Crew members	Radio – Avoid using the radio system until after the final results message
3	Crew members	Verbal Communication – Confirm, while passing the HBD, any defects announced.

19.0 WAYSIDE DETECTOR (HBD) ALARMS AND PROCEDURES SUMMARY

No Alarms: If the final results message reports "no alarms," then proceed without an inspection.

Note: If there was an announcement indicating "Hot box", but the final results report "no alarms", then resume speed and proceed without an inspection.

Use this table to identify the appropriate HBD procedure for various events.

Events/ Defect		Procedure
A	Dragging equipment announced while passing HBD.	See Item 20.1
B	Hot box announced while passing HBD.	See Item 20.2
C	Hot wheel announced while passing HBD.	See Item 20.3
D	Alert tone only while passing HBD.	If this is a dimensional shipment detector, then see Item 20.4
E	Final results message reports "system not working."	a) If any announcement and/or alert tones were heard, then inspect the entire movement following the procedures in items 20.1, 20.2, 20.3 and 20.4 as applicable. b) If no announcement and/or alert tones are heard, then inspect the movement only if carrying SPECIAL dangerous and the HBD is noted by ** in the time table. See item 25.0.
F	Speed is 8 MPH or less passing an operating HBD and final results message reports a defect.	Inspect the entire movement following the procedures in items 20.1, 20.2, 20.3 and 20.4 as applicable.
G	Speed is 8 MPH or less passing an operating HBD and final results message reports NO defect.	Inspect the movement only if carrying SPECIAL dangerous and the HBD is noted by ** in the time table. See item 25.0.
H	Defect announced while passing the HBD, but message unclear or in doubt.	Reduce to 10 MPH and listen carefully to the final announcement.
I	Final results message reports defect, but the location is not heard or is in doubt.	Inspect the entire movement following the procedures in items 20.1, 20.2, 20.3 and 20.4 as applicable.

J	No final results message received.	a) If any announcement and/or alert tones were heard, then inspect the entire movement following the procedures in items 20.1, 20.2, 20.3 and 20.4 as applicable. b) If no announcement and/or alert tones are heard, then inspect the movement only if carrying SPECIAL dangerous and the HBD is noted by ** in the time table. See item 25.0.
K	HBD withdrawn from service by GBO/DOB or by Operating Bulletin.	No inspection unless the movement is carrying SPECIAL dangerous and the HBD is noted by ** in the time table. See item 25.0.
L	Incorrect axle count and the final results message reports No defects.	• No inspection unless the movement is carrying SPECIAL dangerous and the HBD is noted by ** in the time table. See item 25.0. • See item 22.0, Incorrect Axle Count.

20.0 ALARM PROCEDURES

20.1 Dragging Equipment

When an alert tone is followed by the announcement "dragging equipment"…	
Step	**Action**
1	Note the DMD reading.
2	Stop the train immediately using good train handling practices.
3	Perform a stationary train inspection. a) If the entire train passes the HBD location before stopping, then locate the defect using the axle count as per item 21.1. b) If the train is stopped before the entire movement passes the HBD, then locate the defect using the noted DMD distance as per item 21.2
Note	Do not pull ahead to a crew member to perform the inspection, unless it is unsafe to walk back. If it is unsafe to walk back, then pull ahead not exceeding 10 MPH to inspect for defect. If the train must be pulled ahead over a facing point switch, do not exceed 5 MPH.

20.2 Hot Box

When an alert tone is followed by the announcement "hot box"…	
Step	**Action**
1	Note the DMD reading.
2	Immediately reduce to 10 MPH using throttle modulation and dynamic brake, and without using the air brakes, if possible. • If a subsequent announcement states "dragging equipment," then stop immediately and follow the procedure for dragging equipment.
3	Observe the train for defects. If the defect is visible from the cab of the locomotive, then stop the train immediately and inspect. (See item 21.2, Locating Defects using Measured Distance.)
4	When the rear of the train has passed the HBD and the final results messages have been reported, stop the train, making every reasonable effort to stop before a facing point switch. • Note: If an inspection point is designated, then proceed at 10 MPH (without stopping) to the inspection point. • Exception: if the final results message reports more than six alarms, stop the train immediately to perform the inspection.
Note	If the final results message reports "No Alarms" then resume speed and proceed without an inspection. (The final message corrects for inaccurate readings of converted plain bearing journals).
5	Perform a stationary train inspection. a) Locate the defect using the axle count as per item 21.1. b) See item 8.0, to test for overheated bearings.
Note	Do not pull ahead to a crew member to perform the inspection, unless it is unsafe to walk back. If it is unsafe to walk back, then pull ahead not exceeding 10 MPH to inspect for defect. If the train must be pulled ahead over a facing point switch, do not exceed 5 MPH.

20.3 Hot wheel

When an alert tone is followed by the announcement "hot wheel"…	
Step	**Action**
1	Note the DMD reading.
2	Immediately reduce to 10 MPH using throttle modulation and dynamic brake, and without using the air brakes, if possible. • If a subsequent announcement states "dragging equipment" or "hot box," then follow the procedure for that alarm.
3	Observe the train for defects. If the defect is visible from the cab of the locomotive, then stop the train immediately and inspect. (See item 21.2, Locating Defects using Measured Distance.)
4	When the rear of the movement has passed the HBD and the final results messages have been reported: • allow a crew member to detrain, and • pull the train ahead, not exceeding 10 MPH, to the hot wheel defect. Exception: If an inspection point is designated, then proceed to the inspection point, not exceeding 10 MPH Slow Speed and perform the inspection. **Note:** If the final results message reports more than six alarms, stop the movement immediately and perform a stationary inspection. It is not acceptable to pull the movement ahead to the defects.
5	Perform an inspection. a) Locate the defect using the axle count as per item 21.1. b) To inspect for the hot wheels, see item 9.2, Hot Wheels (En route).

20.4 Dimensional Shipment

This instruction applies only to HBDs equipped with dimensional shipment detectors, as listed in the time table subdivision footnotes.

When an alert tone is heard without an announcement…	
Step	**Action**
1	Note the DMD reading.
2	Immediately reduce to 10 MPH using throttle modulation and dynamic brake, and without using the air brakes, if possible. • If a subsequent announcement states "dragging equipment" or "hot box," then follow the procedure for that alarm.
3	Observe the train for defects. If the defect is visible from the cab of the locomotive, then stop the movement immediately and inspect. (See item 21.2, Locating Defects using Measured Distance.)
4	When the rear of the movement has passed the HBD and the final results messages have been reported: • allow a crew member to detrain, and • pull the train ahead, not exceeding 10 MPH, to the hot wheel defect. Exception: If an inspection point is designated, then proceed to the inspection point, not exceeding 10 MPH Speed and perform the inspection.
Note	If the final results message reports more than six alarms, stop the train immediately and perform a stationary inspection. It is not acceptable to pull the train ahead to the defects.

21.0 PROCEDURES FOR LOCATING DEFECTS

21.1 Locating Defects using Axle Count

When available, use axle count to locate defects (rather than distance measured using the DMD).

Step	**Action**
1	Note the location of the defects stated in the final results message.
2	**Locate the defects** by counting the actual axles from the front of the movement, beginning with the lead locomotive. • Ensure cars and locomotives with other than four axles are **not** counted as having four axles.
3	**Inspect the train** in the specified location. • If a defect **is found** at or near the indicated location, then inspect both sides of the train for **8 axles in each direction** from the suspected defect. (This helps verify that the defect has been correctly identified.) • If a defect is **not found** at the indicated location, then inspect both sides of the train for **16 axles in each direction** from the indicated location.
4	If any part of the movement passed the HBD at **8 mph or less**, then inspect the entire train for additional defects.
5	**Notify the RTC** of the inspection results and take appropriate action (e.g., make repairs, set off car, etc.).
6	Complete the **reporting requirements**. See: • item 13.0, Reporting Detention or Defects, and • item 14.0, Crew information / Brake status form.
7	If the defect was a suspected **hot box** and **no defect was found**, see item 23.0, No Defect Found - Hot Box.
Note	In some cases, alarms from hot wheel detectors and dragging equipment detectors can only indicate the general vicinity of the alarm, rather than an exact location.

21.2 Locating Defects using Measured Distance

When axle count is unavailable, locate defects using DMD distance measured.

Step	Action
1	Determine the approximate location of the defect by using the: • noted **DMD** distance, and • **train consist or movement information** (e.g., train length 2000 foot indicators, etc.)
2	**Inspect** the movement at the measured location. • If a defect **is found** at or near the indicated location, then inspect both sides of the train for **8 axles in each direction** from the suspected defect. (This helps verify that the defect has been correctly identified.) • If a defect is **not found** at the indicated location, then inspect both sides of the train for **16 axles in each direction** from the indicated location.
3	Inspect the entire train for additional defects.
4	**Notify the RTC** of the inspection results and take appropriate action (e.g., make repairs, set off car, etc.).
5	Complete the **reporting requirements**. See: • item 13.0, Reporting Detention or Defects, and • item 14.0, Crew information / Brake status form.
6	If the defect was a suspected **hot box** and **no defect was found**, see item 23.0, No Defect Found - Hot Box.

22.0 INCORRECT AXLE COUNT

When a HBD reports an incorrect Axle Count

Step	Action
1	Advise the RTC of the incorrect axle count and arrange to verify train consist or journal information. • If the train is carrying an additional car or cars and any of these are dangerous goods cars, then arrange for a radio waybill (section 13, item 4.2). • If any of these additional cars are SPECIAL dangerous, then the inspection requirements at HBDs indicated by a double asterisk (**) in the time table apply (item 25.0).
2	Use the defect Form (or any other appropriate form) to record the correct information.
3	If the train has **placarded cars**, then update the train consist to show the correct position of all placarded cars. (See section 13 item 4.0.)
4	If the train has SPECIAL dangerous, then see item 25.0.
5	Communicate the correct information to the outbound conductor, and RTC.

23.0 NO DEFECT FOUND - HOT BOX

Whenever a car or engine is identified by an alarm for the defect "hot box" at the same axle location twice within 75 miles and there is no apparent reason for the alarms, that car or engine must be set off at the designated set-off point.

Important: At crew-change points, leave the relieving crew a copy of defect form and Crew information / Brake status form for any car or engine remaining on the movement that was identified by a "hot box" alarm within 75 miles of the crew change point.

24.0 PASSING OCCUPIED SERVICE EQUIPMENT CARS

In the event that a car or engine is identified by a "hot box" alarm and no defect is found;
Such train or engine is restricted to a maximum of 10 MPH while passing occupied service equipment cars as identified by GBO, until passing the next operational detector with no "hot box" alarm.

25.0 SPECIAL DANGEROUS AT DOUBLE ASTERISK (**) OR FOR GATEWAY INSPECTION

HBD - Mandatory Inspection

HBD identified in the time table by a double asterisk (**) indicate mandatory inspection points for trains carrying SPECIAL dangerous commodities. **Note:** the HBD must report a complete and accurate inspection.

A. If a movement carrying SPECIAL dangerous commodities passes a HBD identified with a double asterisk and:
- The HBD is withdrawn from service,
- The HBD reports "System Not Repeat Not Working" or is otherwise known to be inoperative,
- Any part of the movement passes the HBD at 8 MPH or less,
- No message is received, or
- The HBD reports incorrect axle count and system reports No alarms then inspect the train within one mile of the mileage shown in the subdivision footnotes.

B. Perform the inspection:
- On both sides,
- From the front of the train to and including eight axles behind the last full carload, container load, or trailer load of a SPECIAL dangerous commodity,
- At a speed not exceeding 5 MPH.

C. The inspection can be performed by:
- Mechanical department inspectors,
- Crews of standing movements,
- A pull-by inspection by crew members, or
- A standing inspection.

26.0 REPORTING DEFECTIVE HBDS

A. Notify the RTC when a HBD:
- Transmits a message to "inspect the entire movement;"
- Does not transmit any messages;
- Transmits an improper message;
- Transmits a message difficult to hear or understand;
- Transmits the message "system not repeat not working;"
- Total axle count does not appear to be correct; or
- Reports a defect, but upon train inspection there is no defect found.

B. Include appropriate details such as:
- HBD location,
- defect axle number,
- suspect car number,
- train direction,
- side of the movement, and
- type of defect reported by the HBD.

C. The RTC must report this information to the appropriate S&C.

27.0 HOT AND COLD WEATHER TEMPERATURE SPEED ZONES

Note: Cold Weather Temperature Speeds do not apply to passenger trains.

A. During extreme hot and cold weather, movements are governed by specific speed restrictions. The speed restrictions / zones, and specific hot & cold temperature ranges are specified by GBO and/or Summary Bulletin (SB).
- When specific whole miles are indicated in the GBO/SB, the speed restrictions only apply between the mileages stated.
- The HBD temperature announcement prior to the mileages stated, or as determined by thermometer, will govern speed until the next HBD transmission.
- When no specific mileages are indicated in the GBO/SB, the speed restriction applies to the entire subdivision, unless or until otherwise indicated.

B. The conductor must:
1. Record the temperature on the Crew information / Brake status form (Other important information to subsequent crews section).
2. Advise the RTC when a Hot or Cold weather speed restriction goes into effect and when it is terminated
3. Transfer this information to the relieving crew, when applicable.

C. When leaving an initial station or crew change point while extreme Hot or Cold weather temperature is suspected, determine the outside ambient temperature:
- Using an outside thermometer, or
- As indicated on the Crew information / brake status form.

If in doubt as to the outside ambient temperature, the speed restriction applies.

28.0 WHEEL IMPACT LOAD DETECTORS (WILD)

Wheel Impact Load Detectors (WILD) measure excessive wheel impact on rail and identify defective cars using AEI car tag IDs. The WILD transmits the information to a central location. Train crews do **not** hear a tone or a message. When a defective car is identified, the RTC relays instructions to the crew (e.g., speed restriction, set off location).

It is important to set off the car specified by the RTC, because serious defects may not be heard, visible, or otherwise identifiable by train crews. (e.g., A wheel out of round, with no associated sound, may create a greater rail impact than a skidded wheel that is audible.)

29.0 BRAKE PIPE RUN-AROUND HOSE

29.1 Mechanical Services Responsibility

When a brake pipe run-around hose is applied to a car, the Mechanical Services employee in charge must:

A. Secure the uncoupling levers and render them in-operative.

B. Arrange to have an appropriate message generated on the train consist advising train crews that the applicable car cannot be uncoupled from an adjacent car account run-around hose applied.

For example, the message would say:

****

WARNING DO NOT UNCOUPLE FROM CAR CP 123456 ACCOUNT BRAKE PIPE RUNAROUND HOSE APPLIED. UNCOUPLING LEVERS RENDERED INOPERATIVE

****

29.2 Conductor Record Keeping

The conductor must record this information on the Crew information / brake Status form or other appropriate form for the outbound train crew and at the car's destination, advise the Supervisor responsible.

29.3 Handling Restrictions

A. Non-sensitive traffic: Set off the car for repair at the next repair point reached enroute to destination.

B. Cars with brake pipe run-around hose are captive and must not interchange with another railway;

29.4 Destination or Repair Point - Car Setoff

1. Before uncoupling brake pipe run-around hose gladhands, ensure the brake pipe pressure is 0 psi.
   - Trains equipped with an SBU - The locomotive engineer must activate the TIBS emergency feature.
   - Trains **not** equipped with an SBU - The locomotive engineer must make an emergency brake application using the automatic brake valve.
2. Part brake pipe glad hands by hand. It is prohibited to "pull the pin" and allow the hoses to part by car/locomotive movement.
3. After hoses are parted, attach any excess length of run-around hose securely to the car body.
4. Advise the responsible supervisor that the brake pipe run-around hose is no longer in use.

SECTION 6- AIR BRAKE TEST AND PROCEDURES

1.0 GENERAL INFORMATION

1.1 Purpose

These test procedures are intended to ensure the safe operation of brakes on all locomotives, freight trains, and passenger trains operating in Canada. These instructions are in compliance with *Transport Canada's Railway Freight and Passenger Train Brake Rules*.

1.2 Responsibility

Unless otherwise specified, the conductor and/or locomotive engineer are responsible for determining that the required brake test has been completed prior to departure.

1.3 Observe Locomotive Gauges

Brakes will be operated from the lead locomotive.
All air gauges and displays should be observed with sufficient frequency to know that pressures are as required. Should air flow and/or brake pipe gradient increase and continue beyond the limits established in the test procedures, the train crew must take corrective action.

1.4 Definitions

"automatic brake handle" - the handle, push/pull button, rotary knob or other device used to control the application and release of the automatic brake.

"block of cars" means two (2) or more cars that have previously received a No.1 or No.1A brake test, as a solid coupled block, for which a record (Brake Status) is available.

"block swap" means the addition to a train of a maximum of two (2) solid coupled block(s) of cars that have previously received a No.1brake test.

"brakes" means pneumatic (air) or electronically controlled pneumatic (ECP) brake systems.

"calibrated" - an indication on the Air Flow Indicator at a position that corresponds to a flow of air into the brake pipe of 60 cubic feet per minute (cfm).

"certified car inspector" - a mechanical services employee who has been trained and certified to inspect and repair car brake equipment.

"continuity" - having the capability to transmit a brake signal between the leading locomotive and the rear of the last piece of equipment of a train.

"integrity" - having the unimpaired capability to supply air to the rear of the last piece of equipment of a train.

"locomotive" - any on-track equipment intended for propulsion and/or control of freight, passenger, or service equipment and includes locomotives coupled in a consist for multiple operation.

"operative" - the brakes on a car or locomotive apply and release and are in suitable condition to retard and stop that equipment.

"person in charge" - a person appointed by the Company to ensure the safe conduct of a railway operation, and who is certified according to the appropriate Transport Canada Rules.

"qualified person" - a person who has the knowledge, training, and experience to perform a specific duty safely and properly. Train crews are qualified to perform certain brake tests and to perform pre-departure and pull-by inspections.

"safety inspection" - a stationary examination of a locomotive or car for safety defects by a person who is certified or qualified according to the appropriate Transport Canada Rules, to verify that it may move safely or to identify defects which require correction.

"safety inspection location" - a location designated by the Company, and recorded with Transport Canada, where persons are employed for the purpose of performing safety inspections on cars and/or locomotives.

"terminal area" - a location that includes one or more yards together with the tracks connecting the yard or yards and industries within that area.

"Positive Reduction": an application of the train brakes creating a minimum of a 6 PSI brake pipe reduction in the rear car as indicated on the IDU.

"Positive Release": a release of the train brakes creating a minimum of a 3 PSI. increase in the brake pipe of the rear car as indicated on the IDU

"Full Service Application": brake pipe reduction of at least 25 PSI.

2.0 LOCOMOTIVE BRAKE TEST

2.1 Perform a locomotive air brake test when:

- A locomotive has been:
  - placed into service after maintenance,
  - repaired,
  - altered by adding a locomotive, setting off a locomotive from the middle of the consist, or changing operating ends. (A locomotive brake test is not required when setting off the trailing locomotive(s) in a consist.)

A locomotive engineer takes charge of a locomotive, except when changing off with another locomotive engineer, or as provided in 2.2 below.

2.2 Locomotive Brake Test Information

If locomotive brake tests are performed by qualified persons other than the locomotive engineer, then prior to departure, the locomotive engineer must confirm the brake test was completed by obtaining the results:

- in writing (on the appropriate form),
- in person, or by radio from a person who has immediate access to the test results.

If the results of the brake test are made available to the locomotive engineer, and if the locomotive has not been placed in active service, then another brake test is NOT required, regardless of time elapsed. If the results of the brake test are NOT made available, then the locomotive engineer must perform the brake test.

2.3 Locomotive Brake Test Procedure

1. Ensure the locomotive is protected from unintended movement.
2. Place the automatic brake handle in the release position for at least 2 minutes, to ensure the locomotive air brake system is sufficiently charged.
3. Fully release the independent brakes.
4. Make a 15 psi brake pipe reduction and release the locomotive brakes by depressing the independent brake handle (bail) for at least 5 seconds for each locomotive in the consist.
5. Make a further brake pipe reduction (Full Service) and then release the automatic brake
6. Fully apply the independent brakes.
7. Test the operation and recovery of the Safety Control System, except when adding a trailing locomotive(s).

Note: A qualified person must be positioned on the ground to observe that all brake pistons extend and retract as intended on the locomotives being tested.

2.4 Distributed Power (Distr Pwr): Remote Locomotive Air Brakes

To verify the brakes on the remote consist(s) are functioning as intended, observe the decrease and increase of the remote consist(s) brake cylinder pressure on the controlling locomotive's Distr Pwr screen. It is not necessary for a qualified person to be positioned at the remote consist(s) to observe brake pistons.

3.0 RSC (SAFETY CONTROL SYSTEM)

3.1 Locomotive Safety Control System and Test Procedure

Every controlling locomotive must be equipped with an operative safety control system capable of initiating a full service brake application and removing all tractive effort in the event that the locomotive engineer becomes inattentive or incapacitated.

A controlling locomotive must be equipped with a reset safety control (RSC).

Test Procedure

1. Ensure the locomotive is protected from unintended movement.
2. Ensure the safety control valve or switch is cut-IN and sealed.
3. Initiate a penalty brake application by placing the automatic and independent brake handles in release position.
4. Ensure the audible alarm and warning lights (RSC) or warning whistle (safety control foot pedal) is functioning.
5. Ensure the PC, PCS, or Power Off indicator light illuminates.
6. Ensure equalizing reservoir pressure reduces to zero.
7. Recover Penalty brake application.

3.2 Movement with a Defective Safety Control System: Road Locomotives

A movement must not depart an initial terminal or regular crew change location with a defective safety control system on the controlling locomotive.

Note: The Safety Control System on a locomotive is considered defective, when the activation of the RSC fails to initiate a penalty brake application as required.

The safety control cock or switch must be cut-IN at all times, except for enroute malfunctions. Any practice or action which otherwise interferes with the normal and proper functioning of this equipment will be considered a dismissible offence.

If the safety control system completely malfunctions while enroute (e.g., non-recoverable penalty brake application), then the locomotive engineer must:

1. Immediately notify the RTC and the immediate supervisor of the situation and record the defect on the engine defect report.
2. On locomotives equipped, cut out the Safety Control cock or switch.
3. Proceed to the first location where the controlling locomotive can be exchanged another locomotive with an operative RSC.
4. In the event that an exchange locomotive is not available, the movement may proceed to the next regular crew change location and must not proceed beyond that point until the safety control system has been repaired or the defective locomotive replaced.

3.3 Defective Locomotive Event Recorder

If it is determined by the Mechanical Service's Employee that the event recorder has failed on a controlling locomotive, be governed by item 3.2 (e.g., defective Safety Control Systems on road locomotives).

4.0 LOCOMOTIVE AND YARD TEST PLANT AIR PRESSURE SETTINGS

4.1 Brake Pipe Pressure

Standard brake pipe pressure with automatic brake handle in release position:

- For passenger service is 100 psi.
- For freight service is 90 psi.
- Yard test plant is 75 psi.

Specific trains or territories may require brake pipe pressure to be set higher or lower than standard.

4.2 Main Reservoir/Brake Pipe Pressure Differential

With the automatic brake handle in release position, main reservoir pressure must be at least 15 psi higher than locomotive brake pipe pressure.

4.3 Independent Brake Cylinder Pressure

With the independent brake handle in full application position, brake cylinder pressure must be set to the pressure posted in the locomotive cab.

4.4 Equalizing Reservoir / Brake Pipe Pressure

The maximum variance between equalizing reservoir and locomotive brake pipe pressure is 3 psi with the automatic brake handle in the release position.

4.5 En-route Brake Pipe Pressure Requirements

When automatic brake handle is in the release position, other than during intended brake application and/or release activity.

On **Conventional Trains**, if brake pipe air flow exceeds 60 CFM or brake pipe gradient (between lead locomotive and rear car) exceeds 15 psi,

On **Distr Pwr trains**, if combined air flow to the brake pipe exceeds 90 CFM and/or more than 60 CFM at any one locomotive consist on the train.

Corrective action must be taken if the flow or gradient do not return to acceptable limits within a reasonable period of time. This may include stopping the train at the next available location and inspecting for leaks.

5.0 TRAIN BRAKE TESTS

Note: A freight train having received a No.1 or 1A brake test may only depart a terminal if:

A. The train line brake pipe pressure on the tail end of the train is within fifteen (15) psi of the locomotive brake pipe pressure, and,

B. Air flow to the brake pipe does not exceed sixty (60) cubic feet per minute, as indicated by the flow indicator or brake pipe leakage does not exceed five (5) psi in sixty (60) seconds**.**

C. **Distr Pwr Trains Only** – combined air flow to the brake pipe does not exceed ninety (90) CFM and no more than 60 CFM at any one locomotive consist on the train, as indicated by the flow indicator. Brake pipe pressure must be within 15 psi of standard operating pressure. Distr Pwr trains with air flow greater than 60 cfm must use the Air Flow Method only, (leakage test not allowed).

5.1 Brake Test Overview

Follow the train air brake test procedure described in 5.2, and 5.3 to complete each of the brake tests outlined below. Please refer to the detailed instructions for each of these train air brake tests on the next pages.

Test--	**Item --**
No 1--	6.0 --
No 1-A --	7.0 --
Continuity --	9.0--
Transfer --	15.3--

Note: If an emergency brake application occurs while performing any of the above brake tests, then consider the test unsuccessful. The brake test must be repeated until a service brake application applies properly (without going in emergency).

5.2 Before performing a train brake test complete the following steps:

1. Properly position all cocks and valves.
2. Couple the brake pipe air hoses.
3. Release hand brakes unless required because of grade.
4. Ensure the rear car is charged to within 15 psi of locomotive brake pipe pressure.
5. If using the Air Flow Method, the Air Flow Indicator must be calibrated. (Indicator at or below 60 cfm total of all flows not to exceed 90 CFM on Distr Pwr tains).

5.3 Train Brake Test Procedure: Air Flow Method

The Air Flow Method is the preferred Train Brake Test Method. To use this method, the controlling locomotive must:
Be equipped with an EPIC or CCB electronic brake controller or 26L or equivalent brake equipment,
Have an operative Air Flow Indicator.

1. When a signal is given to apply the brakes, make a full service brake pipe reduction.
2. When a signal is given to release the brakes, release the automatic brake.
3. Report the train brake test results to the conductor or locomotive engineer.

5.4 Train Brake Test Procedure: Brake Pipe Leakage Method

Note: Use this method only if the Air Flow Method cannot be used.

Step Description
1. When a signal is given to apply the brakes, make a 15 psi brake pipe reduction.
2. When exhaust ceases, wait 60 seconds.
3. Cut-out the automatic brake. Wait 60seconds.
4. Note brake pipe pressure. Wait 60 seconds.
5. Note brake pipe pressure again. Pressure drop must not have exceeded 5 psi.
6. Reduce equalizing reservoir pressure 3 psi below brake pipe pressure.
7. Cut-in the automatic brake.
8. Make a full service brake pipe reduction.
9. When a signal is given to release the brakes, release the automatic brake.
10. Report the train brake test results to the conductor or locomotive engineer.

5.5 Use of TIBS

On trains equipped with TIBS, the decrease and increase of rear car brake pipe pressure as displayed in the controlling locomotive cab will provide an indication of the application and release of the air brake on the rear car and of continuity between the locomotive and the rear car.

5.6 Inspecting for Brake Release

To determine if the brakes are released, either a standing inspection, or a pull-by inspection at a speed not exceeding 5 MPH is acceptable. When a pull-by inspection is performed, radio communication with the locomotive engineer must be maintained. The locomotive engineer must be advised of the results of the inspection.

Report the train brake test results to the conductor or locomotive engineer.

6.0 NO 1 BRAKE TEST

6.1 No 1 Brake Test:

- Is performed by a certified car inspector;
  - Where a train is made up or on cars added or interchanged at a safety inspection location,
  - And while enroute at any subsequent safety inspection location(s) designated for that train.
- Verifies the integrity and continuity of the brake pipe.
- Verifies piston travel and the condition of brake rigging on each car in the train.
- Verifies the application and release of air brakes on each car in the train.

Exception: A No 1 brake test is not required on:

Trains operating over main tracks, between yards, up to a maximum of a thirty (30) mile radius, which are engaged exclusively in the setting off or lifting of equipment at industry(s), and/or the transfer of equipment between yards.

6.2 If a train is made up at other than a safety inspection location, a No 1 brake test will be performed at the first safety inspection location designated for that train.

6.3 At locations where a No 1 brake test has been performed, the conductor or locomotive engineer, is responsible to ensure that the brake status information for that train is recorded on the Crew to Crew Form. The results of this brake test may be obtained in writing, in person, or by radio from a person who has immediate access to the test results.

6.4 Perform the No 1 Brake Test following the procedures described in items 5.2 and 5.3.

7.0 NO 1-A BRAKE TEST

7.1 No 1-A Brake Test:

Is performed by a qualified person(s):

- Where a train is made up at other than a safety inspection location.
- When an en-route train is extensively switched, except where solid blocks of 2 or more cars are re-marshalled within the same train.
- At an interchange location when Train Brake Status records are not available.
- When cars which have not been previously tested are added to a train.
- On trains operating over main tracks, between yards, up to a maximum of a Thirty (30) mile radius, which are engaged exclusively in the setting off or lifting of equipment at industry(s), and/or the transfer of equipment between yards.
- Verifies the integrity and continuity of the brake pipe.
- Verifies the application and release of air brakes on each car in the train.

7.2 Perform the No 1-A Brake Test following the procedures described in items 5.2 and 5.3.

8.0 CARS BRAKE TESTED PRIOR TO ADDING TO A TRAIN

8.1 No 1A Brake Test is not required on blocks of cars lifted en-route that have:

- Previously received a No.1 brake test; and/or previously received a No.1A brake test at that location within twenty-four (24) hours of the lift.

Note: In both circumstances the brake status information must be received.

Cars Brake Tested Prior to Adding to a Train

When it is required to perform a brake test on cars before adding them to the train and it is not possible to determine brake pipe pressure on the last car being added, the brake test may be performed when:

- The last car being added has had the air cut in for at least 5 minutes, AND
- It is verified that the Air Flow indicator is calibrated. After the cars are placed on the train, a **Continuity Test** must be performed before proceeding.

9.0 CONTINUITY TEST

9.1 Continuity Test

Is performed by a qualified person(s) when:

- Solid block(s) of coupled cars which have received a No 1 or No 1A brake test are added to a train.
- The controlling locomotive has been attached to a train which has received a No 1 or No 1A brake test.
- The locomotive consist has been exchanged or altered.
- The locomotive engineer has been changed.
- Controlling ends of a locomotive consist or a push-pull train operation have been changed.
- Verifies the capability to transmit a signal between the leading locomotive, to the rear of the last piece of equipment on the train.

9.2 When the brake pipe has been uncoupled to set off cars or the trailing locomotive(s) in the consist, and when cars or locomotives have not been added to the train, it is only necessary to recouple the brake pipe and establish brake pipe continuity (e.g. air rising on last piece of equipment).

9.3 A locomotive engineer must perform a brake pipe continuity test immediately prior to leaving if:

- The train does not leave the terminal immediately upon completion of the brake test,
- Stops are made and there is public access to the train,
- Public crossings are blocked,
- Any time that brake pipe continuity is suspect.

9.4 Continuity Test Procedure:

Step Description
1. Make at least a 15 psi brake pipe reduction and ensure that brake pipe pressure has decreased at the rear of the train. 2. Wait for the exhaust to cease.
Note: On Distributed Power trains, the remote brake valve/feed valve(s) must be cut out prior to releasing the automatic brake.
3. When ready to proceed, release the automatic brake. 4. Ensure that brake pipe pressure is increasing at the rear of the train. 5. Train may be started after the brakes release. **Note :** When performing a crew change continuity test, the inbound engineer performs Steps 1, 2 and the note and the outgoing engineer performs steps 3, 4 and 5. Integrity must be confirmed.

10.0 BRAKE PIPE CONTINUITY TEST (ECP TRAINS)

10.1 Although the ECP system has safeguards built in to protect continuity, the following test can be used to confirm brake pipe continuity through the train.

10.2 Continuity Test Procedure for ECP Trains:

Step Description
1. Command a full service brake application (100% TBC) and note the slight drop in brake pipe pressure at the rear of the train.
Note: On a Wired Distributed Power train, the Feed Valve(s) must be cut-out on the remote(s) prior to commanding the full service brake application.
2. When the main operating screen indicates that Train Brake Effort (TBE) reaches 85% or greater, then release the brake immediately (0% TBC). 3. Look for the rise of brake pipe pressure on the EOT. 4. On Wired Distributed Power trains feed valve(s) on the remote(s) can now be cut in.

11.0 RUNNING BRAKE TEST

11.1 A running brake test must be made on all trains prior to descending grades of 2 percent or greater and at locations specified in special instructions.

11.2 Running Brake Test Procedure

Step Description
When the speed of the train permits, apply the train brakes with sufficient force to verify the brakes are operating properly. The locomotive brakes should not be allowed to apply at this time. If the brakes do not operate properly, immediately stop the train, determine and correct the cause of failure, then repeat the running brake test.

12.0 SNOW PLOW BRAKE TEST

Following the appropriate train brake test, and before starting a snow plow operation, an emergency application of train brakes must be obtained from the operator's cab of the snow plow.

13.0 BLOCK SWAPS

13.1 A maximum of two (2) solid coupled block(s) of 2 or more cars removed from a train may be added to another train, or CUT INTO the same train, with only a Continuity test, provided that:

Item Condition

1. Each block of cars being added has:

- Received a No 1 brake test at a prior location, and
- Remained coupled together, and
- Been off air for less than 24 hours (48 hours with notification to TC)
- Train brake status information that includes:
  - date
  - location
  - number of cars previously tested with a No 1 brake test
  - car number and location of any car in the block with inoperative brakes

2. The conductor or locomotive engineer must:

- Receive the train brake status information for those cars being added (in writing or verbally), and
- Update the train brake status information on the Crew information / brake status Form.

14.0 TRANSFER MOVEMENTS

14.1 Transfer Brake Test

A brake test is NOT required for transfer movements, providing:

- Prior to departure, the locomotive engineer, or the RCLS operator must verify that there is sufficient braking effort to control the transfer, confirmed by a running test as soon as possible.
- Except where block signals provide protection, transfers must have air applied throughout the entire equipment consist and the last three cars, if applicable, must be verified to have operative brakes.

IMPORTANT: Transfers carrying dangerous goods MUST have air cut-IN throughout the equipment consist, without exception.

15.0 MOVEMENT OF CARS AND LOCOMOTIVES WITH INOPERATIVE BRAKES

15.1 Cars and locomotives with inoperative brakes may be moved in trains for the purpose of unloading or for repair if all applicable parts of this section are complied with.

Prior to departure, the conductor or locomotive engineer must be notified of any inoperative car or locomotive brakes, and their location.
Inoperative brake information must be recorded on the defect Form.

15.2 To calculate the percentage of operative train brakes, include both locomotives and cars.

15.3 Safety Inspection Locations - 95 percent operative brakes

A. When a train is made up at a safety inspection location, it must have 95 percent operative train brakes.
B. Cars permitted to depart from a safety inspection location with inoperative brakes, may be moved only for unloading or for repair.
C. When cars are added to a train at a safety inspection location, the train must not depart unless a minimum of 95 percent of the brakes on those cars added are operative.
D. When it is impractical to comply with the 95 percent requirements, trains of 18 cars or less may leave a safety inspection location with no less than 85 percent operative brakes. Appropriate actions must be taken to ensure safe operation (e.g., reduce speed).
E. Cars or locomotives with brakes inoperative due to damage may be moved in a train with less than 95 percent operative brakes when authorized by a person in charge who will ensure that appropriate measures have been taken to move such equipment safely.

Trains destined for the USA must have 100 percent operative brakes on all cars unless being move for repairs and properly tagged by a qualified mechanical inspector. (ABTH 100.4)

15.4 Locations other than Safety Inspection Locations - 85 percent operative brakes

A freight train must not be operated with less than 85 percent of train brakes operative, except as provided in item 2 below.

1) Cars or locomotives with brakes inoperative due to damage may be moved in a train with less than 85 percent operative brakes when authorized by a person in charge who will ensure that appropriate measures have been taken to move such equipment safely.
2) A passenger train must not be operated with less than 85 percent of train brakes operative, unless an appropriate reduction in train speed, as determined by the locomotive engineer, is made.

15.5 Locomotives with inoperative brakes:

The lead locomotive must have operative brakes at all times.

The air brake system of all trailing locomotives must be cut-IN so as to respond to the operation of the automatic brake and independent brake in the controlling locomotive, except when a locomotive with inoperative brakes is being moved for repair.

The locomotive engineer must be advised prior to departure when a locomotive in the consist has inoperative brakes.

When a locomotive in a consist has inoperative brakes, the locomotive engineer must take appropriate measures to ensure safety of movement.

No more than 2 locomotives with inoperative brakes may be handled in a locomotive consist. (They may be coupled together.)

15.6 Cars with inoperative brakes:

Cut-out the brakes on all cars or trucks, where appropriate. (Complete defect Form.)
No more than 2 cars with inoperative brakes may be coupled together, except in the case of item 3 below.

1) Multi-platform articulated cars must not be operated with more than 2 consecutive control valves cut out. (typically 3 control valves on a 5 platform car).
2) The rear 3 cars (cars, equipment or locomotives) of a freight train must have operative brakes, except:
3) A 2 axle scale test car without brakes may car of the train and it is coupled to cars be moved in a freight train provided it is placed ahead of the rear with operative brakes.

   Other test cars (e.g. Track Evaluation Cars) may be moved at the rear of a Freight train for test purposes, provided it is coupled to a car with operative brakes.

Note: on cars of articulated or permanently coupled multi-platform design, at least fifty (50) per cent of the control valves must be operational for car to be considered as having operational brakes.

In accordance with company procedures, the person in charge may move cars or locomotives with inoperative brakes, due to damage enroute, at the rear of the train when no other option exists.
The rear car of a passenger train must have operative brakes on one truck.
Railway equipment which is designed without brakes may operate in a freight train.

16.0 RECORDING THE TRAIN BRAKE STATUS

16.1 Train Brake Status following No 1 or No 1A Brake Test

Crews will receive the results of a No 1 brake test verbally or will receive a copy of the Train Brake Status form from the file and immediately record these results in the Crew information /brake status form.

The conductor must record the following information on the Crew information/brake status form in the Grey Box: Date, Conductor or Carman's Name, Train ID, Location, Number of cars on the train, "OK" or any exceptions.

16.2 Updating the Train Brake Status

Prior to arriving at each crew change point or terminal enroute, the conductor must update the Crew information /brake status Form, indicating the date, conductor's name, train ID, name of crew change point or terminal, number of cars on the train, "OK" or any exceptions noted. The originating crew who has recorded the results of the No 1 or No 1A brake test, in the Grey Box, is also required to record brake status when the train arrives at the next crew change point or terminal. All other crews must ensure brake status is updated and recorded, prior to delivery at the next crew change point or terminal, regardless if any changes have occurred.

The original and subsequent Crew information /brake status form(s) must remain with the train to destination. The Crew information /brake status form(s) must be kept current and updated prior to delivery at the next crew change point or terminal. (i.e. when picking up and setting out cars en-route) On arrival at the final destination the original and subsequent Crew information / brake status form(s) must be submitted and retained for a period of thirty (30) days.

16.3 Train Brake Status Lost En-route

If the record of Train Brake Status is not available at a crew change point, and if the incoming crew cannot be contacted to verbally provide train brake status, then a No 1 or No 1A brake test must be performed before the train may proceed. This information must be recorded in the Grey Box.

17.0 TRAINS FOR INTERCHANGE

17.1 Entering the USA from Canada

Trains which are destined for the United States of America (USA) must have 100 percent operative brakes upon departure from the latter inspection location. No train may be operated into the USA at any time with less than 85 percent operative brakes. Cars destined for the USA with inoperative brakes or any other identified safety defects must not be moved past the next location where repairs of that type can reasonably be made.

A Crew information / brake status form, complete with train brake status information should be made available for train crews receiving trains from Canada.

17.2 Entering Canada from the USA

When a train enters Canada from the USA and is accompanied with train brake status information which verifies that a prior initial terminal brake test has been performed on that train, then a No 1 or No 1A brake test is not required. In this case, a Continuity test must be performed.

The train brake status information received at interchange must be transferred to Crew information / brake status form and continue to be maintained and updated as required.

If the necessary train brake status information does not accompany the train, then a No 1 or No 1A brake test must be performed.

17.3 Trains Interchanging within Canada

When a train is received from another railway within Canada and is accompanied with train brake status information, then another No 1 or No 1A brake test is not required. In this case, a Continuity test must be performed.

The train brake status information received at interchange must be transferred to on the Crew information / brake status form and continue to be maintained and updated as required.

If the necessary train brake status information does not accompany the train, then a No 1 or No 1A brake test must be performed.

A Crew information / brake status form, complete with train brake status information should be made available for train crews of other railways receiving trains.

SECTION 7 – HAND BRAKE INSTRUCTIONS & PROCEDURES

1.0 GENERAL INFORMATION

Unless otherwise specified by special instructions, the following instructions apply in the application of CROR Rules 62 and 112.

2.0 LEAVING EQUIPMENT UNATTENDED

(i) Single car must ALWAYS be left with the hand brake applied.
(ii) When leaving three or less cars unattended, apply hand brakes to all cars.
(iii) When leaving more than three cars unattended, refer to the handbrake chart in item 3.0 A. (i) or to CROR rule 112 (k)**.**
(iv) Never leave a car with a defective hand brake by itself. It must be coupled to another car with an effective hand brake.
(v) Individual blocks of cars must be secured with hand brakes on each block.
(vi) Where practicable, hand brakes must be applied on the cars which are at the low end of a downward sloping track.
(vii) When leaving equipment in a track equipped with a derail, it should be left as close as practical to the derail (between 50 and 100 feet). This does not include cars which have been spotted for loading/unloading, repair or cars being handled while switching. Operating Rules which govern proximity to public crossings at grade still apply.
(viii) Effectiveness of the hand brakes must be performed as per CROR rule 112 (e) (ii).

Note: If the result of testing the effectiveness of the hand brakes applied indicates hand brakes are not sufficient, additional hand brakes must be applied and redo a test.

3.0 LEAVING EQUIPMENT UNATTENDED – IN A YARD AND NON-MAIN TRACK AT OTHER THAN SIDING, SUBDIVISION TRACK OR HIGH RISK LOCATION

A. Leaving Equipment Unattended;
Apply a sufficient number of hand brakes according to Hand Brake chart.

(i) **Hand Brake Chart - Yard and Non-main track at other than Siding, Subdivision track or High risk location**

Numbers	Minimum Handbrakes Required
1	1
2	2
3 to 29	3
30 to 39	4
40 (or more)	5
On track with grades of 0.6% equal to or greater, unless protected by an additional physical securement measure, the minimum number of handbrakes required will be determined based on "Minimum Handbrakes Chart for Securing Equipment or Movement Left Unattended" **(CROR 112).**	

(ii) In the application of (2.0), the numbers of hand brakes on locomotives in the lead consist are not to be included in the required number of handbrakes.
(iii) There may be situations where all hand brakes must be applied.

(iv) On Yard and Non- Main Track at other than Siding, Subdivision track or High risk location, special instruction will specify when the number of hand brakes is less than item (i) but not less than 3 hand brakes.

B. Switching and Handling Equipment – In aYard and Non- Main Track at other than Siding, Subdivision track or High risk location

When actively switching the three hand brake minimum referred to in item 2.0 A. (iii) may be reduced. At least one hand brake must be applied and tested to prevent movement when all brakes are released. When switching is completed and leaving the area, comply with item 2.0 A. (i.e. finish with the track, switching at the other end of the track or spotting a costumer, etc…).

4.0 HAND BRAKE APPLICATION PROCEDURES

A. When securing cars handled with air, always reduce brake pipe pressure by at least 20 psi before applying hand brakes. Apply 3 step protection and ensure that the slack has adjusted on cars.

***** Do not attempt to bleed a car off with SERVICE brake applications in effect as this can trigger an undesired air brake release of all other cars*****

B. When applying a hand brake, it must be applied fully.

C. Under winter conditions ensure braking surfaces are free of ice and snow.

5.0 WRECK DAMAGE EQUIPMENT

When hand brakes have been damaged due to derailment or mishap, it may be necessary to secure equipment with wheel chocks or chains. In these cases employees will be governed by the supervisor.

6.0 RELEASING HAND BRAKES

A. Hand brakes have the ability to provide far more brake shoe force than the air brakes; therefore to avoid damage to wheels, hand brakes must be FULLY RELEASED before moving car(s).

B. When releasing a hand brake, it may be determined that it is properly released by ensuring that the bell crank has dropped and that the vertical rod and chain are slack.

> **Note:** Do not depend on brake shoes being clear of the wheels as on many cars the hand brake applies on the "B" end only.

C. Hand brakes must not be released from cars or trains left standing on a grade until the train air brake system has obtained its fully charged state, unless movement can be prevented with locomotive brakes.

7.0 SEPARATION OF EQUIPMENT (I.E. SET OFF ENROUTE)

A. Before Closing the angle cock on the portion to be moved:

(i) Make a service application sufficient to prevent train movement.

(ii) The service exhaust must stop blowing at the automatic brake.

(iii) Advise the crew member when it is OK to close the angle cock on the portion to be moved.

** On trains equipped with TIBS:

- The crew member must advise the locomotive engineer when the angle cock has been closed, and then
- the locomotive engineer must activate the TIBS emergency braking feature.

B. The standing portion must be left in EMERGENCY with angle cock FULLY OPEN.

Crew members are responsible to inquire and confirm with each other that the standing portion has emergency brakes applied. The FULLY OPEN angle cock may be subsequently closed only when:

(i) The angle cock is FULLY OPEN on opposite end of the equipment, or

(ii) A locomotive is coupled on opposite end of the equipment, or

(iii) The equipment has been secured with hand brakes in accordance with CROR 112.

C. In the application of this instruction, hand brakes may be applied near the head end of a train, regardless of low end or high end of a particular grade.

D. When equipment is left unattended on the main track, after the equipment has been properly secured as required by CROR 112 and GOI section 7, except when an immediate set out or lift is performed, the crew must notify the RTC of the number of handbrakes applied and confirm that their effectiveness has been verified as required. This instruction applies also to unattended equipment left on a subdivision track and on a siding.

8.0 MINIMUM HAND BRAKE REQUIREMENT

When unable to Test Effectiveness (I.E. Broken Drawbars on Light, Heavy and Mountain Grades)

Unless otherwise specified in Time Table subdivision footnotes or special instructions, if it is not possible to test hand brake effectiveness on equipment left unattended, hand brakes must be applied immediately as required by the Number of Hand Brakes for Securing Equipment or Movements Left Unattended chart, by going one step above the column grade associated for the movement **(CROR 112).**

On mountain grades of 2.0 % and higher, apply hand brakes on 100% of the cars.

9.0 VENTED BRAKE PIP ANGLE COCK

Many leased and foreign locomotives are equipped with a "vented brake pipe angle cock". When closed, the vent will drain brake pipe pressure in the brake pipe hose. This can cause problems when uncoupling, because if brake pipe has already been vented to 0 psi, then the standing portion cannot be placed in emergency. When leaving a portion of a train standing in emergency:

- IF there is a leased or foreign locomotive in the consist.
- IF you are uncoupling immediately next to that foreign or leased locomotive.
- THEN BEFORE instructing the crew member on the ground that it is OK to close the angle cock on the portion to be moved.
- PLACE the entire movement in EMERGENCY using the automatic brake valve.

10.0 LEAVING A MOVEMENT UNATTENDED

With locomotive(s) attached:

- No locomotive attached to one or more tank cars or a flat car transporting a road tanker containing dangerous goods may be left unattended on a main track or a siding.
- This instruction also applies to transfers on the main track and movements on sidings**.**

Movements left unattended with locomotive(s) attached may be left as follows:

(i) On an ascending grade, train must be stopped with slack stretched; on other than ascending grade, stop with slack in or out.

(ii) LOCOMOTIVES must be ATTACHED with brake pipe coupled and angle cocks open.

(iii) Apply the hand brakes on each locomotive in the lead consist.

(iv) Apply sufficient hand brakes and test their effectiveness as per the minimum number of hand brakes to be applied indicated in minimum required handbrakes chart **(CROR 112).**

(v) When equipment is left unattended on the main track or sidings, after the equipment has been properly secured as required by CROR 112 and GOI section 7, except when a set outs or lifts is performed, the crew must notify the RTC of the number of handbrakes applied and confirm that their effectiveness has been verified as required. This instruction applies also to unattended equipment left on a subdivision track and on a siding.

(vi) On the controlling locomotive, the control stand must be left as follows:

- Independent brake cut-IN and FULLY applied.
- Automatic brake cut-IN and Make a full service brake application after allowing the brake system to re-charge.
- Throttle in Idle.
- Selector handle in the OFF position if equipped.
- Generator Field OFF, Engine Run ON, Control/Fuel Pump ON.
- Engine Control Switch (ECS) to Isolate.
- Reverser handle removed.
- Remove the reverser handle from the cab of all locomotives in the consist.

WARNING: If the ECS switch is set to Isolate on an Auto Engine StopStart System (AESS) equipped locomotive, main reservoir and independent brake pressure are not monitored and can leak off, if the locomotive is in a shutdown mode. If brake pipe pressure must be maintained, the ESC switch must be

left in the Run position. On locomotive equipped with auxiliary Power Unit (APU), It must be Cut-Out on the controlling unit to maintain the engine running.

Turn off all unnecessary lights and close and lock all doors and windows.

CAUTION: It is imperative that all steps in this procedure be followed. Otherwise, apply hand brakes on the cars which are at the low end of a downward sloping track.

Crew information/Brake status report: When required to leave a train in this manner, the information relative to hand brakes applied and inspection performed must be documented on the Crew information/Brake status report as required by air brake and train handling rules.

11.0 LEAVING A LOCOMOTIVE

A. When changing off with Another Locomotive Engineer - Coupled With or Without a Train or Cars

(i) Complete Train information/ Brake status report.

(ii) Take the reverser handle from the cab of the leading locomotive.

B. Leaving locomotive(s) unattended

(With or without cars attached / engines running or dead)

(i) When one or more locomotives are left in a Yard and Non-main track at other than Siding, Subdivision track or High risk location, handbrake must be applied on Each locomotive in the lead consist.

(ii) Test the effectiveness of the hand brakes, release all air brakes and apply sufficient tractive effort to determine effectiveness of the hand brakes and that the hand brakes will prevent equipment from moving once the tractive effort is terminated.

(iii) If separating locomotives, close the cocks on all air hoses between the locomotives to be separated, remove the jumper cable(s) and disconnect walkway safety chains. After separation, secure all hoses in the receptacles / dummy couplings (if provided).

(iv) On the controlling locomotive and/or one of the locomotives left, the control stand must be set as follows:

- Independent brake cut-IN and FULLY applied.
- Automatic brake cut-IN and Make a full service brake application after allowing the brake system to re-charge.
- Throttle in Idle.
- Selector Handle in the OFF position if equipped.
- Generator Field OFF, Engine Run ON, Control/Fuel Pump ON.
- Engine Control Switch (ECS) to Isolate.
- Reverser handle removed.
- Remove the reverser handle from the cab of all locomotives in the consist.

CAUTION: If the ECS switch is set to Isolate on a AESS equipped locomotive, main reservoir and independent brake pressure are not monitored and can leak off, if the locomotive is in a shutdown mode. If brake pipe pressure must be maintained, the ESC switch must be left in the Run position.

(v) Turn off all unnecessary lights and close and lock all doors and windows.

(vi) Where applicable, Automatic Reporting Unit (ARU) must be connected for monitoring of locomotive.

(vii) Complete the Crew information /Brake status report if necessary.

C. Electronic Air Brake (EAB) Failure

WARNING: It is not possible to cut-IN the automatic and independent brake on a locomotive on which the electronic air brake (EAB) system has failed. With a failed EAB system, the locomotive air brake backup mode defaults to trailing locomotive status only. This means the air brakes will eventually leak off. When setting off or leaving a locomotive on which the EAB system has failed, it is especially important that the hand brake effectiveness is tested.

Note: When leaving a locomotive with a failed EAB, after securing the locomotive, the automatic brake handle must be placed in the Handle Off position and the independent brake handle in release.

12.0 SPOTTING OF EQUIPMENT - PROHIBITED SIGN

If equipment must be left between the Spotting of Equipment Prohibited Sign and the Road Crossing:

Prior to leaving equipment between the sign and the road crossing, a crew member must advise the RTC of the location and estimated distance between the equipment and the crossing. A GBO will be issued restricting movements entering the crossing account restricted sightline. If equipment is left less than 150 feet from a crossing, then manual protection of the crossing must be provided, unless it is seen to be clear of vehicular or pedestrian traffic.

At locations not equipped with signs:

A crew member must advise the RTC when equipment causing restricted sightlines is left at locations not equipped with a sign and be governed by instructions from the RTC.

Note: This instruction does not apply to equipment spotted for loading or unloading as per CROR Rule 103(e).

13.0 WINTER OPERATION AIR CONSERVATION INSTRUCTION

CONDITIONS

- This instruction is intended for, set outs or lifts on run through trains only;
- Temperature must be below minus five (-5) degrees Celsius;
- Does not apply to Locotrol equipped trains.

When conditions are met, the following may be applied:

- In the application of this instruction, 7 B above does not apply.
- The train or standing portion must be secured in accordance with CROR 112.
- The train or portion thereof is secured with sufficient handbrakes and their EFFECTIVENESS has been tested;
- Prior to leaving the standing portion unattended, the brake pipe must be reduced to "ZERO" at a rate that is no less than a service rate reduction, this is accomplished by placing the brake handle into the Handle Off position and waiting for the air to deplete from the train line. The SBU must be observed to ensure "ZERO Pressure".

Note: On GE locomotives, due to a built-in locomotive emergency feature, the brake pipe will only reduce to 10 - 11 psi.

- TIBS emergency braking feature should not be tripped.
- Once the air is fully depleted or stabilized (10 - 11 psi as indicated above) at the SBU, the standing portion must be left with the angle cock open.

SECTION 8 – LOCOMOTIVE OPERATION

1.0 DUTIES OF THE LOCOMOTIVE ENGINEER

1.1 Locomotive engineers are responsible to ensure they are familiar with current information regarding the systems and mechanical procedures which apply to locomotives in service on the railway they operate. Locomotive engineers are responsible for the motive power in their care and when other duties permit, must make every effort to ensure their efficient and productive operation.

1.2 The locomotive engineer must take charge, inspect and leave the train in ways that ensure safe operation of both the locomotive and train.

1.3 Locomotives may only be operated as follows:

A. On a shop track, locomotives may be operated by;

- Certified engine attendant (restricted to confines of the shop track), or
- An engine attendant in training under the direction of a certified engine attendant.

B. On all tracks, locomotives may be operated by;

- A qualified locomotive engineer (employee or officer)
- A locomotive engineer trainee under the direction of a qualified locomotive engineer instructor,
- An operating officer (who is not a qualified locomotive engineer) only when:
  - they are under the immediate direction
  - and control of a qualified locomotive engineer (see note), and
  - that officer assumes all responsibility for his/her actions, (see note)

Note: "Immediate direction and control," requires the qualified employee remain in the operating cab of locomotive prepared to take control immediately, if required.

2.0 GENERAL INSTRUCTIONS

2.1 Employees are restricted from opening engine covers and electrical cabinet doors unless authorized, or in the case of emergency.

2.2 In case of mishap or fire to locomotives, the engines and fuel pumps should be stopped, emergency fuel cut off tripped and battery switches opened as soon as possible.

2.3 When locomotive consists are in motion, personnel may move from one locomotive to an adjoining locomotive only when both locomotives are equipped with walkways or vestibules. Hinged walkways should be in the raised position, with safety chains in place, on single locomotives or when coupled to other locomotives not equipped with walkways or vestibules.

2.4 Unless otherwise authorized or in use with Distributed Power, locomotives handled in freight service, including shut-down or idling locomotives, must be marshalled as part of or immediately behind the working locomotive consist.

2.5 Not more than 8 locomotives working or idling are to be handled in a train.

2.6 Locomotives with Non-Alignment Control Couplers Locomotives with non-alignment control couplers (NACC) are susceptible to jackknifing under heavy buff conditions, such as when applying high levels of dynamic and/or independent brake, or when applying throttle to shove cars, etc. are subject to the NACC restrictions outlined below. Locomotives not identified as being NACC can be handled unrestricted.

Unless it can be otherwise determined, all passenger locomotives and/or foreign 4-axle freight locomotives are to be considered as having NACC and are also subject to the following restrictions.

NACC Handling Restrictions:

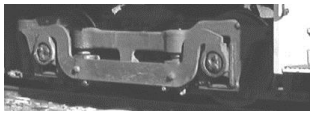
- Trailing Tonnage Does Not Exceed 4000 Tons: a maximum of two (2) NACC locomotives may be operated or moved on a train, and must be marshalled immediately behind head-end locomotive consist.
- Trailing Tonnage Exceeds 4000 Tons: a maximum of one (1) NACC locomotive may be operated or moved on a train, and must be marshalled immediately behind head-end locomotive consist.

2.7. Maximum Permissible Motorized Axles

Unless otherwise specified, the maximum number of working locomotives permitted in any engine consist is restricted to 24 motorized axles. In unit train service on subdivisions specified in the time table or by special instructions, the locomotive consist may be increased to 30 motorized axles.

2.8. LOCOMOTIVES RESTRICTIONS

Locomotives with AAR Type "A" switcher trucks: 25 MPH



3.0 PRE-DEPARTURE LOCOMOTIVE INSPECTIONS

3.1 Locomotive Safety Inspection Locations

Note: The brake test form has been revised to include information regarding a locomotive safety inspection, locomotive defects, and dynamic brake (DB) factors. Other methods may also be used to convey this information.

At locations where a locomotive safety inspection has been performed by mechanical services personnel, the locomotive engineer must be notified verbally or in writing that:

- The inspection was completed, and
- The nature of any safety defects when a locomotive is being moved for repair, and
- to ensure safety of movement, any restrictions.

Before departing, the locomotive engineer must:

- Record any safety defects on the Crew information /brake status form.
- Know that the DB factor does not exceed the maximum permissible limit, and record the DB factor on the Crew information /brake status form.
- Ensure that the headlights, ditch lights, bell and whistle are working on the lead locomotive.
- Know that the flagging equipment is fully supplied on the lead locomotive.
- Ensure that the hand brakes are released.

Note: If the locomotives consist does not roll freely when movement is commenced, stop and check hand brakes on all locomotives.

- Unless advised verbally or in writing that a locomotive brake test was previously completed at that location, perform a locomotive brake test in accordance with GOI Section 6.
- Unless advised verbally or in writing that a locomotive safety inspection was previously completed at that location, perform a locomotive pre-departure inspection in accordance with Item 3.2.

NOTE: At safety inspection locations where remote locomotive(s) are to be added to a train or a rear end remote is set up for lead position (switching ends), the remote locomotive(s) must receive a safety inspection.

3.2 Locations Other than Locomotive Safety Inspection Locations

At locations where a locomotive(s) has laid over more than eight hours without a safety inspection, prior to departing, the locomotive engineer or other qualified person must perform a locomotive pre-departure inspection as follows:

A. Start up the engines, if shutdown.
B. Inspect the running gear and trucks for visible defects.
C. Inspect the locomotive(s) for any other apparent hazards likely to cause an accident or injury.
D. Where applicable, the Automatic Reporting Unit (ARU) must be disconnected.
E. Record any defects on the Crew information /brake status form.
F. Know that the DB factor does not exceed the maximum permissible limit and record the DB factor on the Crew information /brake status form.
G. Know that the air brake system is set up correctly for lead and trailing locomotives.
H. Ensure that the headlights, ditch lights, bell and whistle are working on the lead locomotive.
I. Know that the flagging equipment is fully supplied on the lead locomotive.
J. Ensure that the hand brakes are released on all locomotives.
K. Perform a locomotive brake test in accordance with GOI Section 6.

Notes: At other than safety inspection locations where remote locomotive(s) are added to a train, the remote locomotive(s) must receive a pre-departure inspection.

Where remote locomotive(s) have already been added to a train but the train lays over more than 8 hours, no pre-departure inspection is required.

When a rear end remote locomotive is set up to operate in the lead position (switching ends), that locomotive must receive a pre-departure inspection at that time.

3.3 Changing Off with Another Locomotive Engineer

A. Examine the Crew information /brake status form. If the form does not clearly indicate that the DB factor is within permissible limits, check each locomotive and then update the Crew information /brake status form

Note: Normally a remote consist will not include enough locomotives to exceed the maximum permissible DB factor, so a personal check is not required

B. Know that two flagging equipment are fully supplied on the lead locomotive.

4.0 WINTER OPERATION: LEAVING LOCOMOTIVES

4.1 Policy:

IF…	THEN…
Temperatures are at, or expected to drop below minus 20° Celsius (- 20°C), **And** any locomotive in the consist that may not be equipped with high idle protection **And** such locomotives are being left unattended,	Manually throttle up the consist as follows: On leading locomotive ensure: **1.** Generator Field switch is OFF. **2.** Control/Fuel Pump & Engine Run switches are ON. **3.** REVERSER is inserted and in NEUTRAL. **4.** Throttle is in #3 position.

Note: Locomotives equipped with the High Idle feature should be ISOLATED so that they do not rev up unnecessarily. This should be noted on the *Crew information/brake status form.* It is recognized that train crews do not have easy access to the exact outside temperature. Care and good judgment are essential tools in the application of this instruction.

4.2 Automatic Reporting Units (ARU)

A. In areas where locomotives are connected to an ARU, do not increase the throttle to notch 5 unless so advised by maintenance personnel.

B. All unattended locomotive consists which are tied up at locations where an ARU is located or a portable ARU is used at a remote location, must have the ARU connected as per local operating instructions or as per instructions posted at the ARU or within the portable unit.

C. ARU & DISTR PWR - When leaving DISTR PWR consists at a location where an ARU is to be used, the remote unit(s) must have a MU cable connecting it to the lead consist. This will allow any alarms on the remote unit to be relayed to the lead unit and the ARU. This information must be recorded on the *Crew information /brake status Form.*

D. **CAUTION:** Before moving the locomotive(s), check to ensure ARU cable is unplugged:
- On DISTR PWR consists, the MU cable between the master (lead) consist and the remote consist(s) MUST be disconnected prior to the movement of the locomotives.
- Store the ARU in the designated area to avoid possible damage to equipment/components.

Crews are responsible to ensure that portable ARU's are with the locomotives consist prior to leaving the initial location as well as the remote location.

Note: If the reverser is placed in a direction before the ARU is unplugged, the locomotive wheel slip alarm will activate**.**

E. If responding to an alarm from an ARU:
- Find and correct fault and restart if shut down.
- Ensure locomotive(s) is running in idle. Check isolation switch to ensure it is in RUN position.
- Ensure the ARU plug is correctly set into the MU receptacle on the locomotive.

4.3 Auxiliary power Unit APU

In order to reduce greenhouse gas emissions and fuel consumption, GWCI has installed Auxiliary Power Units APU on some locomotives.

The following instructions apply:

Definitions
- APU: Auxiliary Power Unit.
- ME: Main Engine (locomotive).
- EST: Engine Shutdown Timer.
- ECU: APU – ECU (Engine Control Unit)

APU purpose

The purposes of the basic APU system:
- Maintain ME water temperature between 60°F & 100°F.

Benefits are:
- Reduced idling time
- Reduction of engine slugging.
- Reduced fuel consumption
- Reduced wear on the ME engine parts and maintenance costs.
- Reduced noise and greenhouse gas emissions.
- Maintain the locomotive batteries at 64 VDC.
- Maintain ME lubricating oil between 60°F & 100°F.
- Cab Heat (Optional, only if applied)
- Main benefit:
    - Increase engineer / conductor comfort when ME is stopped. NOTE: This heater is designed to take the chill off the cab, not to provide total heat comfort when the APU is running.

APU operation in "SENTRY" mode

The APU is a stand-alone system that will start and stop based on:
- ME water temperature.
- ME battery voltage.
- Cab temperature (where applied, optional).
- APU Engine battery voltage.

Note: One or all 4 criteria may request that the APU start and run during the same time period but the APU will only stop when all 4 criteria system is satisfied.

Important:
- In order for the APU to perform effectively it must be left in "SENTRY" mode at all times (green light flashing).
- The APU will start and run based on the above conditions regardless:
- Whether the ME is running or not.
- Whether the EST is shutting down or has shut down the ME.

EST Operation

The EST is a timer that will ONLY shut down the ME when certain locomotive and APU conditions are met:

Locomotive conditions:

- The reverser is in the neutral position.
- The Generator Field switch is OFF.
- here is a high Aux. Gen signal to the EST. (ME running)
- When the locomotive is not used for 20 minutes.

APU conditions:

- There is a 12 VDC signal from the APU to the EST indicating that the APU is present, ready and enabled but not necessarily running.
- There is no diagnostic fault code from the APU system. This indicates that the APU is healthy.

Note: The **EST** does not operate or restrict the APU operation in any way shape or form. If the EST is faulty the APU will still operate normally based on its Start / Run conditions.

When is disabling the APU allowed?

Currently there are two scenarios that warrant disabling the APU.

1. When the mechanical department as authorized it.
2. When there is a defect in the APU system.

Note: When there is a problem with the APU or the EST, a report must be made immediately to the mechanical department and the locomotive engineer must complete a defect report and forward it to the mechanical department.

Note: The defect indicated on the APU control panel.

Disabling the APU

- Press the emergency stop button on the APU control panel.
- If necessary secure with the locking device.

Enabling the APU

- Restore the emergency button by slightly turning it in the direction indicated by the arrows on the APU's emergency stop button.

Shutting down the locomotive

- The APU operates independently of the ME. The ME may be normally shut down without affecting the APU.

To leave a locomotive unattended, engine running:

- Secure the locomotive as required by CROR rules 62 and 112.
- Ensure that all lights are closed.
- Close all doors and windows.
- Open (OFF) the silence alarm switch on APU equipped locomotives.
- Ensure that the APU is in "SENTRY" mode (green light flashing) on the APU control panel.

Note: This instruction does not change the existing rules and instructions

5.0 DRAINING A LOCOMOTIVE IN FREEZING WEATHER

5.1 Winter Operation - Draining Locomotives.

During winter operations,

A. IF any engine dies and cannot be restarted, THEN the cooling system MUST be drained using the manual drain valve.

B. IF a LEASED locomotive is trailing and
- it has to be left ISOLATED and
- it is not equipped with an Alarm Silence Switch THEN the cooling system MUST be drained using the manual drain valve:

CAUTION: refer to item 5.2 below.

Silent Alarm Circuit

Some locomotives that are equipped with an Alarm Silence Switch, even when isolated will “sound the alarm” if the engine shuts down and is not equipped with this feature, if ISOLATED, will NOT "sound the alarm" if the engine shuts down.

Automatic Drain Valve
- Do not rely on automatic drain valves. When a crew member responds to an alarm, the cooling water temperature may still be warm enough to prevent the valve from opening.
- When it is cool enough, no one will be present to confirm that the valve opens automatically and if it doesn't, serious damage is likely.

5.2 When the engine of a locomotive is shut down and there is a possibility of damage from freezing, the engine cooling water must be drained.
Refer to the draining instruction posted in the cab. If in doubt, contact the locomotive Specialist for instructions.

PRECAUTIONS

A. When it is necessary to drain the coolant from a locomotive, ensure the drain pipe or pressure relief outlet is not pointed at you.

B. If the locomotive is not equipped with a pressure relief valve on the expansion tank and it is required to remove filler pressure cap, ensure that coolant temperature gauge indicates that coolant temperature is normal or cold prior to attempting to remove the filler cap.

C. Stay clear of the filler pipe connector when releasing pressure. Once the pressure is vented, carefully remove filler pressure cap.

D. Care should be taken as to where cooling water containing compound is drained.

5.3 Locomotive Water Cooling Systems

There are many different types of water cooling systems on locomotives. Water fill instructions are located in the locomotive cab or at the water filling station on the locomotive. If in doubt as to the procedure or if the instructions are missing, contact the Locomotive Specialist and be governed by their instructions.

6.0 CAUSES OF A PCS OPERATION (PNEUMATIC CONTROL OR POWER CUT-OFF SWITCH)

Note: In the following instructions, PCS also refers to PC or Power Cut-Off lights.

The following will cause the PCS switch to operate:

A. An emergency brake application.

B. A penalty brake application caused by**:**

- a timing out of the reset safety control (RSC),
- exceeding the maximum speed of the locomotive.

7.0 RECOVERING A PCS FOLLOWING A PENALTY BRAKE APPLICATION

1- Place the independent brake handle in FULL application.
2- Place the throttle/dynamic brake handle(s) in IDLE/OFF.
3- On a locomotive equipped, depress the safety control foot pedal.
4- Place the AB handle in SUPPRESSION
5- On a RSC equipped locomotive, operate any system reset and wait for brake pipe exhaust to cease, or the PCS light to extinguish.
6- Return the AB handle to RELEASE.

WARNING - PCS RECOVERY (GM & GE Locomotives)
The throttle and dynamic brake handle MUST NOT be moved from the IDLE position before attempting an automatic brake release. Following the release, ensure brake pipe pressure is being recharged AND the PCS light is out.

Note: On some locomotives, after the exhaust ceases, the PCS light will not extinguish until the AB handle is returned to the RELEASE or RUNNING position.

8.0 FOLLOWING AN EMERGENCY BRAKE APPLICATION

1- Place the independent brake handle in FULL application.
2- Place the throttle/dynamic brake handle(s) in IDLE/OFF.
3- Place the AB handle in EMERGENCY
4- Wait 60 seconds AND on locomotives equipped with an electronic display screen, ensure reset message appears or the fault disappears.
5- Return AB handle to RELEASE, pausing briefly in HANDLE OFF and SUPPRESSION.

WARNING - PCS RECOVERY (GM & GE Units)
The throttle and dynamic brake handle MUST NOT be moved from the IDLE position before attempting an automatic brake release. Following the release, ensure brake pipe pressure is being recharged AND the PCS light is out.

8.1 PCS Recovery/TIBS Failure

The TIBS is known to be defective and it is necessary to recover the PCS while standing on a grade, and

- IF the state of charge of the brake pipe cannot be determined or is in doubt, and
- IF the locomotive brakes are not sufficient to prevent train movement,
- THEN a sufficient number of retainers and/or hand brakes must be applied to hold the train standing, before releasing the automatic brake.

8.2 Emergency Brake Application Recovery

Procedure when Moving from a Stop - Retainers/Handbrakes

1. Refer to:
   - GOI Section 9, Descending Heavy Grade, "Use of Retaining Valves," or
   - Time Table footnotes regarding mandatory use of retainers or handbrakes.
2. When hand brakes are used, they must be released before moving the train, but only after the train air brake system is fully charged.
3. When High Pressure (HP) retainers are used, the train must not exceed 20 MPH. The train must be stopped every 20 minutes for a period of 10 minutes in order to allow the wheel and brake shoes time to cool off.

9.0 CHANGING OPERATING CAB OF A MULTIPLE LOCOMOTIVE CONSIST

Note: Ensure that the locomotive is protected from unintended movement.

9.1 At the cab being cut-out (to set up for TRAILING locomotive).

Place

- the throttle in IDLE
- the selector handle in OFF (if applicable) and
- remove the reverser handle

Place the independent brake handle in FULL application.

Make a full service reduction.

- Cut-out the automatic brake.
- Move the automatic brake handle to HANDLE OFF and remove the handle, if removable and place in receptacle.

Place the Cut in /cut out cock, MU-2-A valve or electronic equivalent in TRAIL position.

Place the independent brake handle in RELEASE and remove the handle if removable and place in receptacle.

Note: Brake cylinder pressure is not maintained when the independent brake is cut out. Observe brake cylinder pressure for leakage, and if necessary apply hand brake(s).

At the control stand, ensure the Generator Field switch is OFF. Leave the Control/Fuel Pump and Engine Run switches ON until after having set up the controls on the locomotive being cut in as the controlling locomotive.

Note: On AC4400 locomotives, ensure the dynamic brake circuit breaker on the control stand is OFF.

Return AB handle to RELEASE, pausing briefly in HANDLE OFF and SUPPRESSION.

9.2 At the cab being cut in (to set up for LEAD).

Replace the handles to the automatic and independent brake, and move the independent brake handle to FULL application.

Place the Cut in /cut out cock , MU-2A valve or electronic equivalent in LEAD.

Move the automatic brake handle to RELEASE. If necessary adjust Equalizing Reservoir Pressure.

Cut-IN the automatic brake.

At the control stand, ensure the Control/Fuel Pump, and Engine Run switches are ON.

Note: On AC4400 locomotives ensure the dynamic brake circuit breaker on the control stand is ON.

Return to the cab of the locomotive being cut out, place the Control/Fuel Pump and Engine Run switches to OFF.
Perform a Locomotive Air Brake test.

10.0 JOINING A LOCOMOTIVE CONSIST

1. Couple the locomotives and STRETCH to ensure that the couplers are locked.
2. On the controlling locomotive, apply the independent brake FULLY.
3. Before coupling the air hoses, open the cocks enough to blow out any accumulation of dirt or snow from the hose couplings. Check the air hose gaskets.
4. Ensure that all air hoses are properly connected, and that the airline cocks are open.
5. Ensure that the jumper cables are properly connected and secured in the captain hook, or other securing device.
6. Ensure that the controls and switches are properly positioned on all locomotives in the locomotives consist. (e.g. for lead or trailing).
7. Release the hand brakes where applied.
8. Perform the required air brake test.

Note: Ensure that any locomotive(s) to be left standing is properly secured in accordance with CROR rules 62 and 112.

11.0 STARTING/STOPPING THE DIESEL ENGINE – BATTERY KNIFE SWITCH

CAUTION: Electrical arcing may occur when opening or closing the main battery knife switch.

- Do not wear dangling accessories, jewellery or other similar items likely to come in contact with the bare metal parts of the switch
- Grasp the battery knife switch by the handle only
- Avoid direct contact with the bare metal bars and bare metal surfaces of the battery knife switch

12.0 STARTING/STOPPING THE DIESEL ENGINE – GMS AND GES

12.1 GM Locomotives – Starting Description Action

1. Lube oil, cooling water, compressor oil	Check

2. On control stand:	
Engine Run switch	**ON**
Generator Field switch.	**OFF**
Control/Fuel Pump switch.	**ON**
Throttle	**IDLE**
Reverser handle	**CENTERED**
MU Engine Shutdown. (if equipped)	**RUN**

3. SD90MACs ensure:	
CONTROL circuit breaker (CBrk).	**OFF**
COMPUTER CONTROL C Brk	**OFF**

4. Main Battery Knife Switch.	CLOSE
Note: On EMD locomotives, f the engine has been shutdown for more than 12 hours, open the cylinder test valves. To ensure that the engine will not start during the cylinder discharge, trip the low oil button on the governor. If water or oil is discharged from any of the test valves when the engine is rotated, allow the engine to rotate (no more than 20 seconds) until the discharge ceases, then close the cylinder test valves and report the condition to the mechanical service by way of the locomotive engineer's report.	

5. On SD90MACs in the following order:	
FUEL INJECTION SWITCH (on #2 C Brk Panel)	**START/RUN**
C Brks in black and yellow striped zone	**ON**
COMPUTER CONTROL C Brk	**ON**
CONTROL C Brk.	**ON**
WAIT FOR 2 MINUTES TO ALLOW COMPUTER POWER UP	

6. Isolation switch	START/STOP/ISOLATE

7. Alarm Silence Switch (if equipped).	ON

8. On DC traction locomotives, at start station	
Governor low oil button (if equipped)	Reset if tripped
Engine over speed lever (if equipped).	Reset if tripped
Fuel Prime/Engine Start switch (if equipped).	**PRIME** (until return fuel sight glass is full and free of Bubbles)
Fuel Prime/Engine Start switch (if required).	(20 seconds maximum)
***Layshaft* (if equipped) move to 1/3 of full travel (until engine starts)** **Caution: Do NOT use *Layshaft* on engines equipped with Q-TRON Electronic Governor (QEG).**	
Low water protective device (within 1 minute of starting). RESET	

9. On SD90MACs, in the locomotive cab on Engine Control Panel	**Engine Start Press for 2 Seconds and Release**
Note: An alarm will sound for 5 seconds prior to start-up. If the engine fails to start, the computer will display a fault message on the left operator screen.	
10. If engine fails to start within 20 seconds,	**Re-check steps 1 - 9, Allow at least 2 minutes between attempts (for starting motors to cool or computers to reboot) and try starting again.**

13.0 ENGINE SHUTDOWN ACCOUNT CRANKCASE OVERPRESSURE

Certain conditions can cause a severe build-up of dangerous gases within the engine crankcase. GM and GE engines are protected in different ways and therefore respond differently.

GM Engines:

If the crankcase pressure button trips (pops out); DO NOT attempt to restart the engine. Explosive gases in the crankcase could be ignited and cause injury.

14.0 OPERATING THROUGH WATER

Locomotives should not be operated through water of a depth of more than three inches above the rail. They may be operated through water if the depth is three inches or less above the top of the rail, but at a speed not exceeding three miles per hour.

If it becomes necessary for a locomotive to operate through water aboverail level the following should be done:

1. Place the throttle in idle and reduce the speed as quickly as possible.
2. Place the generator field switch in OFF and advance throttle to notch 4 to increase the volume of air supplied by the traction motor blowers to prevent water from entering the traction motors.
3. After passing through the water, resume power with caution and watch for any abnormal operation. If locomotive operates normally (no ground relay, etc), it may be considered safe to proceed.
4. If the motors are flooded, power should not be reapplied.
5. Whether water has affected the motors or not, the occurrence must be reported to the Locomotive Specialist and noted on the Crew information /brake status form

15.0 LOCOMOTIVE LOAD METER

Note: AC traction locomotives are not subject to short time ratings or traction motor stall burn.

15.1 Short Time Ratings

1. Unless the locomotive is isolated, Locomotive Engineers should observe the load meter, but particularly so when under slow speed full throttle conditions.
2. If the load meter enters the short time current rating, or if an AC locomotive is controlling in a locomotives consist with DC locomotives trailing, the rating table must not be exceeded in order to avoid traction motor damage.

Speed	Rating
11 MPH	Continuous
10.5 MPH	60 minutes
10 MPH	30 minutes
9 MPH	15 minutes
8 MPH	10 minutes
5 MPH	5 minutes

15.2 If the load meter enters the short time current rating, to avoid traction motor damage, the short time rating must not be exceeded.

15.3 It should be understood that the different short time rating zones are not to be considered as consecutive ratings.

For example: The locomotive must not under any circumstances be operated at the ¼ hr. rating for ¼ hr., then at the ½ hr. rating for ½ hr. then at the 1 hr. rating for 1hr.

15.4 If operating in the short time rating zone, but the load is then reduced such that the load meter falls below the short time rating zone for less than 20 minutes, and then the pointer re-enters the short time rating zone, the time operating in the short time rating zones must be added together. Do not exceed the time indicated by the most restrictive zone reached by the load meter.

15.5 Should it appear that the short time rating will be exceeded, the RTC must be advised and the train crew shall take the necessary corrective action by either;

A. Stopping the movement and cooling the traction motors for 20 minutes by centering the reverser, place the GF switch OFF and advance the throttle to No. 4 position, or

B. Stopping the movement and either reducing or doubling the grade.

15.6 In addition, to avoid traction motor damage, DO NOT power up the locomotive to hold a train at a standstill on a grade OR allow the locomotive to stand without movement for more than 10 seconds after the throttle is opened.

16.0 LOCOMOTIVE SPEED INDICATORS

16.1 Locomotive engineers must verify that speed indicators are in working order when leaving a shop track.

16.2 The speed indicator must be checked for accuracy, as soon as possible after leaving a terminal. This check must be made before reaching maximum speed and again after maximum speed is reached, and thereafter as often as may be required. When speed indicator inaccuracy is observed, speed must be adjusted accordingly and the exception noted on a Crew information /brake status form.

16.3 In the event the speed indicator on a controlling locomotive fails enroute, the locomotive engineer will advise the Locomotive Specialist and RTC accordingly. Arrangements will be made so that the controlling locomotive will have an operative speed indicator before the return trip.

17.0 LOCOMOTIVE EVENT RECORDERS

17.1 Locomotive Event Recorders are installed to record the following data:

• Locomotive number • Speed • Acceleration / Deceleration • Tractive effort • Dynamic Brake position • Brake pipe pressure • End of train (EOT) messages • Equalizing Reservoir • Horn • Headlight Operation • RSC override operation • Dynamic Brake operation • Locomotive over speed • Emergency Brake Application – Lead Loco • Additional engine/locomotive diagnostic data	• Time/Date • Distance and Direction • RSC system operation • Throttle position • Tractive Effort Wheel Slip • Brake cylinder pressure • End of train pressure • Independent Bail • Bell • Ditch light Operation • RSC system failure • Wheel slip • ECP Messages (if equipped) • Emergency Brake Application – Train Initiated • Other miscellaneous operational data (Manufacturer provided)

17.2 The data will be monitored to provide information in a minimum of the following areas:
- Rule compliance/speed control
- Train handling/fuel conservation
- Training/qualification standards
- Accident/incident analysis
- Litigation/claims and legal
- Identifying mechanical problems.

18.0 PUMPING AIR

If main reservoir pressure cannot be maintained 15 psi above feed or regulating valve setting at low engine speed, air compressor output can be increased by:
1. Place reverser handle in NEUTRAL.
2. Place generator field switch OFF.
3. Advance throttle to not exceed No. 3.

Note: On GE & SD90MAC locomotives, leave the throttle in IDLE .

19.0 RESPONSE TO ALARMS

19.1 Continuous Wheel Slip/Pinion Slip Indication

If wheel slip and/or pinion slip indicator and accompanying ALARM indicates slipping, even though throttle or dynamic braking are reduced enough to prevent slipping:
1. **STOP MOVEMENT IMMEDIATELY.**
2. Check locomotive wheels while moving slowly to see that all wheels are rotating freely.
3. If all wheels are rotating freely, a traction motor pinion may have loosened. Contact the Locomotive Specialist and be governed by their instructions. Inform RTC of train delay.

4. If no loose pinion is detected and the locomotive is equipped with a traction motor cut-out switch, cut out the motors in sequence until the wheel slip indicator stops. The locomotive can now be worked unless special instructions specify otherwise.
5. If a locked pair of wheels is found the locomotive must not be moved further, until instructions are received from the Locomotive Specialist.

19.2 Response to Locomotive Alarm Indications

IF the locomotive alarm is sounding and/or being displayed, the cause of the alarm must be investigated as soon as practical. If the cause of the alarm cannot be determined, the alarm indication may indicate pinion or wheel slip problems and must be handled as per item 19.1.

Note: Before SILENCING continuous alarms by cutting out traction motors or ISOLATING a locomotive when the cause cannot be determined, It must be known that:

a. All wheels are rotating freely, and
b. There is no evidence of overheating or disintegration of rotating electrical equipment**.**

20.0 OVERCHARGED CONDITIONS

20.1 When a train's air brake system is charged to a pressure higher than the prescribed standard for that train, the overcharge will be maintained to the train's destination, providing the brake pipe pressure is not higher than 110 psi.

20.2 An overcharged air brake system occurs when the storage reservoirs on the locomotive and/or cars are charged to a value higher than the feed or regulating valve setting on the controlling locomotive. This is indicated by the air brakes being applied on the train or portion thereof, when the automatic brake handle is in the RELEASE position on the controlling locomotive.

20.3 To eliminate an overcharge on a car or block of cars:

A. Close the angle cock between the locomotive and the overcharged car(s).
B. Bleed the reservoirs on the overcharged car(s).
C. Cut the air in on the car(s).

20.4 To eliminate an overcharge on a train:

A. Protect against undesired train movement.
B. Place the automatic brake handle in RELEASE position.
C. Using the feed/regulating valve, ensure equalizing reservoir pressure is adjusted to the required pressure.
D. Place the automatic brake handle in EMERGENCY position. Wait at least 2 minutes before recharging the train air brake system.
E. A pull-by inspection must always be made to ensure the overcharge has been eliminated.
F. Repeat the above procedure if the pull-by inspection reveals the overcharge has not been eliminated.

20.5 An overcharged brake system is most likely to occur in the following situations:

A. When adding one or more cars with an overcharged condition to a train.
B. When attaching locomotive to the opposite end of a train.
C. When changing the locomotive.
D. When picking up cars that were set off of a train operating with higher brake pipe pressure.

21.0 USE OF THE INDEPENDENT BRAKE

(i) The blocking of the independent brake handle in the BAIL position is prohibited.

(ii) To release the locomotive brakes when train brakes are applied, hold the independent brake handle in the actuating (bail) position for five seconds per locomotive.

(iii) Use of the independent brake to control train speed can cause overheating of the locomotive wheels. Unless otherwise indicated in train handling rules, the independent brake should not be used to control train speed.

(iv) Full application position on the independent brake is used when the locomotive is stationary.

(v) To control a consist of seven or more locomotives, the automatic brake is to be used instead of the independent brake.

SECTION 9 – HANDLING / OPERATION OF MOVEMENTS

TRAIN OPERATING INSTRUCTIONS
(ore / freight / others)

GLOSSARY

Conventional train :
A train with only head-end engines as a driving force.

***Locotrol* train**:
A train with one or several engine(s) at the center or the rear of the train controlled by remote control from the lead engine.

Departure:
A train is considered to have departed when the speed of the train has gone from 0 to approximately 1 MPH.

Acceleration:
A train is considered to be accelerating during the interval when its speed goes from approximately 1 MPH to its authorized speed (normal speed).

Circulation:
When the train reaches its authorized running speed (normal speed) and continues to move at that speed.

Level track:
A section of the track that is sufficiently level for the track configuration not to cause significant stress to the train.

Sharp incline:
An incline of more than 1.0%.

Crest:
A long ascending grade followed by a long descending grade.

Sag:
A section of the track composed of an incline followed by an ascending grade, a level track or an almost level track.

1.0 GENERAL INSTRUCTIONS

1.1 The locomotive engineer will be responsible for proper train handling in both yard and road service.

1.2 Braking practice will depend on weather and rail conditions, speed and weight of train, braking capacity, grade and other factors.

1.3 The above conditions will govern the point at which a brake application should be initiated, as well as the speed at which a running release can be safely made. A running release must not be attempted under circumstances which will damage couplers or draft attachments.

1.4 A train or locomotive must start down a heavy or mountain grade at a very slow speed, gradually allowing speed to increase as braking power is seen to be sufficient.

1.5 When coupling together two portions of a train, a brake pipe reduction of 35 psi is to be made before opening the angle cock, unless train movement can be prevented with the locomotive brakes.

1.6 Winter Conditions

A. During weather conditions which may cause snow or ice build up to occur between brake shoes and wheels, periodic running brake tests must be performed to insure proper braking effort is being provided.

B. During weather conditions described above, when trains are approaching a location which will require the use of the train air brake, the locomotive engineer must make an automatic brake application sufficiently in advance of that location to determine that brakes are working properly.

C. If there are abnormal train braking indications (e.g., the brakes have had time to warm up and speed should be decreasing, not remaining the same or increasing) the train shall be stopped by a full service brake application with dynamic brake fully applied (using care not to jackknife the train). If, in the locomotive engineer's judgment, circumstances require an emergency brake application, this is to be done without hesitation.

D. After stop is made, train will be inspected to determine that brake shoes are free of snow and ice build-up before proceeding.

E. Immediately after proceeding, a running brake test must be made at a safe speed to determine whether or not the brakes respond properly.

2.0 USE OF THE AUTOMATIC BRAKE

2.1 When commencing a service application and the train air brake system is FULLY charged, the initial equalizing reservoir reduction must not be less than 5-8 psi.

2.2 When commencing a service application and the train air brake system is NOT FULLY charged, one of the following methods must be used:

A. On Conventional or Distr Pwr trains (except tail end remote), make an equalizing reservoir reduction of at least 7 psi below the rear car brake pipe pressure.

B. On Conventional or tail end remote equipped trains, using the equalizing reservoir gauge, measure at least a 7 psi reduction from the point where the service exhaust starts to blow.

C. On Conventional and Distr Pwr equipped trains, the following method may be used, but in order to avoid an undesired release, it is necessary to understand the following information:

- **True Gradient**
  After charging or re-charging, if brake pipe pressure (BPP) on the rear car has stopped rising, then the train air brake system is considered FULLY charged
- **False Gradient**
  During charging or re-charging, if BPP on the rear car is still rising, then the train air brake system is NOT FULLY charged.

D. The application of paragraphs A and C above, if TIBS fails to display rear car brake pipe pressure and it is necessary to apply the brake with the train air brake system not fully charged, an equalizing reservoir reduction of at least 5 psi more than the last reduction must be made.

2.3 Using the **regulating valve** to make brake pipe reductions is prohibited**.**

2.4 Should locomotive brake pipe pressure be reduced below 48 psi during service brake operation, the train must be stopped and the brake system recharged.

3.0 MINIMIZING STICKING BRAKES

A. Do not overcharge the train brake system above the standard pressure for that train, unless otherwise specified as per special instructions.

B. Whenever a train is operating in a false gradient condition, if an angle cock is closed such as when changing a defective air hose, a build-up of brake pipe pressure in the cars ahead of the closed angle cock may result in sticking brakes when the angle cock is opened. In order to eliminate the possibility of sticking brakes, a full service brake pipe reduction must be made before the angle cock is closed.

C. The total brake pipe reduction should be 10 psi or more before the release is made. An overall reduction of less than 10 psi should therefore be increased to 10 psi or more before releasing. Brake pipe exhaust must be stopped for at least 20 seconds before releasing.

D. Whenever air brakes are used to stop a train, if a 15 psi brake pipe reduction has not been made, it must be increased to that amount, and comply with Continuity Test Procedure.

4.0 EMERGENCY AND PENALTY BRAKE APPLICATION

4.1 All employees concerned must familiarize themselves with the location of the emergency valves on locomotives and cars so equipped. Emergency valves are to be used only in cases of emergency, and when used must be opened wide and left open until the movement is stopped. Members of the train crew are to communicate to the extent possible in the event of an emergency brake application so as to ensure personal safety.

4.2 An EMERGENCY BRAKE APPLICATION must not be made unless it is necessary. In cases that require stopping in the shortest possible distance, when contact has been made or to avoid imminent contact with, someone or something that could result in harm to members of the public, employees or property, an EMERGENCY BRAKE APPLICATION must be made;

- On trains so equipped, the TIBS emergency brake feature must also be activated.
- If accessible to other crew members, the conductor's emergency valve must be opened fully and left open until the movement stops.
- Except in DB, place the throttle to idle.

4.3 When an EMERGENCY BRAKE APPLICATION occurs from any source, the locomotive engineer must immediately:

- Activate the TIBS emergency feature (if so equipped)
- Place the automatic brake handle in the EMERGENCY position and leave it there until the movement stops.

4.4 In the event of a PENALTY or EMERGENCY BRAKE APPLICATION while moving, the locomotive engineer must, until the movement stops, regulate locomotive brake cylinder pressure to obtain the shortest possible stop required by the situation. Care and good judgment must be exercised to avoid locomotive wheel slide and severe in-train forces.

Note: After an emergency brake application, brake pipe vent valves will remain open for as long as one minute. No attempt should be made to release brakes or recharge the brake pipe until this interval has elapsed.

4.5 If there is an indication by the air flow indicator or otherwise that the air brakes are being applied from other than the automatic brake, the locomotive engineer must immediately shut off power, placing the automatic brake handle in full service position, and leave in that position until movement stops.

4.6 To stop a locomotive in an emergency situation, if both the air brake and the dynamic brake are inoperative, "plug" or reverse the traction motors.

This procedure may be hazardous to personnel and equipment and should only be used as a last resort. It should be performed as follows:

1. Alert all personnel on the locomotive.
2. Place the throttle in IDLE.
3. On locomotives so equipped, place the selector lever in the No 1 or Power position.
4. Place the reverser handle in the position opposite to the direction of locomotive movement.
5. Advance the throttle to FIRST notch only.

5.0 DYNAMIC BRAKING (DB)

Summary of available DB on locomotives:

Locomotive Type or series	Retarding Force per locomotive	DB Factor
All 4 axle (except GP60)	= 40,000 lbs	DB factor 4
SD40-2	= 60,000 lbs	DB factor 6
AC4400 & ES44AC	= 98,000 lbs	DB factor 10
SD90MAC	= 96,000 lbs	DB factor 10
SD45	= 80,000 lbs	DB factor 8
SD60	= 80,000 lbs	DB factor 8
Some leased units	= nil	

Note (1): Some older SD40/40-2 locomotives and other 4 & 6 axle locomotives:
Leased Units, Yard Engines, low horse power road switchers are NOT equipped with DB.

Note (2): If in doubt, check locomotive control stand for DB controls or refer to locomotive information on consist list or contact the locomotive shop supervisor.

Note (3): When SW 1500 locomotives are moved in a freight train, dynamic braking is prohibited.

EXAMPLE:
3 SD40s = 3 times factor 6.0 = 18 (DB factor is 18)
2 SD90MACs = 2 times factor 10 = 20 (DB factor is 20)

5.1 Using Dynamic Brake

Except as otherwise restricted, full available DB may be used with up to a maximum of 4 SD 40-3 engines (200,000 lbs) (referred to as DB factor of 20) DB should be cut-IN on the lead locomotive and cut-out on trailing locomotives so that DB factor does not exceed 20.

Note: When operating conditions permit, it is acceptable to operate with the lead locomotive isolated. Ensure DB factor does not exceed 20 when the locomotive is placed back "on line".

When changing off with another locomotive engineer, if the Crew information/ brake status form does not clearly indicate that the DB factor is 20 or less, then the locomotive engineer in charge must inspect the consist, limit DB properly, and then update the Crew information/brake status form accordingly.

5.2 When changing from motoring to DB when the train is in motion, pause for ten seconds with the throttle in IDLE.

5.3 When moving into the braking zone, pause at the minimum braking position long enough to adjust train slack, then move the handle slowly within the braking zone to obtain the desired braking effect.

5.4 After releasing the DB in preparation for applying power, the throttle must be advanced with care to ensure gradual adjustment of train slack.

5.5 Handling Dynamic Brake (DB) in the following situations;

1. **At Sidings and Crossovers**
   When entering a siding or crossover and the DB factor of the lead locomotive consist is 14 or greater, the DB effort **MUST NOT** exceed 60 Klbs (500 amps) before reaching the turnout and until at least half the train has entered the siding or crossover.
2. **When governed by Temporary Speed Restriction**
   When the DB factor of the lead locomotives consist is 14 or greater, the DB effort **MUST NOT** exceed 60 Klbs (500 amps) for approximately one half mile prior to the beginning of, or when the locomotive is moving over any track governed by temporary speed restriction.

Note: The train air brakes and DB may be used to comply with the speed restriction.

3. **On Yard Tracks**
   When operating on any yard track, if the DB factor of the lead locomotives consist is 14 or greater than the DB effort **MUST NOT** exceed 60 Klbs (500 amps).

5.6

A. The train air brakes and DB may be used in conjunction with each other. To avoid skidding locomotive wheels during this operation, the locomotive brakes must be actuated (bailed off) manually to protect against a DB interlock malfunction.

B. When the release of an automatic brake application is to be followed by a DB application or an increase in DB, the DB should be applied before releasing the automatic brakes. However, the DB should be reduced for at leased two minutes after releasing the automatic brakes to prevent a run-in of slack of jackknifing proportions.

C. The independent brake may be used in conjunction with DB but only at speeds of 10 MPH

- On locomotives without extended range DB, wheels are likely to skid if independent brake pressure of more than 25% at 10 MPH or 50% at 5 MPH is used, based on maximum pressure posted in the cab.
- On locomotives with extended range DB, close observation of DB effort displays and locomotive brake cylinder pressure is required to ensure that total braking effort does not cause wheel slide or loss of DB as per IPS pressure settings described below.

5.7 Dynamic Brake Interlock (DBI)

A feature which (while operating in DB) prevents application of the locomotive air brakes when automatic service brake applications are made; unless otherwise specified, DBI does not function during Emergency or Penalty brake applications.

5.8 Independent Pressure Switches (IPS)

These are switches activated by pre-determined pressures in locomotive brake cylinders that will reduce, remove or restore DB levels. IPS are designed to help prevent locomotive wheel slide on locomotives equipped with extended range DB. IPS switches will function as intended during normal DB or during DB holding.

IPS pressure settings operate as follows:

- On DC traction locomotives with extended range DB, IPS pressures are set at 10 and 15 psi. This means that if the locomotive is in DB and if locomotive brake cylinder pressure rises to 15 psi, DB is reduced or removed entirely, if pressure is then lowered to 10 psi, DB is restored entirely.

5.9 DB Holding Feature

A feature that HOLDS or maintains DB if an emergency or penalty brake application occurs for any reason. The PCS switch will open immediately, but normal DB control is retained indefinitely.

Additional information about DB holding:

- Trailing locomotives depend on the controlling locomotive for DB holding feature.
- If the controlling locomotive is equipped with DB holding, then trailing locomotives will hold DB if an emergency brake application occurs.
- Conversely, if the controlling locomotive is not DB holding equipped, then trailing locomotives will not hold DB if an emergency brake application occurs.
- On Distr Pwr operated trains, the remotes will not hold DB if an emergency or penalty brake application occurs but will develop 45 psi locomotive brake cylinder pressure.

5.10 DB Holding Feature Operating Instructions:

A. On locomotives with an Emergency or Penalty PCS switch open, and with a locomotive in DB holding mode, DB interlock will not prevent the build-up of locomotive brake cylinder pressure caused by the drop in brake pipe pressure. This build-up of locomotive brake cylinder pressure can only be reduced by operation of the independent bail.

B. While in dynamic braking mode, if a controlling locomotive is equipped with DB holding feature, and if an emergency or penalty brake application occurs for any reason, the locomotive engineer must regulate brake cylinder pressure (bail and depending on the situation, moderately apply independent brake) so that the DB holding feature will function as intended. Close observation of DB effort displays and locomotive brake cylinder pressures is required.

C. After the movement stops, Emergency PCS must be recovered.

6.0 RESTRICTION WHEN MOVING BACKWARD

6.1 **Note:** Extreme caution and good judgment must be used when making reverse movements. Throttle is to be advanced slowly and only sufficient enough to cause the equipment to move. Once the equipment starts to move, throttle is to be reduced to only maintain movement.
Unless otherwise authorized by special instructions, if any part of the movement is on non- main track, and if handling one or more cars, the limits as shown for curves & turnouts must be used shoving or doubling over.

The following table is to be used when moving backward, shoving, doubling over or assisting.
The tractive effort (amp) values in the table are for the indication that will be shown on the lead locomotive.

Unit Type	**Maximum Tractive Effort on:**	
AC	**Curves & Turnouts**	**Straight Track**
1 unit	150 klbs	Maximum available
2 units	75 klbs	110 klbs
3 units	50 klbs	75 klbs
DC	**Curves & Turnouts**	**Straight Track**
1 unit	900 amps	900 amps
2 units	450 amps	600 amps
3 units	300 amps	450 amps

Exception: If the above ratings are not sufficient to move, then the ratings may be exceeded, but only to the extent to cause or allow movement of the equipment. Extreme caution and good judgment must be used as there is a high risk that jackknifing may occur.

Note: No more than 3 operating locomotives may be used when making reverse movements. Additional locomotives must be isolated.

6.2 On Distr Pwr trains, if at least 35 cars/platforms separate each locomotive consist, then each consist is permitted the limits as indicated in item 6.1.

7.0 INTRODUCTION TO TRAIN HANDLING GUIDELINES

7.1 Knowledge of the road and train make-up are the most important factors the locomotive engineer must take into account when developing a train handling plan to operate safely, efficiently and with competence.
The purpose of these guidelines is twofold:

1. to eliminate the occurrence of personal injury associated with severe slack action and;
2. to minimize damage to the draft gear, cars and lading caused by poor train handling practices.

The particular care and attention required when starting or stopping a train must also be exercised when the train is undergoing a transition from bunched to stretched or vice versa. Changes in slack due to grade changes and/or train make-up, as well as those initiated by the locomotive engineer must be handled in such a way as to maintain the in-train forces within acceptable levels

7.2 Starting Freight Trains

Factors to be considered:

- Throttle response characteristics of locomotive consist.
- Weight and length of train.
- Amount of slack in train.
- Weather.
- Grade.
- Rail conditions.
- Proximity of curves in relation to head portion of train.
- Train marshalling.
- Rear car should be started with care, using lowest throttle possible to start train moving.
- After train is moving, throttle may be moved to the next higher position when amperage or tractive effort begins to decrease.

7.3 Stopping Freight Trains

Factors to be considered:

- Knowledge of the territory over which you are operating is extremely important. With this familiarity, planning ahead will enable you to select the most desirable train handling method.
- Unless rules specify otherwise, during planned stopping, slowing or controlling train speed, if dynamic brakes are available, the power braking method should be avoided.
- Total braking effort from dynamic and air brakes should be kept at the lowest practical level when stopping in curve territory.
- In many of the train handling methods, a final reduction is made approximately 200 feet from stop. This reduction is to keep the train bunched.
- When the instructions require that the locomotive brakes be applied to complete a stop, brake cylinder pressure must be sufficient to prevent a run-out of slack without creating excessive buff forces.
- A 30 second pause between split reductions minimizes in-train forces.
- Unusual blocking of loads or empties (train marshalling) must be considered in choosing the proper train handling method.
- The various train handling methods must be known and understood. The method that you select should be the one that minimizes in-train forces and locomotive fuel consumption.

7.4 Modified Slack Bunched – Under 15 MP¨H –Dynamic brake not available

a) Gradually reduce throttle to idle and allow slack to adjust.

b) Further bunch slack with the independent brake.

c) Make a minimum reduction and allow locomotive brakes to apply.

d) Approximately 200 feet from stop make a final reduction exhausting on stop and allow independent brakes to apply

Note: Care and good judgment must be exercised to avoid locomotive wheel slide and severe in-train forces.

7.5 Slowing or Controlling Freight Trains

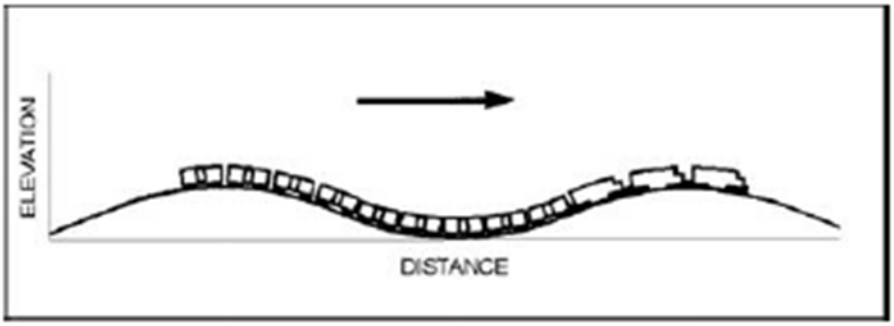
Methods to be considered:

- Throttle Modulation - Gradually reduce throttle one notch at a time to adjust train slack gradually until desired speed is reached.
- Dynamic Brake - If the dynamic brake alone will provide sufficient retardation to slow or control speed, use of the train brakes is unnecessary.
- Stretch Braking - Throttle 4 or less with automatic brake application.

8.0 DEFINITION OF TRACK PROFILES

8.1 Undulating Grade

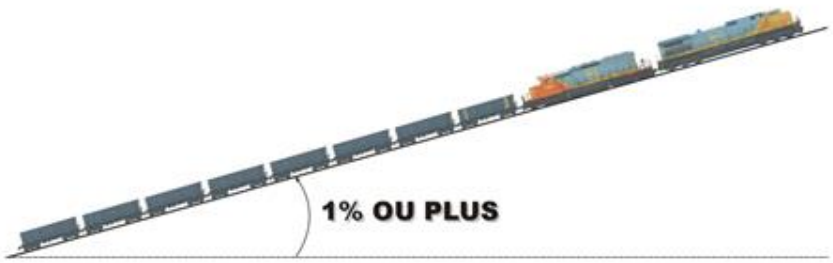
A track profile with grade changes so often that an average train passing over the track has some cars on three or more alternating ascending and descending grades. The train slack is always tending to adjust as cars on descending grades tend to roll faster than those on ascending grades.



8.2 Ascending Grade

An ascending grade is considered HEAVY between and including 1.0 and 1.8 percent. A LIGHT grade is below 1.0 percent.

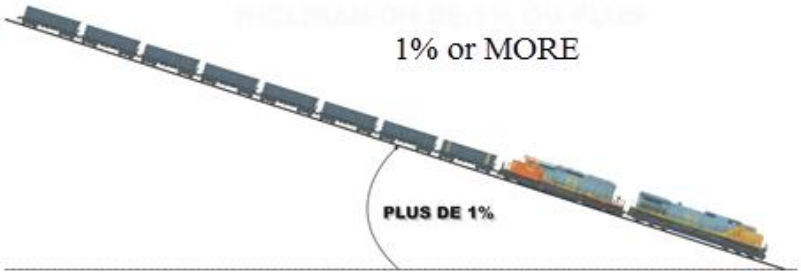
STEEP ASCENDING GRADE 1% or more



8.3 Descending Grade

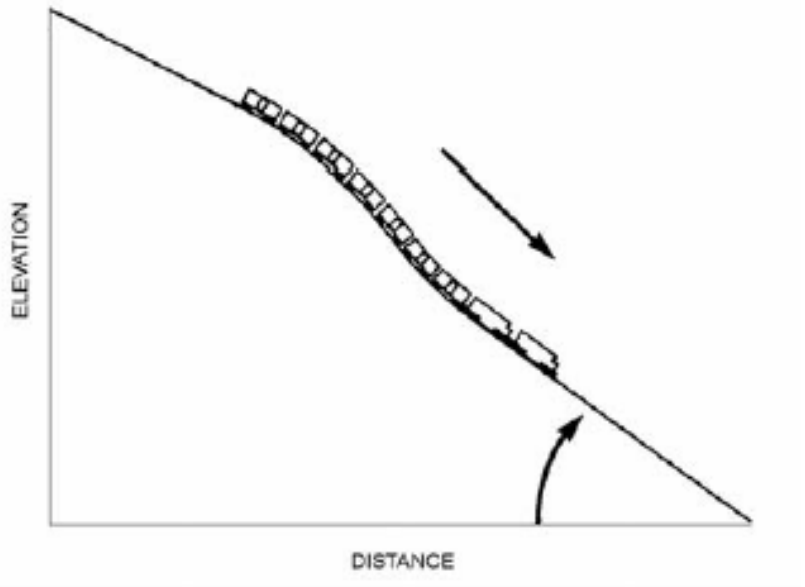
A descending grade is considered HEAVY between and including 1.8 and 0.8 percent, while a light descending grade is below 0.8 percent.

STEEP INCLINE 1% or more



8.4 Mountain Grade

A grade is designated a MOUNTAIN grade when it is greater than 1.8 percent.



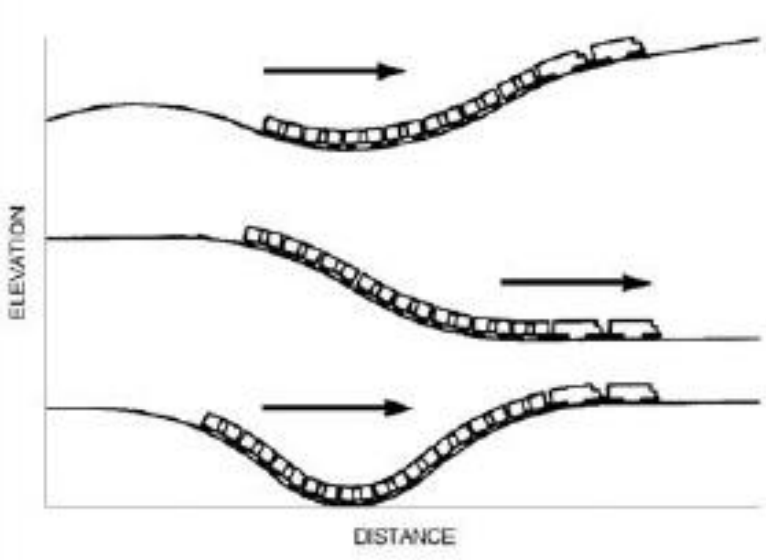
8.5 Cresting Grade

A long ascending grade which rapidly changes to a long descending grade, both of significant magnitude to require a change in the train handling procedure when the grade is topped

CREST

8.6 Sag or Dip

A rapid decrease in grade followed by an increase in grade sufficient to result in abnormal slack adjustment.



8.7 Level track - Departure

LEVEL

Forward Departure

1. Make sure that the brakes on the train and the engine are released before departing.
2. Put the independent brake valve in the "release" position, to allow the coupling to start to stretch.
3. Put the throttle at notch 1 and watch the ammeter.
4. When the ammeter needle stabilizes, bring the throttle up a notch until the desired speed has been reached.
5. If there is wheel slippage during train departure, bring the throttle down a notch until the wheel slippage warning light goes off. If necessary, activate the sanding control and bring the throttle back up to the desired notch. Sanding can be used until it is no longer required.
6. If the train does not manage to depart and the ammeter value is high and/or there is repeated wheel slippage, the throttle must be closed to prevent damage to the equipment and to the track. Bring in the slack and try to depart again: (each car has approximately 4 inches of slack).

9.0 PASSENGER TRAIN HANDLING

9.1 When approaching stopping points, after gradually shutting off power or adjusting throttle as required, and after allowing for any necessary slack adjustment, the initial reduction must be at least 10 psi to ensure brakes apply throughout the train. Subsequent brake pipe reductions will depend upon train speed.

9.2 To avoid slack action, the locomotive brake may be held off during the first reduction, if necessary, until the train brakes have applied.

9.3 After the speed of the train has been reduced sufficiently, the brakes may be graduated off, if necessary.

9.4 When the speed has decreased or the deceleration rate is too high, brake cylinder pressure should be reduced in graduated steps. This is accomplished by moving the automatic brake handle to RELEASE position, on a Passenger equipped 26 type brake valve, move the handle slightly toward release position in the application zone. The equalizing reservoir gauge should show an increase of approximately 4 psi. Do not attempt a further graduation after the brake pipe pressure has been restored to within 10 psi of the standard brake pipe pressure. Graduations should be spaced so a relatively low brake cylinder pressure will be retained when the train is moving 15 MPH or less, especially with cast iron shoes.

9.5 When making a spot stop in passenger service, braking should be commenced at a sufficient distance from the stopping point to allow for two distinct automatic brake applications.
The final application should be commenced at a speed which will permit a light reduction to bring the train to a stop. Time should be allowed for all brakes throughout the train to be released before starting this application.

9.6 When making slowdowns on passenger trains, the slack should be kept stretched by working light power. As the train slows down from the brake application, the throttle must be reduced to prevent excessive load meter readings.

9.7 When passenger trains are controlled by use of a back-up hose or valve, the locomotive engineer must not allow the speed to become excessive. When it is noted that brakes are being applied, place the automatic brake cut-off valve in OUT position. Power must be reduced as required and brakes must not be released until stopped or a signal is received to continue the movement.

10.0 FUEL CONSERVATION

Using the most fuel efficient method of operation, not only reduces the amount of fuel used, it can also have tremendous advantages environmentally. The reduction of emissions into the atmosphere, such as hydrocarbons, nitrogen oxides, carbon monoxides, sulphur dioxides and particulate matter are greatly reduced.
Because fuel conservation techniques are of such importance, the following train handling guidelines are required, whenever, and wherever practicable. These instructions are in addition to those train handling guidelines and instructions contained in GOI train handling section.
Whenever practicable, the most fuel efficient method of operating must be used.

A. Dynamic Brake should be considered the primary choice of retardation.
B. Use contour braking/throttle modulation, allow the natural resistance of grade, curvature and friction slow the train.
C. Use a combination of low power split reduction and dynamic braking.
D. When choosing the low power split reduction method, the following steps must be followed:
1) reduce the throttle to the 4th notch or less.
2) the train air brakes must be applied in the following sequence:
- make an effective minimum reduction.
- reduce throttle again.
- make additional brake pipe reductions in 2-3 psi increments as required,
- throttling down if possible between each supplement.
- * There are occasions when "ZERO THROTTLE" stretch braking might be employed - i.e. cresting grades, relatively short train with multi-unit consists, trains where loads are marshalled near the head end, trains which are dynamically stable and are virtually slack free (i.e. bulk trains).

E. Unless authorized by Time Table or Special Instruction, High Throttle Power Braking (notch 5-8) is prohibited.
F. Whenever practicable, avoid increasing the throttle while the brake is set.
G. When a train is going to be delayed for a period of time greater than 20 minutes, the RTC is responsible to communicate to the affected crew:
- the location and estimated duration of delay
- calculate the speed required based on their distance from the delay point and the duration of the delay.

H. Avoid short bursts of speed.

I. When charging the train air brake system, advance the throttle only when Main Reservoir pressure cannot be maintained at or above 105 psi. then promptly return the throttle to IDLE as soon as Main Reservoir pressure exceeds 105 psi.

J. The following locomotive defects are of particular significance concerning the efficient use of fuel and must be reported to the Central Locomotive Specialist:

1. Non-operating, malfunctioning, or ineffective Dynamic Brakes.
2. Engine not loading properly.
3. Locomotive exhaust (e.g. excessive black smoke).
4. Battery failure or other starting problems.

K. When you are making your train handling decisions, safety and rules compliance are the first consideration. However, fuel conservation must be a major factor in the train handling method selected. Train handling practices in conjunction with fuel conservation will be monitored through random event recorder downloads and on the job observations and evaluations of operating officers to ensure that all locomotive engineers re making the proper fuel conservation decisions.

11.0 PRESSURE RETAINING VALVE (RETAINERS)

The purposes of a pressure retaining valve are:

a) To exhaust brake cylinder pressure to the atmosphere.

b) To retain and control the air pressure in the brake cylinder when the train brakes are released. They help to better control the speed of a train when braking during a descent.

There are two types of pressure retaining valves in service: the four-position valve and the three-position valve. The positions of the valves are indicated by letters cast in the body of the valve:

SD - slow direct exhaust
LP - low pressure
HP - high pressure
EX - direct exhaust

This does not relieve locomotive engineers or crew members of their responsibility to ensure that retaining valves are in the proper position before descending grades.

11. 1 Operation

When the handle is placed in position:

SD - SLOW DIRECT EXHAUST (handle at 45° above the horizon): the air coming from the brake cylinder will go through a choke in the retaining valve and escape to the atmosphere. It will take approximately 90 seconds to release the brakes on a car which had a 20 psi brake pipe reduction.

LP - LOW PRESSURE (handle horizontal): the air coming from the brake cylinder will go through a 10 psi calibrated spring valve located in the retaining valve, and the pressure will lower from 50 to 10 psi in about 60 seconds. The valve will shut off and the last 10 psi brake cylinder pressure will be retained.

HP - HIGH PRESSURE (handle at 45° below the horizon): the air coming from the brake cylinder will go through two calibrated spring valves located in the retaining valve, and the pressure will lower from 50 to 20 psi in about 90 seconds. The valve will shut off and the last 20 psi brake cylinder pressure will be retained.

EX - DIRECT EXHAUST (handle turned downward - vertical): the air coming from the brake cylinder will go directly to the atmosphere since there is no restriction in the pressure retaining valve.

11. 2 Special instruction steep incline

Locomotive engineers operating ore trains on steep incline who are unable to maintain authorized speed due to air brake or dynamic brake problems, **must stop their train and are not to proceed prior to having advised the RTC and the transportation supervisor.** If this occurs, a minimum of twelve retaining valves shall be put in **HP**: (high pressure) position.

12 sets = 36 cars.

During severe snow and/or cold weather operations, it might become necessary to put retaining valves at **HP** (high pressure) on loaded ore trains in order to maintain the prescribed time table speed.

11.3 Manual "load/empty" lever

Some companies Ore car (IOC) **"LOAD and EMPTY"** change-over valves will be placed in the **"LOAD"** position on all loaded cars of ore at **loading points** and will be placed in the **"EMPTY"** position where the cars are emptied as indicated in special instruction. Employees making pull-by inspections must ensure that the valves are in the proper position.

On an empty ore car, the lever must be positioned to "EMPTY".

On a loaded ore car, the lever must be positioned to "LOAD" at all times.

The following demonstrates the importance of having the **"LOAD/EMPTY"** lever in the appropriate position:

- A 20 psi brake pipe reduction on an empty ore car with the lever in the **"EMPTY"** position gives approximately 9,590 pounds of braking force on the wheels of the car.

- The same reduction on an empty ore car with the lever in the **"LOAD"** position gives approximately 23,980 pounds of braking force on the wheels of the car.

There is therefore an increase of 14,390 pounds of braking force on a car with the lever in the **"LOAD"** position. It is this difference in braking force that can cause the wheels to skid on an empty car thus causing flat spots.

It is very important to have the "LOAD/EMPTY" lever in the proper position.

SECTION 10 – EQUIPMENT HANDLING


CN 667013

1.0 GENERAL DEFINITIONS

1. 1 Definitions

A. **Cars or Platforms** – When used together, it means conventional car(s) or platforms. "Cars or platforms" is usually used with a number, such as "10 cars or platforms." Conventional cars count as one. Multiplatform cars count by the number of platforms (i.e., a five-pack counts as five).

B. **Container Slot** – Space for a container on a platform of an intermodal car. Intermodal cars have more slots than platforms. Double stack cars have bottom slots and top slots.

C. **Cushioned Drawbar** – Designed to dampen the car coupling and in-train forces by using a hydraulic-style car impact cushioning system with longer travel than typical drawbars. Cars that often have cushioned drawbars include:

- multi-level automobile cars,
- automobile parts boxcars,
- centrebeam lumber cars,
- intermodal flat cars (greater than 80 feet in length and capable of holding two FEUs),
- flat cars used to ship loads prone to shifting.

Cars that **do not** have cushioned drawbars include:

- covered hopper cars,
- hopper cars,
- gondolas,
- tank cars.

D. **Extreme Head End** – First car or cars on the train immediately next to the lead locomotive consist.

E. **Extreme Rear of Train** – Last car or cars on the train with no other cars trailing except an operating caboose or "crew transportation car." Cannot be ahead of a remote locomotive consist.

F. **FEU** – Stands for "Forty-foot Equivalent Unit." It refers to a container 40 feet long, or its equivalent. Equivalent means two TEUs, or a single container 40 feet or longer (for example, 45 feet, 48 feet, or 53 feet).

G. **Maximum Trailing Car Tonnage** – The trailing car tonnage that a car can safely handle in a train. It depends on the type and weight of the car.

H. **Outside Length** – The distance between pulling faces of couplers. It is not stenciled on the car, but can be found on the train consist documents.

I. **Platform** – Loading area of a car. Conventional cars have one platform.

i. Multi-platform cars typically have 2 to 5 platforms. Intermodal platforms have

ii. container slots.

J. **TEU** – Stands for "Twenty-foot Equivalent Unit." One twenty-foot long container is one TEU.

K. **Threshold Tonnage** – Maximum train tonnage that can be handled without the possibility of causing a maximum trailing car tonnage violation.

i. Threshold tonnage applies to Mixed Conventional trains. (See item 3.4.)

L. **Trailing Car Tonnage** – Applies to Mixed trains. On a Mixed Conventional train, the trailing car tonnage is the total weight of all the other cars following that car in the train.

i. On a Mixed Distributed Power train, the trailing car tonnage of cars located ahead of one or more remote locomotive consists is determined by a calculation that depends on the position of the remote locomotive consists in the train. The trailing car tonnage of cars located behind the last remote locomotive consist is determined in the same manner as it is for conventional trains.

M. **Train** – In these instructions, the term Train can apply to Trains / Transfers or Engines handling equipment.

1.2 Car Type Definitions

A. **Multi-platform Car** – Any car with two or more platforms.

B. **Articulated Car** – A car with two or more platforms sharing common inboard trucks.

C. **Articulated Double Stack Car** –
Articulated intermodal container car with 2 or more platforms. They have deep wells that permit double-stacking (i.e., have bottom container slots and top container slots).

D. **Spine Car** – Articulated intermodal container car with 2 or more platforms.
These cars do not have deep wells to permit double stacking (i.e., single-stack, with bottom container slots only).

E. **Solid Drawbar Connected Car** – A car with two or more platforms that do not share common in-board trucks. Platforms are connected by solid drawbars.

F. **Solid Drawbar Connected Double Stack Car** – a solid drawbar connected intermodal car capable of handling double stacked containers (i.e., have bottom container slots and top container slots).

G. **Long-Runner Car** – a solid drawbar connected intermodal car capable of handling up to either three or four trailers. This diagram shows how a long runner car that can handle a maximum of three trailers would be loaded.

H. **Conventional Car** – Any freight car equipped with two trucks and a standard or cushioned drawbar at each end.

2.0 GENERAL

A. Specific Equipment Restrictions: In addition to those found in this section, specific equipment restrictions may be found in special instructions, operating bulletins, messages, etc., and/or, as a follower line on train journal or on computer generated lists. No matter how they are provided, the instruction must be complied with.

B. Authority for Movement: Prior to placing work equipment, scale test cars, dead locomotives, dimensional Loads, or cars requiring special handling and/or speed restrictions in any train or movement, it must be preauthorized by the proper authority. Conductors must advise the locomotive engineer and other members of the crew and be governed by the applicable speed restrictions or special handling requirements.

C. RTC Notification: Before any movement enters a main track, the RTC must be advised of any car on such train or movement which requires special handling.

D. Speed restrictions on consist/ Train Journals and switch lists: Equipment having a speed restriction which can be identified and tracked in the RMI system will be included on a follower line on Train Journals and Switch lists, and such restriction may not be shown in this section.

E. Conductors on trains and transfers provided with a train consist / journal or train list are responsible for ensuring that such documents once received are thereafter maintained in a current, correct and legible manner as concerns any change in car sequence, Train Brake Status and/or cars with air brakes cut-out.

Any lifts or set-offs must be identified on the original document. In the case of an enroute lift, where a list of cars is provided, it must be verified for accuracy and included with the original document which must have a written insertion mark as indication of where the cars were placed in the train or transfer.

3.0 MIXED TRAIN INSTRUCTIONS – CONVENTIONAL AND DISTRIBUTED POWER

3.1 Marshalling Heavy and Light Cars or Blocks

To reduce undesirable track/train dynamics in Mixed trains, apply the following marshalling instructions, subject to destination blocking.

Heavy Cars and Blocks

- Marshall heavy cars as close as possible to the head end.
- Do **not** marshall heavy blocks of cars to the rear of train unless blocks of cars ahead are equally as heavy.

Light Cars and Blocks

- Marshall light cars or blocks as close as possible to the rear, unless the cars behind are also relatively light.

Marshalling Restrictions:

Articulated Car

Articulated cars should be marshalled in the last half of the train with not more than 4000 tons of traffic to the rear of the car when either end platform is empty. When both end platforms are loaded, this restriction does not apply.

3.2 Short Car Coupled to Long Car (32/65 Rule and 41/80 Rule)

A car with an outside length less than 32 feet must not be coupled to a car or platform greater than 65 feet in outside length.

A car with an outside length less than 41 feet (other than operating cabooses or "crew transportation cars") must not be coupled to a car or platform greater than 80 feet in outside length.

Exception: Cranes coupled to Idler cars are exempt from this item, and any short car/long car violation.

3.3 Maximum Trailing Car Tonnage for Cars Greater than 65 Feet in Outside Length

On Mixed trains there is a maximum trailing car tonnage for all cars greater than 65 feet in outside length. Cars that have more than the allowable maximum trailing must be re-marshalled or set off before the train may proceed.

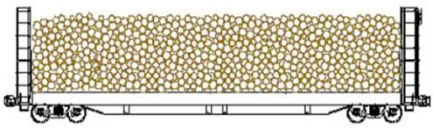
3.4 Threshold Tonnage

When the train tonnage is lighter than the threshold tonnage, maximum trailing car tonnage violations will **not** occur. Threshold tonnages apply to Conventional Trains only.

Threshold Tonnage Conventional Trains: 9550 tons

4.0 SPEED RESTRICTIONS

Use the following table to identify speed restrictions for various kinds of loads and equipment

Speed Restrictions for Various Equipment			
	Equipment Type	**Must NOT Exceed…**	**Additional Information**
A.	**Business Cars / Passenger Coaches**	**Freight train speed**	See item 9.1
B.	**Passenger Equipment**	Passenger Train speed as indicated in Time table	Unless otherwise advised or restricted by operating agreement, applies to Passenger Train equipment (other than business cars) such as GO, Via, AMT, etc..
C.	**Bulkhead flats:** a) Empty b) Loaded crossways with pulp wood or other logs Example: 	45 MPH 40 MPH	When required – notification on consist / train journal as well as when these cars are lifted en route.

Speed Restrictions for Various Equipment			
	Equipment Type	**Must NOT Exceed…**	**Additional Information**
D.	**CWR and Strings of bolted Rail** **16 Strings or more-** ***Curves 8 degrees or over will be identified by the engineering department.**	40 MPH 15 MPH 10 MPH	On straight track On curves of at least 8 degrees*. Through turnouts See item 19.0
E.	**Occupied service Equipment**	35 MPH	**Note:** Occupied service equipment may be moved at the head end of freight trains, behind the locomotive(s), but for no greater distance than 20 miles, and at no greater speed than 20 MPH.
F.	**Snow plows**	35 MPH, handle in the direction of travel or maximum freight speed whichever is the slower.	If not possible to handle the snow plow in the direction of travel, then the train speed must not exceed 20 MPH.
G.	**Spreaders**	Unless otherwise authorized, Spreader in operation Max. speed 15 MPH.	Spreaders handled in a train with the wings secured and nose headed in the direction of movement may be handled at freight speed to a maximum of : 25 MPH for slow speed spreaders.
H.	**Handling of partially loaded cars**		Movements handling partially loaded car, must with extreme care.

5.0 HEAVY CARS AND LOADS – AUTHORITY REQUIRED

5.1 Cars Exceeding Maximum Standard Weight

A Protection Notice or authority from the General Manager - must be obtained for the following cars:

- car (less than 55 feet) exceeding 268,000 pounds
- car (55 feet or longer) exceeding 286,000 pounds.

5.2 Articulated Multi-platform Cars

A. Restrictions are specified in subdivision footnotes for movement of articulated multiplatform cars having a content weight on ANY platform up to **106,000 pounds**.

B. Unless authorized by Protection Notice, authority must be secured from the General Manager - for movement of articulated multi-platform cars:

- having a content weight on ANY platform in excess of 106,000 pounds; or
- having a content weight on ANY platform in excess of 118,000 pounds (when equipped with 125 ton trucks).

5.3 Solid Drawbar Connected Multi-platform Cars

- Restrictions are specified in subdivision footnotes for movement of solid drawbar connected multi-platform cars having a content weight on ANY platform up to **173,000 pounds**.
- Unless authorized by Protection Notice, authority must be secured from the General Manager for movement of standalone multi-platform cars having a content weight on ANY platform in excess of173, 000 pounds.

6.0 SWITCHING, SPOTTING, AND LOADING

6.1 Tank Cars

Due to the sloshing action in loaded or partially loaded tank cars special handling may be required when using train or hand brakes. In train or yard operations, train brakes should be left applied longer after a stop is made to prevent any movement. The application of extra hand brakes may be required to prevent further movement of loaded or partially loaded tank cars after they have been placed.

6.2 Coupling Cars Safely Maximum coupling speed is 4 MPH (unless further restricted elsewhere).

To prevent damage to equipment and lading, couple while moving at the slowest speed possible.
Do not attempt to couple a car or locomotive to another piece of equipment, unless the couplers are in line with each other. When it is necessary to adjust a mismatched coupler, follow the procedures outlined in the transportation safety rules and procedures.

6.3 Centre Beam Bulkhead Flats

Centre Beam Bulkhead Flats: Centre beam bulkhead flat cars must not be coupled to or moved while partially loaded or unloaded, unless the load is equally distributed on both sides of the car deck. Movement of these cars when the load is unbalanced may cause car to overturn and/or derail. Cable tie downs on empty center beam flat cars could create a safety hazard if left loose and improperly stowed. All Equipment Department personnel and customers using this type of equipment are being advised that cable tie downs must be properly secured prior to movement. Instructions for proper securement are stencilled on these cars.

6.4 Switching Restrictions and Precautions - Equipment

Use the following table to identify switching restrictions for specific equipment.
Refer to Dangerous Goods, and, Dimensional Traffic, for additional restrictions.

Switching Restrictions – Types of Equipment		
	Equipment	**Switching Restrictions and Precautions**
A	Service equipment car	See item 17.0
B	Cars **over 65 feet** (outside length), including Multi-level autos	Whether loaded or empty: • Couple to other cars on straight track (when possible). • Follow the steps in item 6.2, Coupling Cars Safely, to properly align coupler heads before coupling. • Shove fully clear of adjacent tracks before being uncoupled. In addition, loaded multi-level automobile cars should not be hung onto during switching.
C	**Multi-platform** cars	a) When loaded or empty: • Do **not** cut off in motion. • Do **not** allow to be struck by a car moving under its own momentum. • Do **not** couple onto with more force than necessary to complete the coupling. b) In addition, when loaded with one or more trailers or containers: 1. Stop between 12 and 6 feet from a stop block or from the equipment being coupled onto. **CAUTION**: If required to align coupler heads, follow the steps in the transportation safety rules. 2. Couple with care to avoid damage to lading.
D	**Two axle** scale test cars	See item 8.0
E	**TEC** (Track Evaluation Car)	See item 18.0
F	Cuts of **20 or more cars**	When cuts of 20 or more cars are subject to damage from overspeed impact: 1. Stop between 12 and 6 feet from the cars to be coupled. **CAUTION**: If required to align coupler heads, follow the steps in the transportation safety rules and procedures. 2. Couple with care to avoid shock.
G	**SBU** (Sense and Braking Unit)	Remove the SBU before lifting or setting off cars from the rear of the train.

6.5 Switching Restrictions and Precautions - Loads

Use the following table to identify switching restrictions for specific loads.
Refer to, Dangerous Goods, and, Dimensional Traffic, for additional restrictions when switching those kinds of loads.

Switching Restrictions – Types of Loads		
	Load	Restriction and Precautions
A	• **Transformers** • **Circuit Breakers** • **Traction Motors** • **Wheelsets**	Always switch with locomotive attached.
B	**CWR or Strings of bolted rail**	**Speed Restrictions – Strings Longer than 150 Feet** a) **Less than 16 strings -** Cars containing fewer than 16 strings of CWR or bolted rail may be moved in regular trains, or special trains, without speed restrictions providing: • CWR equipment is used; • the train consist includes a buffer car at each end of the rail; and • each string is secured.
C	**Trailers or Containers**	Trailers and containers should **not** be: • humped or cut off in motion; or • struck by a car moving under its own momentum. **Caution**: If these actions cannot be avoided, then ensure the movement, and following movements, are properly controlled.
D	**Bridge girders, pipe, poles**, or similar lading	When loaded on three or more flat or gondola cars: • Do **not** cut off in motion.
E	**Prone to shifting and subject to damage**	Use extreme care when switching commodities subject to damage, especially when cars are partly loaded or unloaded. (E.g., shed, team, or industrial tracks)

6.6 Spotting Multi-level Automobile Cars at Automobile Compound Ramps

A. Before placing the car against the stop block, stop the car between 12 and 6 feet from the stop block.
CAUTION: If required to align coupler heads, follow the steps in the transportation rules and procedure.
B. Set hand brakes on all cars.
C. Do **not** couple together multi-levels that have over 3 inches difference in deck heights

Use the following table to determine the distance between railcars.

Bridge plate length	Distance between railcars
53 inch	Position multi-level car with 38 to 46 inches between cars. Do not compress or extend cushioned couplers to attain this distance.
56 inch	Position multi-level car with 41 to 49 inches between cars. Do not compress or extend cushioned couplers to attain this distance.
Adjustable length	Position multi-level car with 38 to 56 inches between the centre point to centre point of the barrel rings on adjacent multi-level cars. Do not compress or extend cushioned couplers to attain this distance.

6.7 Spotting Cars Loaded with Trailers at Unloading Ramps

Complete the following actions when spotting cars loaded with trailers at unloading ramps.

- Stretch slack.
- Apply hand brakes.
- If there is a ramp coupler, test to ensure coupling is made to the ramp.

6.8 Loading Bridge Girders, Pipe, Poles, or Similar Lading on Ferries or Barges

- Load when the aprons are as level as possible.
- After loading, carefully examine blocking and tie down fastenings.

7.0 MARSHALLING RESTRICTIONS

7.1 Marshalling Restrictions – Equipment

	Equipment Type	Instructions to Marshall in FREIGHT TRAINS
A	**Multi-Level Autos – LOADED**	Marshalling loaded multi-level autos: Do NOT place immediately behind open top cars containing coal, sand, gravel, sulphur, or similar commodities. Separate from these open top cars by at least 1 closed type car, when practicable.
B	**Snowplows and Spreaders handled deadhead**	a) Marshall at the extreme rear of train, or immediately ahead of operating caboose (where provided). b) Run in the direction of travel. If not possible to run in the direction of travel: wings must remain properly secured; snow must not pack behind wings during movement; snow-plow or spreader must be turned at first available wye or turntable. c) Do not marshall "nose to nose" account limited clearance on curves. d) See Speed Restriction Chart, item 4.0.
C	**Cabooses**	Trailing car tonnage must not exceed 2500 tons.
D	*****BAD ORDER*****	A train receiving this Car Movement Restriction Message (CMRM) on any of the following documents: Work Order, Car Handling Report, Outbound Wheel Report or Tonnage Profile Indicates car(s) have Mechanical defect(s) and subject car(s) must not be lifted or moved *unless* instructions are received from the RTC that car(s) are safe to travel, these instructions may or may not include Restrictions or Special Handling information. In some cases, a Mechanical Services (MS) employee may provide the required handling instructions directly to the crew. In all instances, the train crew must record the handling information received from either the RTC or MS employee on the Crew information /brake status form.
E	**B/O, SAFE TO TRAVEL**	A train receiving this Car Movement Restriction Message (CMRM) has a Bad Order car that has been deemed safe to travel by Mechanical, h*andled*, in accordance with the CMR Messages received.
F	**Rotary Couplers**	When enroute, rotary couplers must not be coupled to each other, unless it is confirmed that one of the couplers has been secured to prevent it from turning.

7.2 Marshalling Restrictions – Loads

	Load Type	Instructions
A	**Loads prone to shifting** (E.g., pipe, timber, poles, metal rods, or other similar material.) Marshalling restrictions apply when lading is both: a) in an open: - top car, - trailer moving in piggyback service, or - container in the end position on the car; and b) not protected by end bulkheads extending to top of lading. Note: These loads are not prone to shifting: flat cars loaded with steel plates or machinery; bulkhead flats loaded with banded or packaged lumber that does not extend above the bulkhead by more than 50 percent.	On trains operating without a manned caboose, marshall loads prone to shifting not more than: 2000 feet from the leading locomotive (all other trains). Separate loads prone to shifting from occupied: cabooses, service equipment cars, and passenger cars, by at least two cars of any type, or by one: full sized steel box car, car loaded with one or more containers, or bulkhead type car the ends of which extend above the load being protected against. Separate loads prone to shifting from: a locomotive, a car containing livestock, an SBU (Sense and Braking Unit) by at least one car of any type.
B	**Special loads requiring observation**	Marshall as close as possible to leading locomotive, and not exceeding 2000 feet from the leading locomotive. Notification that a special load is in the train is given by: train consist, protection notice or General Manager.
C	**Transformers, or Circuit breakers**	Marshall at head-end of the train, no more than 15 car lengths (approximately 600 feet) from the locomotive, when practicable.
D	**Traction motors, or Locomotive wheelsets**	Marshall at head-end of the train to facilitate switching to shops, when practicable. (Do not delay trains to accommodate this instruction.)

8.0 SPECIFIC EQUIPMENT AND LOAD INSTRUCTIONS

8.1 Scale Test Cars

Speed Restrictions

Car Type	Car Numbers	When authorized freight train peed is:	Maximum speed with scale test cars is:
Two-axle	420926, 420928, 420932, 420939, 420941 CN 52104, CN 52108, CN 52109, CN 52257, CN 52258, CN 52274, CN 52277, GTW 52264, GTW 52265, MNWX 444, MNWX 555	30 MPH or over 25 MPH or less	30 MPH Authorized freight train speed
Short, four-axle	420927, 420930, 420934, 420935, 420936, 420938, CN 52280, CN 52281, CN 52284, CN 52285	50 MPH or over 45 MPH or less	45 MPH or less Authorized freight train speed
Unrestricted	420937, 420942, 420940 CN 52259, CN 52279CANX 61300, CANX 61301, MNWX 333	Any speed	Authorized freight train speed

8.2 Permission for Movement

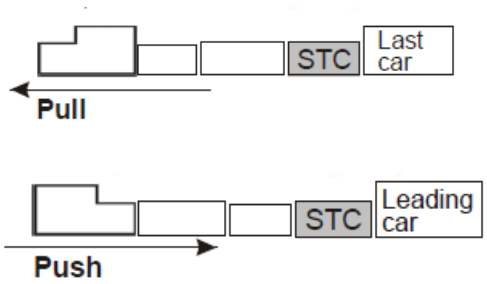
Before placing a scale test car in a train, the responsible Manager must give permission.

8.3 Switching Two-axle Scale Test Cars (STC)

A. Adjacent car(s) must **not** be longer than 55 feet outside length.

B. When pulling, marshall two-axle scale test car immediately in front of the last car in the direction of travel, unless handling only scale test car(s). Last car must not exceed 40 tons gross weight.

C. When pushing, marshall two-axle scale test car immediately behind the leading car in the direction of travel, unless handling only scale test car(s). Leading car must not exceed 40 tons gross weight.



8.4 Marshalling Two-axle Scale Test Cars

A. Marshall immediately ahead of:
- the operating caboose (where provided), or
- the rear car. (Maximum rear car weight is 40 gross tons.)

B. Adjacent car(s) must have:
- an outside length of 55 feet or less, and
- operative brakes.

C. Only one two-axle test car may be handled per train.

8.5 Marshalling Short Four-axle Scale Test Cars

Maximum length of adjacent car(s) is 80 feet (outside length).

9.0 BUSINESS CARS (RAILWAY) –PASSENGER COACHES

9.1 Business cars should be placed at the rear of train. Authority may be granted by message or by business car personnel to marshal the car at any other location in the train. DO NOT handle these cars while switching if handled in freight service. These cars must not be handled without air brake system charged. Extra precaution must be taken to secure this equipment when left standing. Cars equipped with diaphragms and striker plates must not be coupled to equipment with double shelf couplers. When handled in freight train consists, freight train speeds apply.

9.2. Passenger Coaches when handled in freight trains:
- Are not to be coupled to equipment with double shelf couplers (e.g. Tank Cars);
- Are restricted to no more than two (2) coaches per train;
- Unless otherwise directed, must be marshalled as the second (and third where applicable) from the last car on the train.

- DO NOT handle these cars while switching if handled in freight service. These cars must not be handled without air brake system charged. Extra precaution must be taken to secure this equipment when left standing.
- When handled in freight train consists, freight train speeds apply.

10.0 OPEN TOP EQUIPMENT

Dust Producing Commodities: Open top loads of dust producing commodities such as sand, coal, chips, ore concentrate, etc., must not be placed immediately ahead of other open top loads such as automobiles, mobile homes, camper trailers, trucks, farm machinery or transformers. At least one of the intervening cars when practicable, must be a closed top type car.

There is no restriction against handling such loads next to each other and trailers thus loaded may be handled on the same flat car.

11.0 GONDOLA CARS LOADED WITH PULPWOOD

A. The maximum height that pulpwood may be accepted when loaded in gondola cars is not to exceed the steel end doors or side stakes. Conductors will not pick up cars loaded in excess of this height and will advise shippers accordingly.

B. Before entering CTC or multitrack territory, after picking up such cars, inspection must be made of each individual car to ensure cars are in condition to continue movement to destination.

12.0 END DOORS

Cars with end doors must not be moved from a loading or unloading point until the end doors are closed and secured.

13.0 SIDE STAKES CARS (RACK FLAT)

Cars equipped with side stakes must not be moved until side stakes are placed in proper receptacles.

14.0 TIE DOWN CHAINS

Cars equipped with tie-down chains and/or cables must not be moved until chains and/or cables are properly secured.

15.0 ROTARY DUMPING EQUIPMENT

Rotary dumping equipment, air hoses must not be crossed under the couplers in the conventional manner, but must be connected in a straight line alongside the couplers. The double rotary car has dual angle cocks and air hoses at each end of the car to enable connecting hoses to be connected in a straight line. Hoses not used must have a dummy coupling applied.

Note: This instruction applicable to unit trains of other commodities (coke, sulphur, etc.) which consist of rotary dumping equipment and when moving blocks of this equipment in all freight trains.

16.0 MOVEMENTS NOT CONTROLLED BY THE LEAD LOCOMOTIVE, PILOTS

Except for snowplows, cab cars on commuter trains or other similar passenger equipment, movements not headed by the controlling locomotive must not exceed 25 MPH, **unless otherwise specified by CROR rule 115.**

If a locomotive is not equipped with a pilot in the direction of movement, that movement is restricted to 20MPH.

17.0 SERVICE EQUIPMENT CARS

17.1 Definition:

Service equipment refers to railway maintenance of way equipment, wrecking auxiliaries, rolling stock used to house employees at work sites and material cars used for railway company purposes if not used in revenue service.

17.2 Responsibilities

When occupied service equipment is placed in sidings, back tracks, or other tracks:

1. The conductor must advise the RTC of the location and track
2. The RTC will issue a GBO or DOB specifying the location of such equipment
3. The switches of back tracks and other tracks will be spiked or locked with special locks.
4. Where practicable, the switches of sidings will be spiked and locked with special locks

17.3 Switching Restrictions

The following instructions apply when switching occupied service equipment cars, or unoccupied service equipment cars equipped with stoves, propane ranges, or tables;

1. Do not couple to or move occupied service equipment cars, unless authorized by the person in charge.

2. Do not cut off in motion.
3. Do not cut off other cars in motion towards these cars.
4. Before coupling to or moving occupied service equipment:
   a) Stop between 12 and 6 feet from the cars to be coupled or moved. **CAUTION**: If required to align coupler heads, follow the steps in the transportation safety rules and procedures
   b) Notify persons in or about the cars.
   c) Check cars to ensure all cables, hoses, temporary ladders etc., have been removed.
   d) After receiving the proper signal, couple carefully to avoid shock.

Note: The conductor will be informed when these restrictions apply to unoccupied service equipment.

17.4 Marshalling Restrictions

A. Location:

Freight train: marshal at the rear of a freight train immediately ahead of operating caboose, where provided.

Mixed freight and passenger train: marshal immediately ahead of any passenger cars.

Where track configurations require extreme care in set-off movements, may be marshaled:
- directly behind the lead locomotive consist;
- at **speed not exceeding 20 MPH**;
- for distance not exceeding 20 miles.

Note: These location restrictions do not apply to flangers, snow plows, spreaders and test cars are exempted from this item.

B. Maximum number of cars - A train handling:

30 OR LESS occupied service equipment cars, is restricted to 60 cars in total.

MORE THAN 30 occupied service equipment cars is restricted to:
- 80 cars total, and
- service equipment cars only.

Unoccupied service equipment cars containing stoves, propane ranges, or tables is restricted to 80 cars in total.

C. Unoccupied service equipment: The conductor will be notified when these restrictions apply to unoccupied service equipment.

18.0 TRACK GEOMETRY – TRACK EVALUATION CARS

18.1 Track evaluation system cars (T.E.S.T. CONSIST)

A. Test Cars are in the charge of a system supervisor. The supervisor must be qualified in CROR and qualified to conduct the required air brake test and inspect such equipment in compliance with the applicable GOI air brake instructions. Testing can be performed in both forward and reverse movements. TEST cars are equipped with a pilot and should run in the forward direction whenever practicable.

B. Test cars should be placed at the rear of train, immediately ahead of the operating caboose, where provided, when handled in freight or work trains. They should be placed immediately ahead of passenger equipment when handled in mixed trains. Authority may be granted by TEST Car personnel to marshal the car at any other location in the train.

C. Test power box car is equipped with a pilot and should run in the forward direction only.

D. When testing, copies of all DOBs and TGBOs must be supplied to the Test supervisor, prior to departure.

E. Test consist equipment may operate at freight speed.

F. Authority for movement and marshalling instructions will be granted by MESSAGE and/or Test car personnel when testing and/or deadheading.

G. One train crew member may occupy test coach car to handle tail end operations. Test car movement will be as prescribed by the test car supervisor.

H. TEST cars must be handled with care at all times to protect sensitive equipment. An onboard impact detector measures and records all switching activities.

18.2 TEST cars are to be marshaled as follows:

On Work Trains
Locomotive, caboose (if any), box power car, coach; TEST on extreme rear.
On Freight Trains less than 30 cars:
TEST consist on extreme rear.
On Freight Trains, 30 or more cars:
TEST consist next to units.

Note: Only partial testing can be performed on freight trains.

Whenever possible, when handling TEST car on GWCI lines in "testing" mode, it should be handled with a work train.
One train crew member may occupy TEST coach car to handle tail end operations that are usually performed in the caboose. TEST car movement will be as prescribed by the TEST Supervisor.
Air brakes will remain cut-in unless otherwise requested by the TEST supervisor. Reference RTC Order No. 38352, authority has been granted by Transport Canada to cut-out brakes on the rear truck of the TEST coach as required to perform track evaluation.

Trains

Do not handle on freight trains, except under special circumstances when authorized by the TEC staff.

1. When deadheading, marshal directly behind the trailing locomotive.
   With Train Set 1, also add at least 4 cars with operative brakes to the TEC consist; because the instrumented truck on 424993 does not have air brakes.
2. When testing, marshal all cars in the set at the rear of the train.
   If the dedicated locomotive accompanies the TEC cars, marshal the locomotive at head end of the train.

Note: other types of track Geometry – Track evaluation cars may be use on GWCI, in all cases the system supervisor will give the required instructions.

19.0 RAIL CHANGE OUT

Movements handling continuous welded or end-bolted rail exceeding 82 feet in length are restricted:

- To a maximum permissible speed of 40 MPH, reducing to 10 MPH through turnouts except when signal indication permits a speed of 30 MPH or greater through turnouts, then speed must not exceed 20 MPH through such turnouts;
- To a total of 40 continuous welded/end-bolted rail cars when other equipment is handled in the train. The train must not exceed 6400 feet in total length (including locomotives) and rail cars must be marshalled within the front half of the train.
- To a total of 82 continuous welded/end-bolted rail cars including any required idler cars, when other equipment is not handled in the train.

20.0 HIGH AND SLOW SPEED CRANES

A. High Speed cranes with boom disconnected will be governed by speed restrictions indicated on train journals.

B. Slow Speed cranes with boom disconnected must be handled in a train with boom trailing, and at a maximum speed of 25 MPH. If attached, it may be handled with boom leading at a speed not exceeding 20 MPH, to the first point where it can be turned.

C. When handling High or Slow Speed cranes with boom and counterweight not detached, movement is restricted to 20 MPH. The crane operator must ride in the crane cab and have radio contact with the train and engine crew.

D. A car not exceeding 60 ft. in length must always be coupled to the end of the crane opposite from the boom car.

E. High and Slow Speed Cranes when moving in freight trains must be marshalled as close to the headend as possible with at least 5 cars (when possible) placed between the crane and the locomotive(s) handling the train. The air brakes on such cranes will be cut out by Work Equipment personnel and same will be indicated on a follower line on the train journal.

F. Unnecessary switching with High and Slow Speed cranes in the consist must be avoided whenever possible. When marshalling and switching of trains is required, cranes should be set out until switching is complete.

G. Fixed cab pile drivers, boom leading or trailing 25 MPH.

21.0 SPECIALIZED EQUIPMENT

21.1 Self-Propelled cars & Specialized Equipment

A. Permissible speeds

Rail defect detector cars when testing - 15 MPH.

Rail defect detector cars not testing - Time table passenger speed or 50 MPH whichever is less.

Rail grinding equipment - maximum freight train speed or specified speed for that type of equipment whichever is less.

Highway-Rail Wrecking Cranes - maximum rail speed 25 MPH, reverse 15 MPH, through turnouts and crossovers 5 MPH.

B. Protection when tied up

The switches governing movement to the tie-up track must be locked with special locks and lined against other movements. When it is not practicable to lock these switches the RTC must be notified. When so notified, the RTC will issue instructions to all trains affected that such equipment must not be coupled on to.

21.2 Service Equipment

Multi-Purpose Machine equipment:

The following Multi-Purpose Machine equipment (MPM) when handled in a freight train must be marshalled on the extreme tail-end:

- Herzog MPM consisting of power units in series HZGX 100 - 199, platform car series HZGX 1000 - 1999, and cab control unit HZGX 18900; or;
- Georgetown MPM in car series GREX 5000 - 5300.

Note: These MPM power units and cars have their operating levers secured and are considered as permanently coupled equipment. When handled in a freight train, SRS follower line generated will state: **"TAIL END CAR - MUST BE LAST CAR ON TRAIN"** When so indicated the term "LAST CAR" refers to the entire MPM consist.

21.3 Self-propelled Geometry

This car when not operating as a track unit, will be operated by qualified engineering employees under the following instructions:

- operate as a train under the direction of a conductor;
- must not exceed authorized freight speed;
- must not exceed 30 MPH:
- between the advance signal and, until the unit is entirely clear of any controlled or automatic interlocking;
- approaching all public crossings at grade equipped with automatic warning devices until such crossing is fully occupied
- Operating in CTC will be governed by the indication of all block and interlocking signals.

22.0 DIMENSIONAL LOADS

Classification

Dimensional traffic is classified according to width, based on shipment being loaded on a car less than 42 feet. This information will be included on the train consist in a "Instruction Message"

Classification Effective Width
W-00 : 10' 8' or less
W-01 or D-1: 10' 9" to 11' 0"
W-02 or D-2: 11' 1" to 11' 6"
W-03 or D-3: 11' 7" to 12' 0"
W-04 or D-4: 12' 1" to 12' 6"
W-05 or D-5: 12' 7" to 13' 0"
W-06 or D-6: 13' 1" to 13' 6"
W-07 or D-7: 13' 7" to 14' 0"
W-08 or D-8: 14' 1" to 14' 6"
W-09: 14' 7" to 15' 0"
D-9:14.7" wide and over (description generally used on CN)
W-10 15' 1" and over (description generally used on CP)

For overhanging shipments or shipments loaded on cars of 42 feet or longer, the effective Width" is reflected by a more restrictive classification.

Note: Classification W-00 refers to dimensional traffic that has an effective width of 10'8" or less. (e.g. shipment exceeds maximum weight or height standards but not maximum width standards).

Examples:
DL4011109 W-08 GENERAL RESTRICTIONS APPLY
or
RL4013099 W-05-07 GENERAL AND SPECIFIC RESTRICTIONS APPLY

A. File Number
- A file number commencing with "DL" indicates that General Restrictions apply.
- (e.g. DL4011109)
- A file number commencing with "RL" indicates General and Specific Restrictions apply. (e.g. RL4013099)

B. Restrictions
- "General Restrictions Apply," indicates that subsection (G) of the GOI applies.
- "General and Specific Restrictions Apply," indicates that SPECIFIC RESTRICTIONS of the protection notice also apply.

C. **Authorization:** All dimensional loads must be preauthorized for movement on line.

Prior to entering or fouling a main track, the train crew is responsible to inform the RTC of any Dimensional load in the W-01/D1 to W-10/D9 category on their train.

Dimensional loads handled in yards are the responsibility of the Train or Yard crew and Yard Coordinator (supervisor). The crew is responsible to inform the RTC prior to moving a dimensional load in the W-01/D1 to W-10/D9 category onto a non-main track which is adjacent to a main track.

To ensure that dimensional traffic is properly identified and protected, yard crews must advise the Supervisor - Transportation of all loads or cars that appear dimensional which are not identified as dimensional on a switch list, cut list or journal. This must be done promptly to ensure system special handling codes will be applied.

D. **Classification:** Dimensional Load classification will be based on their Height, Weight, and/or Width as follows:

Height: Loads classified as Dimensional for Height will be classified as DX and will be governed by restrictions contained in a dimensional message.

Weight: Loads classified as Dimensional for Weight will be classified as DW and will be governed by restrictions contained in a dimensional message.

Width: Loads classified as Dimensional for Width will be classified as W-01/D1 (over 10'8" in width) to D9 (over 14'7" in width) or W-10 (15.1" and over) will be governed by restrictions contained in a dimensional message.

E. **Dimensional Messages:** Except for those identified as "UNRESTRICTED", Operating crews must ensure that they are in possession of a Dimensional clearance message for all Dimensional loads handled on main track.

Operating crews and the RTC must observe and be governed by all general and specific restrictions contained in the dimensional message.

Note: Unrestricted dimensional may be present in the DX, D1, and D2 category and will be identified by the letter "U" i.e. DXU, D1U, D2U and have no specific restrictions.

F. **Marshalling:** Unless otherwise instructed, dimensional loads or cars identified by the letter "U" i.e. DXU, D1U, D2U and/or have no specific restrictions, may be marshalled anywhere on a train.

Unless otherwise instructed or stated in the message, restricted Dimensional equipment should be marshalled as close to the headend as possible so that they can be seen by the train or transfer crew. Marshalling instructions do not apply to trains primarily engaged in pick-up and/or set-off service and do not supersede other instructions which prohibit marshalling of certain cars next to the engine.

G. Meet/Pass Restrictions

Note: Crews on trains or transfers handling a Meet/Pass restricted load are responsible for the clearing of the restricted load when passing equipment on adjacent tracks other than sidings or main tracks.

Loads classified as DX or DW are to be treated as non-dimensional for meeting and passing.

Except for W-00 and W-10, loads identified by the D-X as the same meaning as W-X.

Unless further restricted by message, there are no meet/pass restrictions for trains handling dimensional traffic in category W-01/D1 to W-03/D3 when meeting/passing one another.

When the dimension requires special arrangements will be afforded by the RTC as per CROR rule 101 d).

When there is an option of speeds for the two trains at a meet/pass location, the RTC is to advise the trains which option is to be used in the meet/pass.

Neither train may proceed beyond the meeting nor passing point(s) given by the RTC until arrangements have been made between the trains required to meet/pass as follows:

Meet/Pass Instructions (Applicable until the restricted car(s) pass one another)

D4	
On adjacent Main tracks may meet/pass:	
D1, D2	No restrictions
D3:	When one movement is stopped, the other movement is unrestricted. When both are moving at meet/pass location, do not exceed 10 MPH.
D4	When one movement is stopped, the other movement not to exceed 10 MPH.
D5	Both movements must stop, then one movement must proceed on hand or radio signal.
D6+:	Must not meet/pass D6 or greater.
On single track at sidings may meet/pass:	
D1 to D6	No restrictions.
D7	When one movement is stopped, the other movement is unrestricted. When both are moving at meet/ pass location, do not exceed 10 MPH
D8:	When one movement is stopped, the other movement not to exceed 10 MPH.
D9+:	Must not meet/pass D9 or greater.

D5	
On adjacent Main tracks may meet/pass:	
D1:	No restrictions.
D2	When one movement is stopped, the other movement is unrestricted. When both are moving at meet/ pass location, do not exceed 10 MPH
D3	When one movement is stopped, the other movement not to exceed 10 MPH
D4	Both movements must stop, then one movement must proceed on hand or radio signal.
D5+:	Must not meet/pass D5 or greater.
On single track at sidings may meet/pass:	
D1 to D5	: No restrictions.

D6	When one movement is stopped, the other movement is unrestricted. When both are moving at meet/ pass location, do not exceed 10 MPH
D7	When one movement is stopped, the other movement not to exceed 10 MPH.
D8	Both movements must stop, then one movement must proceed on hand or radio signal.
D9+	Must not meet/pass D9 or greater

D6	
On adjacent Main tracks may meet/pass:	
Non-Dimensional and D1	When one movement is stopped, the other movement is unrestricted. When both are moving at meet/ pass location, do not exceed 10 MPH
D2	When one movement is stopped, the other movement not to exceed 10 MPH
D3	Both movements must stop, then one movement must proceed on hand or radio signal
D4+	Must not meet/pass D4 or greater
On single track at sidings may meet/pass:	
D1 to D4	No restrictions
D5	When one movement is stopped, the other movement is unrestricted. When both are moving at meet/ pass location, do not exceed 10 MPH
D6	When one movement is stopped, the other movement not to exceed 10 MPH
D7	Both movements must stop, then one movement must proceed on hand or radio signal
D8+:	Must not meet/pass D8 or greater.

D7	
On adjacent Main tracks may meet/pass	
Non-Dimensional	When one movement is stopped, the other movement is unrestricted. When both are moving at meet/ pass location, do not exceed 10 MPH
D1	When one movement is stopped, the other movement not to exceed 10 MPH
D2	Both movements must stop, then one movement must proceed on hand or radio signal
D3+:	Must not meet/pass D3 or greater
On single track at sidings may meet/pass	
Non-Dimensional and D1 to D3	No restrictions
D4	When one movement is stopped, the other movement is unrestricted. When both are moving at meet/ pass location, do not exceed 10 MPH
D5	When one movement is stopped, the other movement not to exceed 10 MPH
D6	Both movements must stop, then one movement must proceed on hand or radio signal
D7+:	Must not meet/pass D7 or greater.

D8	
On adjacent Main tracks may meet/pass:	
Non-Dimensional	When one movement is stopped, the other movement is not to exceed 10 MPH
D1	Both movements must stop, then one movement must proceed on hand or radio signal not exceeding 10 MPH
D2+	Must not meet/pass D2 or greater
On single track at sidings may meet/pass	
Non-Dimensional and D1 to D2	No restrictions.
D3	When one movement is stopped, the other movement is unrestricted. When both are moving at meet/pass location, do not exceed 10 MPH
D4	When one movement is stopped, the other movement not to exceed 10 MPH
D5	Both movements must stop, then one movement must proceed on hand or radio signal
D6+	Must not meet/pass D6 or greater

D9
All Main tracks and sidings. Be governed by message instructions.

SECTION 11 – TIBS

1.0 TRAINS OPERATING WITH TRAIN INFORMATION BRAKING SYSTEMS (TIBS)

1.1 The TIBS is composed mainly of two separate units as follows:

Note: When the term "display unit" is used in these instructions, it refers to CDU, IFD, ICE or FIRE

1.2 Sense and Braking Unit (SBU)
The SBU senses brake pipe pressure, motion and direction and transmits this information to the head-end of the train. The SBU is equipped with either a red reflectorized plaque or a highly visible marker (HVM).

Note: Further references in this section to the HVM do not apply unless the SBU is so equipped.

In addition, the SBU is equipped with an emergency braking feature.

1.3 Communications Display Unit (CDU)
The CDU accepts, analyzes and displays information relevant to the rear of the train. The CDU provides audible alerts and displays to the locomotive engineer.

1.4 Integrated Function Display (IFD), Integrated Cab Electronics (ICE) and Functionally Intergraded Railroad Electronics (FIRE)

The IFD is the menu driven operator's screen on GE AC locomotives; ICE or FIRE are the operator's screen on SD90MAC locomotives. IFD, ICE and FIRE accept and display information relevant to the rear of the train.

1.5 Procedure to Disconnect Head-End Display Unit
When necessary to disconnect the display unit, place the radio circuit breaker in the OFF position and then disconnect the twist lock connector. Once the twist lock connector is removed, it is to be placed in the dummy receptacle (where provided) and the display unit keyed to indicate the test ID code of 0000.

2.0 TIBS ARMING FEATURES

2.1 ARMING of TIBS is to be performed as follows:

1. Enter the ID Code of the SBU assigned to the train into the display unit, e.g. 80801.
2. During pre-departure testing, when the test button on the SBU is pressed, the display unit will sound an audible alert and display "ARM NOW" for five seconds.
3. To ARM the display unit, the COMM TEST button must be pressed within the five second interval in which the "ARM NOW" display is shown. This will cause the display unit to indicate "ARMED."
4. The COMM TEST button must not be pressed until the display indicates "ARM NOW." Pressing the button in advance of this display will cause the following:
   - an audible alarm will sound and the display will flash "NOT ARMED." Locomotives equipped with an IFD display "EOT EMERG STATUS DISABLED";
   - the display will revert to normal, with the exception that "U" will be displayed in the COMM field, or the NOT ARMED indicator will be illuminated, as a reminder that the display unit is not armed. Locomotives equipped with an IFD continue to display "EOT EMERG STATUS DISABLED."

2.2 Once TIBS is armed, if the display unit ID code is changed from that to which the system is armed, the display or light will flash NOT ARMD. After a brief period the system will revert to normal display

accompanied by "U" or "NOT ARMED" light as a reminder that the display unit is not armed to the ID code entered therein. Locomotives equipped with an IFD will display "EOT EMERG STATUS DISABLED."

2.3 IFD Arming Procedure

There are **two** varieties of IFD. Check EOT Status window. If it displays "Armed" you must disarm it before arming to a new SBU ID (See Disarm Procedure). If it does not display "Armed," continue with the arming process.
Select "EOT Setup" Screen • Press F7 'Accept'.

Arming Procedure continued...

- Personnel at end of train is instructed to press button on the SBU.
- EOT Status flashes "Arm Now." F7 flashes 'Arm Two Way.'
- **Press F7 immediately.** You have only 3 seconds to do this.
- If successful, EOT Status window reads 'Armed.'
- 'Rear' indicates air pressure at end of train.

3.0 SBU MODEL 6695

Test Button Operation

Note: The test button must be pressed and held until the display shows the feature desired.

Menu Items.

A. PRESSURE
Releasing the test button when the word "PRESSURE" appears allows you to read the brake pipe pressure.

B. ARM
ARMING: Releasing the test button when the word "ARM" appears will start the "ARMING" sequence.

C. TEST
Releasing the test button when the word "TEST" appears will start a self test. The SBU display will scroll the following items during the test.

D. PHOTOCELL
Releasing the test button when the word "PHOTOCELL" appears allows you to test the HVM operation. Pressing the test button again ends the test.

E. LITE
Releasing the test button when the word "LITE" appears will activate a feature where the HVM will continue to flash with no air pressure and light present.
If selected by mistake, lay the SBU gently on its side to deactivate.
During pre-installation and testing of the Model 6695 at locations not equipped with an air supply, the following pre-installation tests must be performed to verify the SBU is operating as intended:

1. Install fully charged batteries.
2. Depress the test button and release when the display indicates "TEST" and observe the test procedure.
3. Ensure the display indicates "Self -Test Good" and does not indicate "Battery O##," "Battery WEAK##," or "Battery REPLACE." Enhanced train consists will indicate when a train is equipped with a Model 6695 SBU.

4.0 OPERATION OF MODEL 6696 CDU

4.1 Functions which may be selected with "MENU UP" or "MENU DOWN" are:

- Change ID
- Change train length
- Odometer
- TL Distance
- Measured mile
- Disarm
- Change loudness
- Change brightness
- Self-test

4.2 Changing ID Code

1. **To change the ID code:**

   Press the MENU UP or MENU DOWN key until the function menu display reads “change ID #####”. The ID code is changed by using the [→] or [←] keys to select digits to be modified. The current active digit flashes. Use the [↑] or [↓] keys to increment or decrement the selected active digit.

2. **Once the ID code has been selected:**

   Press the SET key to store the new ID code.

3. **Function menu display will read:**

   “Saving...” followed by “Press SET.

4. **The alarm indicator will flash ON accompanied by 5 beeps from the sonalert and “ID Code Display” will show:**

   “ID = #####” alternating with “NOT ARMED”.

5. **The locomotive engineer then alerts the employee at the rear of the train** via

   voice radio to proceed with arming. The employee at the rear of the train momentarily presses the TEST button on the SBU.

6. **When the CDU receives the request to arm message, it prompts the locomotive engineer for a response.**

   The function menu display reads:

   “PRESS COMM/ARM TO ARM” for five seconds accompanied by beeps from the sound alert.

7. **If the locomotive engineer presses the SET key during the 5 second window, the system will arm and the CDU will then briefly display**:

   “SYSTEM IS NOW ARMED”

   The NOT ARMD alarm indication will turn off.

8. **If the SET key is not pressed during the 5 second window, or if the SBU doesn't respond as described above, the function menu display will briefly show:**

   “ARMING FAILED”. In this case, the process must be repeated from Step5 above.

5.0 USING THE TRAIN LENGTH DISTANCE FUNCTION

A. To use the Train Length Function:

1. Press the MENU UP or MENU DOWN key until the function menu display reads:
2. "TL Distance press SET". As the lead locomotive passes the initial starting
3. point, press SET and the displayed length will decrement accordingly. The
4. display will always indicate the distance to go before the end of the train is clear of the point to be passed.

B. Press CANCEL key to reset the train distance function.

5.1 Measuring Distance Travelled Using the Odometer

1. To use the Odometer: Press the **MENU UP** or **MENU DOWN** key until the function menu display reads: "Odometer press **SET**".
2. To measure distance: Press the **SET** key. The function menu display reads: "Odometer 00000 ft.". The 5-digit count is initially set to zero and, as train moves, it begins to count the distance.
3. Press the CANCEL key to reset the odometer function.

5.2 Calibrating the Odometer Using a Measured Mile

Calibration of the Odometer is used to compensate for locomotive wheel wear and differences in wheel diameter from one locomotive to another. The allowable range of locomotive wheel diameters is 34.00 inches through 46.00 inches. The CDU default is 38.1 inches.

1. **To calibrate using a measured mile:**
   Press the MENU UP or MENU DOWN key until the function menu display reads:
   "Measured Mile press SET".
   When the zero mile marker is passed:
   Press the SET key to begin the measurement.
   The function menu display reads:
   "Press SET at End of Mile ##### ft.".
2. **When the one mile marker is reached:**
   Press the SET key a second time to mark the end of the mile and to calculate the new wheel size.
3. If the measurement is such that the calculated wheel size falls within the permitted range the calibration passes and the sonalert will beep once to indicate that the measurement is completed.
   For example: If the function menu display reads: "4954 ft, corrected to 5280 ft".
4. However, if the measurement is such that the calculated wheel size falls outside of the permitted range, the calibration fails, the sonalert will beep once, and the Function menu display reads: Measured Mile FAILED".

6.0 EMERGENCY BRAKING FEATURE

To activate the emergency braking feature, lift the red safety cover located on the right side of the display unit and move the EMERGENCY toggle switch upwards. This will cause the EMERGENCY VALVE of the SBU to which the system is ARMED to be activated.

7.0 COMMUNICATIONS TEST

If communications problems are suspected, continuity may be tested by pressing the COMM TEST button. When the button is pressed a "+" or "reply pending light" will appear briefly. Disappearance of either of these indications verifies continuity of communications. Locomotives equipped with an IFD will display COMM TEST PASSED. If the "+" symbol, or "reply pending light" remain displayed, the COMM TEST button must be pressed three times in rapid succession. If this fails to overcome the problem the train should be moved one train length and the test repeated.

Model 6696 CDU

If communications problems are suspected, continuity may be tested by pressing the "COMM ARM" button. When the button is pressed a **"WAITING FOR REPLY"** message is briefly displayed on the "Function Menu Display," followed with brief message **"COMM TEST OK."**

If the "Function Menu Display" reads **"COMM TEST FAILED"** for 2 seconds, the "COMM ARM" button must be pressed three times in rapid succession. If
this fails to overcome the problem the train should be moved one train length and he test repeated.

Note: A manual COMM TEST must be performed at run through locations to verify TIBS is operating as intended.

8.0 PRE-DEPARTURE TESTING OF TIBS

Pre-departure testing of TIBS will only be performed at the location where the components of TIBS are initially installed on the train. Once a pre-departure test of TIBS has been performed, such test will not be repeated unless one of the components has been changed out.

Pre-departure test procedures for TIBS shall be conducted as follows:

A. The head-end crew or other qualified person, must enter the ID Code of the SBU assigned to that train into the display unit.

B. When the air pressure has been applied to the SBU it must be verified that pressure is shown on the display unit.

C. Depress the SBU test button and confirm that pressure is displayed in the viewing window.

D. As soon as the display unit indicates ARM NOW, the person performing the test shall depress the COMM TEST button or ARM 2-WAY switch and verify the display ARMED is given, indicating the display unit is authorized to the SBU assigned to that train.

E. Instruct person on the locomotive to perform a COMM TEST.

F. After the brake-pipe has been charged to not less than 48 psi., close the angle cock on the lead end of the rear car and verify that the display unit shows pressure.

Note: It is acceptable to leave rear car angle cock open, but for next step (G), verify emergency brake application propagates from SBU through to leading locomotive.

G. Instruct the person performing the test to activate the emergency feature and verify that the SBU initiates an emergency brake application on the rear car and that the display unit indicates 0 psi.

H. The EOT (SBU) pressure must remain at 0 PSI for at least 30 seconds before the emergency valve will close and allow the EOT to recover.

Failure to do this will result in a "VALVFAIL" message at the LCU (IDU). After creating the emergency brake application and all air is exhausted from the brake pipe, the solenoid valve on the SBU will reset (30 Seconds) and air may be reapplied. Open the angle cock on the rear car and confirm that the pressure is again being displayed on the display unit.

CAUTION: If 3 steps protection was applied in a state of false gradient, a undesired release may occur when the air is cut in.

I. Perform the required brake test.

J. At run-through points, pre-departure testing consisting of a COMM TEST, will be made by the outbound crew to verify TIBS is operating as intended.

9.0 DEFINITIONS & OPERATING PROCEDURES IN EVENT OF TIBS FAILURE AT A SCHEDULED CREW CHANGE LOCATION

A train operating without a manned caboose must not depart a scheduled crew change location if:

A. The display unit fails to display brake pipe pressure.

B. The emergency braking feature is inoperative.

C. The HVM is inoperative. (If so equipped)

D. The batteries are known to be weak.

E. The distance measuring device (DMD) is inoperative.

9.1 Enroute

Note: In this instruction, the words "inoperative enroute" or "TIBS fail" also include situations where an SBU falls off the rear car or is stolen and cannot be recovered or reinstalled.

If TIBS fails to display BRAKE PIPE PRESSURE and/or the EMERGENCY BRAKING FEATURE becomes inoperative enroute, trains *must* be governed as follows:

A. Should TIBS fail and the standard locomotive gauges and Air Flow Indicator indicate no loss of air pressure, the train may proceed at a speed not exceeding 25 MPH until the equipment resumes normal operation.

Should TIBS fail and the standard locomotive gauges and Air Flow Indicator indicate a loss of air pressure, the train crew is required to perform a Continuity Brake test. After completion of the Continuity test, the train may proceed at a speed not exceeding 25 MPH until the equipment resumes normal operation.

Note: If a successful Continuity test cannot be performed, the train must not proceed except to clear the main track, until the TIBS is repaired, resumes normal operation or a Continuity test is successfully completed.

B. Such movements shall be made only after appropriate measures have been taken to ensure safety of movement and then only to the nearest location where the main track may be cleared.

9.2 The EMERGENCY BRAKING FEATURE must be considered inoperative under the following circumstances:

A. The display of "VALV FAIL" or a "V" in the valve field or the IFD displays EOT VALVE.

B. A successful COMM TEST cannot be performed.

C. The display unit indicates a Front to Rear communications failure or the IFD displays EOT COMM.

D. The display unit indicates NOT ARMED.

E. During pre-departure testing of TIBS, activation of TIBS emergency feature will not cause an emergency brake application on the rear car.

SECTION 12- TRACK SIGNS

TRACK SIGNS DESCRIPTION

Signs illustrated in this section are in accordance with current standards. Signs of older types still in service convey the same meanings.

WHISTLE POST

Black letter W on reflective silver background

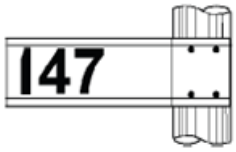
Located at least one-quarter (1/4) mile from the edge of all public crossings at grade, blind curves and tunnels.

PROHIBITED WHISTLE POST

Black letter W encircled in red with red diagonal bar, on reflective silver background

Located at least one-quarter (1/4) mile from the edge of every public crossing at grade, where engine whistle signal Rule 14 (l) is prohibited by special instruction.

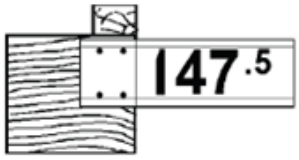
MILE POST



Black numerals on white background

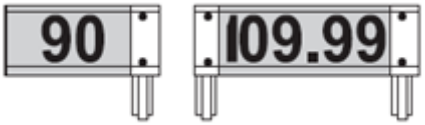
Located at one mile intervals to designate subdivision mileage.

STRUCTURE NUMBER SIGN



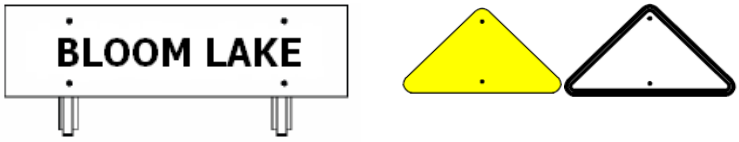
Black numerals on white background
To designate to nearest tenth of a mile the location of certain structures such as bridges, tunnels and snow sheds.

SWITCH MILE SIGN



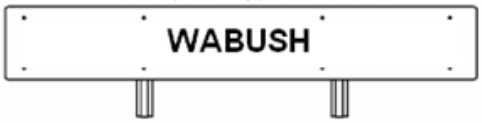
Black numerals on reflective silver background
Located opposite actual point of switch, to identify certain switches which are designated by mileage in Track Occupancy Permits or Clearances.

STATION ONE MILE SIGN



Black letters on white background
Located one mile from station, siding switch, first main track switch where trains can enter or leave yard tracks, designated switch, or junction switch, whichever is the most outlying in each direction.

STATION NAME SIGN



Black letters on white background
Located at mileage shown in time table, parallel to main track.

BEGIN HEAVY GRADE SIGN AND END HEAVY GRADE SIGN

Black letters on reflective silver background
Placed at locations indicated in special instructions or in time table footnotes to mark the beginning and end of a downgrade which exceeds 0.8%, but does not exceed 1.8%, for a distance of 2 miles or more.

ADVANCE SPEED SIGN

Black vertical arrow above black letters, on reflective yellow background
Located one mile in advance of a permissible speed sign marking the beginning of a zone of lower speed.

PERMISSIBLE SPEED SIGN

Black numerals on reflective yellow background

To mark the beginning of a speed zone specified in special instructions. When two speeds are shown on the sign, the upper speed applies to passenger trains and the lower speed to other trains and engines. When one speed is shown on the sign it applies to all trains and engines.

STOP SIGN

Black letters on reflective red background

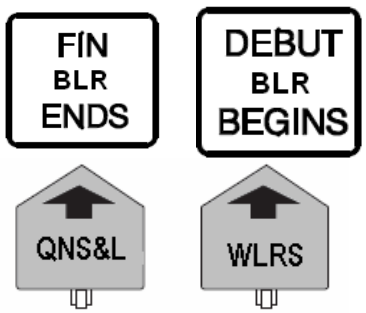
Located 500 feet, except where otherwise indicated, from non-interlocked railway crossings at grade, non-interlocked drawbridges, and at other locations where its use is required.

END OF TRACK SIGN

Black check on reflective yellow background

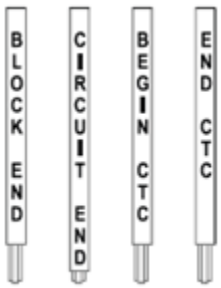
Located at the actual termination point of track, to indicate end of track.

BEGINNING OF RAILWAY (NAME) SIGN



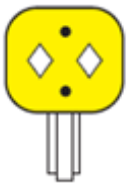
Black vertical arrow above black initials of railway, on reflective silver background
Located at actual point where the (named) railway authority begins.

BLOCK AND CIRCUIT END, BEGIN AND END CTC SIGNS



Black letters on white background
BLOCK END - Indicates end of track circuit controlling a block or interlocking signal.
CIRCUIT END - Indicates end of track circuit controlling automatic warning devices at locations specified in special instructions, or other designated devices.
BEGIN CTC - Indicates beginning of centralized traffic control system territory.
END CTC - Indicates end of centralized traffic control system territory.

RESTRICTED CLEARANCE SIGN

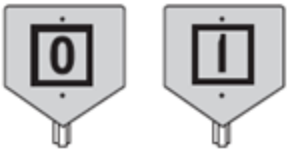


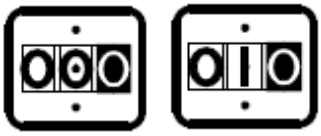
Two diamond shaped holes in yellow background
To call attention to restricted side or overhead clearance, or both, where employees must not ride sides or above the roof of a moving engine or car.

SNOW PLOW AND FLANGER SIGN

Black circles on reflective silver background
To call attention of snow plow and flanger operators to an obstruction to the operation of their snow removal equipment.

BEGIN MEASURED MILE SIGN AND END MEASURED MILE SIGN





A black numeral within a black hollow square on reflective silver background
Placed exactly one mile apart, and located where required, to permit crews to verify accuracy of the Locomotive Speed Indicator and/or the Distance Measuring Device.

ENGINE PROHIBITED BEYOND THIS POINT SIGN

Black engine symbol encircled in red with red diagonal bar on reflective yellow square
Located at actual point beyond which an engine is prohibited from moving.

SPOTTING OF EQUIPMENT PROHIBITED BEYOND THIS POINT SIGN

Black car symbol encircled in red with diagonal red bar and black arrow on white square
Located at sufficient distance from a road crossing, and to the outside of the outer track(s) to which it applies, in order to provide adequate sight distance of adjacent main track for vehicles using the road crossing.
Indication: Cars, engines or track units may not be left between the sign and the road crossing in the direction of the arrow.

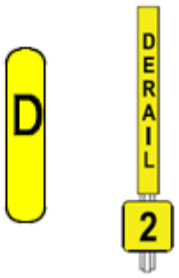
MAIN TRACK BEGIN SIGN

Black letters T over M symbol on reflective silver square
Located at the actual point where main track begins.

MAIN TRACK END SIGN

Black letters T over M symbol with black diagonal bar on reflective yellow square
Located at the actual point where main track ends.
Note: These signs need not be placed where the main track begins or ends at a switch.

DERAIL SIGN

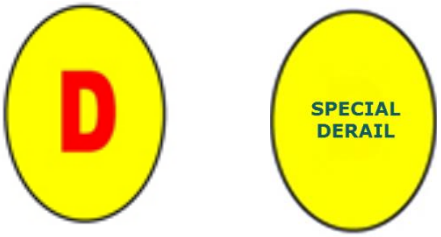


Black letters/numeral on reflective yellow background
DERAIL - Indicates location of derail.
DERAIL NUMBER - When added to DERAIL sign, indicates another derail, or other derails, on adjacent track(s) where derail signs cannot be installed because of clearance restrictions. Number refers to the total number of tracks having derails at the location marked by the derail sign.

DERAIL SWITCH SIGN

Black letters on reflective yellow background
Indicates location of a switch point derail

SPECIAL DERAIL:



A derail that may be left in the non-derailing position when no equipment is left on the track

OVERHEAD WIRE SIGN

Black letters, numeral, arrow and symbol on reflective yellow background
To call attention to crane operators that overhead wires are crossing the track.
Number indicates number of overhead wires.
Placed 200 feet in advance of the first overhead wire crossing the track on each approach.

LUBRICATOR LOCATION SIGN

Black letters on silver background
To indicate to snow plow operators the location of a rail lubricator mounted on track.

OCS BEGINS SIGN

Black letters on white reflective background

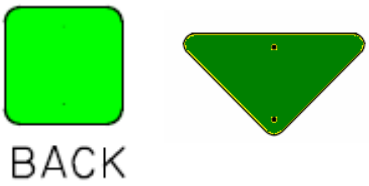
OCS END SIGN

Black letters with black diagonal on white reflective background

PERMANENT SLOW ORDER SPEED SIGN

Black diagonal on yellow reflective square (front of the sign)

RESUME SPEED SIGN

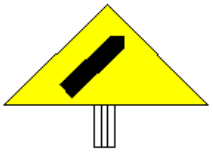


Inverted green triangle /Green reflective square (back of the sign)
Located at the end of a slow order, indicates that the movement can resume its authorized speed after the entire movement has pass the sign.

CROSSING CIRCUIT SIGN

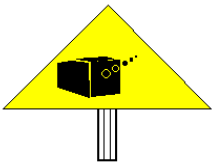
Black crossing circuit symbol on yellow reflective background

ADVANCE ONE MILE TO INTERLOCKING SIGN

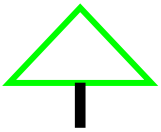


Indication: Proceed, prepare to stop at the interlocking signal. Note: this requirement does not apply when it is known that the track is to the interlocking signal and the indication of the signal is more favorable.

HOT BOX AND DRAGGING EQUIPMENT DETECTOR SIGN



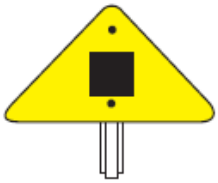
BROKEN RAIL SIGN



Temporary Rail Break signs will be reflectorized on both sides, and will be placed on one side of the track at the location of a temporary rail break to indicate its location. The location of the sign (side of the track) will be specified in the GBO issued. A temporary rail break sign remaining in place for more than one day must be equipped with warning flags in accordance with rule 43

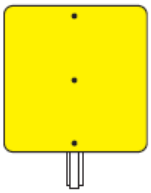
ADVANCE CAUTIONARY LIMIT SIGN

Black square on reflective yellow triangle
Placed at least one mile in advance of each cautionary limit sign.



CAUTIONARY LIMIT SIGN

Reflective Yellow Square
To define cautionary limits. Sign visible from both directions



RADIO ZONE SIGN

RADIO ZONE (Channel)

DANGER DO NOT ENTER SIGN

DANGER
DO NOT TREPASS
SIGN

Black and red writing on a white background with a « do not enter » sign located in the middle.

SECTION 13- DANGEROUS GOODS

DANGEROUS GOODS DESCRIPTION -DEFINITIONS

Regulation:
The transportation of dangerous goods is governed by Transport Canada's Transportation of Dangerous Goods Act and Regulations. Violation of these regulations can result in penalties and/or fines to the company and/or to individual employees.

Guidebook:
A copy of the NORTH AMERICAN EMERGENCY RESPONSE GUIDEBOOK must be accessible to each crew member while on duty. Refer to this book if required to reference applicable placard types, UN numbers, commodity names, and emergency procedures.

Definition:
Dangerous goods car - A loaded dangerous goods car or a car containing a residue of dangerous goods.

IH train:
An IH train is a train, other than a yard assignment, handling one or more placarded loaded tank cars designated as Poison Inhalation or Toxic Inhalation Hazards. The use of yard limit rules as the method of operation on the main track between yards or stations does not void the application of these guidelines.

"Key Train" means an engine with cars;

a) that includes one or more loaded tank cars of dangerous goods that are included in Class 2.3, Toxic Gases and of dangerous goods that are toxic by inhalation subject to Special Provision 23 of the Transport of Dangerous Goods Regulations (information on a shipping document); or

b) that includes 20 or more loaded tank cars or loaded intermodal portable tanks containing dangerous goods, as defined in the Transportation of Dangerous Goods Act, 1992 or any combination thereof that includes 20 or more loaded tank cars and loaded intermodal portable tanks.

"Key route" means any track on which, over a period of one year, is carried 10,000 or more loaded tank cars or loaded intermodal portable tanks containing dangerous goods, as defined in the Transportation of Dangerous Goods Act, 1992 or any combination thereof that includes 10,000 or more loaded tank cars and loaded intermodal portable tanks.

"Within Census Metropolitan Area" (CMA)
For the purpose of this instruction, A CMA means population centers defined by Statistics Canada as core (i.e., at least 50,000 persons) and secondary core (i.e., at least 10,000 persons) of CMAs listed in Appendix B. The list of CMAs will be amended should updates by Statistics Canada become available.

1.0 CAR INSPECTION BY TRAIN OR YARD CREWS

1.1 Shipper's Siding or Interchange

Before lifting a dangerous goods car from a shipper's siding or interchange:
Comply with Pre-departure Inspection Procedures in section 5.

A. Ensure the car:
(i) is not leaking;
(ii) is equipped with serviceable roller bearings and trucks;
(iii) is properly placarded (if required, as per item 2.1).

B. If the car is a tank car, also ensure it has:
(ii) double-shelf couplers;
(iii) dome cover, or man way cover closed;
(iv) bottom outlet cap and plugs applied;
(v) caps and plugs of all other visible openings in their proper places;
(vi) loading/unloading rack equipment is clear and secured.

Inspect tank car qualification dates;

A. Make sure the stencils describing the tank car specification (e.g. DOT 111A100W1) and qualification dates are legible (**see example below**). These stencils will appear on both sides of the tank car toward the end on the right as you face the car.

B. Make sure the tank car qualification dates for pressure relief devices (PRD), tank, and interior heater coils are current (a car is currently within the qualification date until the last day of the year shown) (**see example below)**.

Note: When the car is loaded before the end of the year, it may be transported for unloading purposes but must be requalified before reloading.

C. When the qualification date is overdue, do not load or accept loaded tank cars from the shipper.

D. When found enroute, car may proceed to destination after contacting the supervisor.

TANK CAR QUALIFICATION DATE (New Style Example)

	STATION STENCIL	QUALIFIED	DUE
TANK QUALIFICATION	ABC-1	2006	2016
THICKNESS TEST	ABC-1	2006	2016
SERVICE EQUIPMENT	ABC-1	2006	2016
PRD VALVE: 75 PSI	DEF-1	2006	2016
LINING	ABC-1	2006	2016
88.B.2 INSPECTION	ABC-1	2006	2016
STUBB SILL INSPECTION	ABC-1	2006	2016

TANK CAR QUALIFICATION DATE (Older Style Example)	
DOT 112J340W	
Safety Valve	280.5 LB
Tested 2006	Due 2016
Tank	340 LB
Tested 2006	Due 2016
Blt.	03/2006

Note: If a car does not meet all of these requirements, and the exception cannot be corrected, then do NOT lift the car. If you do not lift the car, notify the appropriate person.

E. Signs of tampering, such as suspicious items or items that do not belong, the presence of an "Improvised Explosive Device" (IED), and other signs that the security of the car may have been compromised. (This inspection must take place from the ground, at a close enough distance so that any problems can be readily identified, and must NOT be performed from a moving vehicle.)

Note: Where an indication of tampering or a foreign object is found, take the following actions:
Do not accept or move the rail car.

- Immediately move yourself and others to a safe location away from the rail car before using radios and cell phones to make notifications.
- For cars at a customer's facility, immediately contact local plant personnel. If local plant personnel are not available or cannot explain what you see, immediately contact the RTC, Supervisor or Yardmaster.
- For cars on interchange tracks or in the yard, immediately contact the RTC, Supervisor or Yardmaster.

1.2 In Transit or in a Yard

- Do not move, without authorization, a car found leaking in a yard or in transit.
- Follow the Emergency Procedures outlined for (Leaks and Spills).

2.0 SAFETY MARKS (E.G., PLACARDS)

2.1 Shipper's Siding or Interchange

Before lifting a placarded car from a shipper's siding or interchange, check the following:
Placards are:

- applied to both sides and both ends of the car, container, or trailer;
- the same in all locations;
- right-side up in the diamond position;
- clearly visible and legible from the ground; and
- in good condition.

UN/NA number is displayed on placards or orange panels, e.g., the same as indicated on the documents.

Notes:

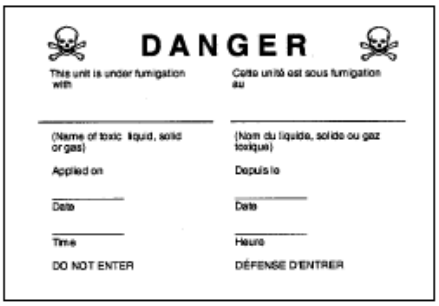
- Placarded shipments without the required documentation must not be lifted, as per item 3.1.
- Traffic originating from the U.S. or overseas may display placards with words.
- Mixed loads may display danger placards. These placards do not display UN numbers.

2.2 In Transit or in Yard

Placards or orange panels found missing, unreadable, or damaged in transit must be replaced: at locations where THAT train is given a standing train inspection by Mechanical Forces, and prior to being interchanged to another carrier.

2.3 Cars Under Fumigation

Do NOT Enter Cars under fumigation –
Cars under fumigation are marked with the following label.



3.0 DOCUMENTATION

3.1 Shipper's Siding or at Interchange

Before lifting a dangerous goods car from a shipper's siding or interchange, complete the following steps.

A. Obtain for each car:

- GWCI (Railway) supplied waybill, or
- Compressed waybill, or
- Foreign line waybill (interchange only).

B. Verify the following list outlines the information required on a shipping document.

1. Consignor's name and address
2. Date shipping document given to initial carrier
3. Car and initial number
4. Description of each of the dangerous goods

Sub-points i) to vii) must be listed in this order

i) UN Number (NA when originating in the USA)
ii) Shipping name
iii) Class
iv) Compatibility group when product is Class 1 – Explosive
v) Subsidiary class when product is one
vi) Packing group (when product has one)
vii) the words "toxic by inhalation" or "toxic – inhalation hazard" or "toxique par inhalation" or "toxicité par inhalation"

5. Quantity - weight or volume (originating from Canada/ metric system).
6. 24 hour telephone number for technical information about the dangerous good.
7. Residue information if the container contains residues of a dangerous good.
8. Consignor's certification (shipper)
9. Additional information

Emergency response assistance plan (when required)

The reference number of the emergency response assistance plan issued by Transport Canada preceded or followed by the letters "ERP" or "ERAP" or "PIU".

Description of required information

Consignor's name and address
The consignor must include the name and address of their place of business in Canada.
Shipping date
The shipping date is the date the consignor prepared the shipping document or first delivered it to the carrier.

Update the appropriate train documents to show the position of all placarded cars.

3.2 Radio Waybill (Required Documents Missing Enroute)

Dangerous goods cars cannot be moved without the required documentation. Occasionally, errors occur and dangerous goods cars depart the origin or crew change point without the required documentation. This error may be identified by the train crew, or by another employee.

Use the following process when a train has departed the train consist origin or crew change point without the required documents.

Documents Discovered Missing while Enroute		
Step	**Employee**	**Actions**
1.	Train crew, or other employee	Discovers documents are missing and **promptly** reports this to the RTC.
2.	RTC	• Obtains documents and relays the required information to the train crew; or • If unable to locate the documents, then advises train crew where to set off the car.
3.	Train crew	• Records information on "Dangerous/Hazardous Materials Radio Waybill;" or • Sets off car as per RTC instructions.
4.	Relief crew at next crew change point	Does not move the dangerous goods car until the radio waybill has been replaced by: • Compressed waybill, or • Proper shipping document.

Railway: _____

Dangerous Goods Radio Waybill			
1	Train number:		
2	Initial and car number: _____	Position in the train : _____ Load : ☐ Empty (Residue) : ☐	
3	Consignor's Name :		
4	Consignor's Address :		
5	Shipping date (initial):		
6	Consignee' Name :		
7	Consignee's Address :		
	Description : UN (NA) number = _____ Shipping Name = _____ Class = _____ Compatibility group (class 1 - explosive) = _____ Subsidiary class ( ) = _____ Packing Group = _____ The words " Toxic by inhalation" (TIH)= Yes : ☐ or No : ☐		
8	Weight or Volume / Quantity - lbs./kg/L :		
9	24 heures number :		
10	« PIU », ERP, ERAP number :		
11	Residue last contained : Yes : ☐ or No : ☐		
12	Special Dangerous Commodity : Yes : ☐ or No : ☐		
13	The words « Toxic par inhalation » (circle one): ZONE A ZONE B ZONE C ZONE D		
14	Consignor's certification (shipper):		
15	Marine Pollutant : P ☐ \ PP ☐		
16	Other information :		
	Filled by :	Date :	Time :

3.3 Custody or Control of Documents

Documents or copies must be in the custody or control of:

- The crew, when the shipment is part of a train or any other movement for delivery to customer or interchange.
- The responsible yard office, when the car is in a rail yard for other than repairs,
- The person in charge of a repair track, when the car is there.

In all other cases, the documentation must be at a location designated by the person in charge or RTC.

4.0 RECORD POSITION OF PLACARDED CARS

4.1 Position of Placarded Cars

Train crews shall have in their possession a document indicating the position of each placarded car in their movement. When the position of a dangerous goods car changes (e.g., cars lifted or set off), or a placarded car is placed in the train, update the document to indicate the change. A train consist, switch list, or other prepared document may be used to meet this requirement.

4.2 Information to Show

When using the train report or any other appropriate form to indicate cars lifted enroute, show the following information for **loads and residues**:

car initials and number,
product name (shipping name),
class,
UN/NA number,
position from locomotives, and
SPECIAL **dangerous** (if applicable).

5.0 SWITCHING OR COUPLING TO EQUIPMENT

Dangerous goods cars:

Must not be cut off in motion or, coupled onto by a car moving under its own momentum.

Instructions for coupling to dangerous goods cars

Before coupling placarded dangerous goods cars to other equipment, the following precautions must be taken:

A stop must be made not more than 12 feet and not less than 6 feet from the equipment to couple onto. Then, proceed with coupling with care to avoid jolts.

Any impact with a dangerous goods car suspected of having been made at a speed exceeding 6 mph must be promptly reported to the appropriate railway supervisor for furtherance.

The following policy applies to all cars containing materials with an Inhalation Hazard. Commodities historically handled that have Inhalation Hazards are:

Anhydrous Ammonia UN 1005
Chlorine UN 1017
Sulphur Dioxide UN 1079

Note: Even though large volumes of these commodities are not handled, the following restrictions must be observed:

Switching
Cars containing inhalation hazard materials must be set aside and not held onto unnecessarily during switching movements.

Delivery
These cars must be delivered to the customer or interchange point as soon as possible and are not to be stored on the property.

6.0 MARSHALLING

6.1 Application
These Marshalling restrictions apply to all placarded cars (loads & residues) on movements **exceeding 15 MPH**.

6.2 Check Train Consist Dangerous Commodities Marshalling
Check the train consist for any marshalling violations.
Verify and correct all violations.

6.3 General Marshalling Restrictions (Except Placarded Containers and Trailers Positioned on Flat Cars)
The following marshalling restrictions apply to all placarded dangerous goods cars.
Do **not** marshall a placarded Dangerous Goods car next to:

- An operating locomotive (unless all cars in the movement have a placard);
- Any occupied car (unless all other cars are either occupied or have a placard);
- A car equipped with a mechanical heating or cooling device or has a source of ignition, and is in operating mode;
- An open top car when lading protrudes beyond car or lading above car end is liable to shift lengthwise (except packaged and/or banded lumber on a bulkhead flat car provided the top packages do not exceed the bulkhead by more than 50%);
- A loaded flat car (except trailers or containers on flat cars, multi-level auto Transport cars, or any car specially equipped with tie down devices for handling vehicles).

Note: When a multi-platform car is used as a buffer car, each platform counts as one car.

Marshalling Chart

The following chart outlines additional restrictions for Placarded Dangerous Goods cars.

Dangerous Goods Cars in Group/Class:	Must not be placed next to:		
	Group A	Group B	Group C
Group A: Explosives Classes 1.1 & 1.2 		X	X(1)
Group B: (Infrequently handled. See list below.)	X	X(2)	X
Group C: Explosives Classes 1.3 to 1.6,  Classes 2, 3, 4, and 5. 	X(1)	X	
Group D: Classes 6, 7, 8, 9, and mixed loads 	Only general marshalling restrictions (item 6.3) apply.		

Notes: X "must not be next to" restriction
(1) not applicable to explosives in Classes 1.3 to 1.6.
(2) not applicable if the next car has the same UN number.

Group B Dangerous Goods (Infrequently handled)
UN 1008, CLASS 2.3 UN 1660, CLASS 2.3
UN 1026, CLASS 2.3 UN 1911, CLASS 2.3
UN 1051, CLASS 6.1 UN 1975, CLASS 2.3
UN 1067, CLASS 2.3 UN 2188, CLASS 2.3
UN 1076, CLASS 2.3 UN 2199, CLASS 2.3
UN 1589, CLASS 2.3 UN 2204, CLASS 2.3
UN 1614, CLASS 6.1 UN 3294, CLASS 6.1

6.4 Marshalling Plain Bearing Cars

Loaded Dangerous Goods in Caboose less Train Operations can be anywhere in the consist, subject to the marshalling restrictions indicated in this section, provided there are no plain bearings on the train ahead of a loaded dangerous goods car.

In addition to the other requirements outlined in items 6.3, loaded dangerous goods cars marshalled behind cars that have plain bearings:

must be marshalled within the first 2000 feet on trains 4000 feet or less, or;

must **not** be marshalled in the last 2000 feet on trains over 4000 feet.

7.0 EMERGENCY PROCEDURES

7.1 Accidents, Collisions, Derailments

Use these procedures (a to f) for incidents involving a car, container, or trailer that contains or last contained dangerous goods. The order in which the steps are completed depends on the incident. After the initial response and initial assessment, many actions are completed simultaneously.

Note: Emergency procedures for leaks and spills are described in item 7.2.

A. Protect and Communicate – Initial Response

- Protect train in accordance with CROR and/or Special Instructions.
- CROR Rule 125, Emergency Communication Procedures; or
- CROR Rule 35 Emergency Protection;
- CROR Rule 102, Emergency Stop Protection.
- Enroute, complete emergency call to the RTC.

The RTC immediately advises the designated manager, contact the responsible supervisor.

B. Assess Dangerous Goods Hazard

- Visually inspect the incident, from the cab of the locomotive if possible.
- Identify dangerous goods involved using the train documents:
  - Compressed waybill, or
  - Use the Emergency Response Guidebook to identify protective actions. To use the Guidebook:

C. Find the material's Guide number using the:

- UN Number (yellow-bordered pages), OR
- Shipping name (blue-bordered pages)
- Use the Guide number to find the "Public Safety" instructions in the orange-bordered pages.

(Note: The emergency response information in the train documents may be used as a supplement to the *Emergency Response Guidebook*.)

D. Assess Site Hazards

- If the dangerous goods hazard does **not** prevent you from approaching the derailed cars and it is necessary to approach the cars, then assess the site hazards.
  - **Physical**: slip, trip, fall, sharp objects, moving equipment, shifting loads, or shifting track material.
  - **Chemical**: from derailed cars, or damaged underground utility or pipeline.
  - **Electrical**: power lines (over-head or underground) and fiber optic cables.
  - **Other**: water, embankments, bridges, etc.

- Keep away from hazards to avoid injury.
- Avoid any unnecessary exposure to smoke or fumes.
- Keep all open flames, including fusees and smoking material, away from the incident scene.

E. Rescue and Secure

- If it can be done safely, rescue the injured and move them to a safe place. Apply first aid or secure medical assistance.
- Keep public well away from the scene. If necessary, secure help from police forces.
- If the locomotives are not directly involved in the accident, the train should be cut as close as safely possible and cars removed a safe distance

F. Communicate Details

Use the shipping document, compressed waybill, or the train consist to provide the following information for cars containing dangerous goods, or residue cars:

- location (Subdivision and mileage),
- number of cars involved and condition,
- car initials and number,
- weather conditions,
- any additional information, as requested

G. Documents

KEEP all documents until relieved of that responsibility by a supervisor.
When a public security official (e.g., police officer, fire fighter) arrives at the scene, attempt to contact the official and assist him/her in examining the supplied dangerous goods documents/shipping document(s), train consist, or other appropriate form, and Emergency Response Information.

7.2 Leaks and Spills

If you suspect a car containing dangerous goods is leaking, or you see a dangerous goods spill:
Get clear of the spill or leak immediately, upwind if possible. Avoid low-lying areas.
From a safe location, notify others in the area as soon as possible.
En Route, notify the RTC and use the shipping document, compressed waybill, or the train consist to provide the following information:

i) location,
ii) car initials and number,
iii) weather conditions,
iv) additional information requested.

In the yard, contact the responsible supervisor or the RTC.
Keep the area clear of all personnel except Emergency Responders.
Do **not** move, without authorization, a car found leaking in a yard or in transit.

7.3 Cars Under Fumigation

An accident, collision, derailment, spill or leak involving a car under fumigation does **not** require special considerations for dangerous goods. However, **ensure no one enters these cars.**

8.0 SPECIAL DANGEROUS COMMODITIES

8.1 Identifying SPECIAL Dangerous Commodities

To alert all concerned that a **SPECIAL dangerous** commodity is being handled, the load may be identified as follows:

- The compressed waybill and waybill displays "S**PECIAL DANGEROUS** COMMODITIES,"
- Train report indicates **SPECIAL DANGEROUS** lifted enroute.

8.2 Instructions – Reference.

A. A train carrying one or more full carloads or container loads or trailer loads of Special Dangerous commodities MUST, within one mile of the mileage shown by subdivision footnote at which this instruction applies,

- perform a pull-by or standing inspection,
- from the front of the train to and including 8 axles behind the last full carload, container load, or trailer load of a Special dangerous commodity.

B. The following references direct you to other instructions that apply when handling **SPECIAL DANGEROUS** commodities.
Speed restrictions, and Locations where inspection is required. Time Table footnotes,

9.0 PROTOCOL FOR HANDLING TOXIC INHALATION HAZARD MATERIALS

9.1 Protocol for Handling Toxic Inhalation Hazard Materials (IH)

An IH train is a train, other than a yard assignment, handling one or more placarded loaded tank cars designated as Poison Inhalation or Toxic Inhalation Hazards. The requirement of rules such as, Restricted Speed, Reduced Speed or Speed on Non-main track (CROR 105) between yards or stations does not void the application of these guidelines.
The following guidelines govern operating instructions, maintenance of routes, and qualifications of employees on all railways over which IH shipments are handled. These instructions will supplement any regulatory requirements for the protection of safe operations.

9.2 Qualifications of Employees

All engineers operating in other than yard service handling IH shipments must have a minimum of 1 year service as a qualified locomotive engineer or be authorized to handle IH by a supervisor of locomotive engineer (on-job trainer/DSLE). Every engineer/conductor must have successfully completed Hazardous Material (HazMat) Training and be currently certified in HM-1/TDG training. All employees in IH service must be trained and qualified in the Supplemental Hazardous Material Training Program. Employees entering IH service must be certified in both HM-1/TDG training and Supplemental Hazardous Material Training prior to performing IH service. Employees working in IH service must receive Supplemental Hazardous Material Training annually.
Locomotive engineers in other than yard service must pass a skills certification ride of at least 4 hours duration, annually as conducted by a qualified supervisor of locomotive engineer (on-job trainer/DSLE) or designated on-job trainer, in order to maintain qualifications for operating a train containing IH shipments.

9.3 Operating Practices

Speed: IH trains are restricted to a maximum speed of 30 mph/48 kph.
Train Placement: When practical, all IH shipments must be placed in a train no farther than 50 cars from locomotives and where possible, IH shipments must not be the last car in a train.

A. **Inspection:** All IH shipments will be inspected by a qualified crew member or mechanical inspector at interchange, or before being pulled from a customer facility to insure the equipment is in proper condition, and without unauthorized appurtenances. Before moving in a train, the location of each IH shipment must be ascertained, with placards and transportation documentation verified. All chain of custody and control requirements as set forth by Transportation of Dangerous Goods Act, 1992 (1992, c. 34) must be met.

B. **Exceptions or Delays:** When a train will be delayed or stopped at one location in a Census Metropolitan Area (CMAs) or other high risk area as defined by the railway's Security Plan required by Transport Canada, and when conditions permit, a member of the crew will make a physical inspection of the train including each IH shipment. Inspection results must be communicated to Rail Traffic Controller (RTC) or other authorized representative of the railway as soon as communication is available.

C. Train crews operating trains containing IH shipments must remain alert and vigilant for any potential activity which will disrupt the safe movement of the train. Any exceptions noted by crew members or delays enroute (as described above) must be promptly communicated with the RTC or other authorized representative of the railway, acknowledging train location, any unusual circumstances encountered enroute, or cause of any delays.

D. **Communication:** All trains must be equipped with effective working radio communication as required by Transport Canada which can include cell phones (where radio communication is unavailable). Each railway will develop an emergency response plan. Notification of emergency service outside the company will be the responsibility of the authorized representative of the railroad as indicated in the railway emergency response plan.

E. **Enroute Set-out:** Should it become necessary to set off a loaded IH at any unattended location along line of road, crew must immediately notify the RTC or other authorized representative of the railway who will arrange for 24/7 security until the car can be safely moved from set off location.

F. **Delivery:** All loaded IH cars should be scheduled for delivery to the customer within 24 hours after arriving in the serving yard. IH shipments standing unattended longer than 24 hours between scheduled services must be security inspected every 24 hours by an authorized representative of the railway for defects.

9.4 Track Inspection

All tracks over which loaded IH will travel must be inspected per the "Key Train" Inspection Protocol, which was made effective April 15, 2014 (revised for Canada August 27, 2015); document is attached as Appendix "A." Inspection records must be maintained, filed and retained per FRA or Transport Canada regulations.

9.5 Advance Planning

Regions regularly transporting loaded IH must have a least 1 manager attend and complete the AAR HazMat Specialist (First Responder) Training in Pueblo, CO or Equivalent training in Canada to train affected employees and facilitate communication with emergency response teams.
Regions regularly transporting loaded IH must develop a joint response plan with local, city, regional emergency teams. The joint response plan will consist of notification procedures, contacts, handling procedures, communication networks, and other plans as determined by the joint efforts.

9.6 Revisions

Modifications and revisions to these guidelines will be made as required to conform to final rules as established by the various regulatory agencies

APPENDIX "A"

"Key Train" Inspection Protocol

In effect - April 15, 2014, (revised for Canada August 27, 2015)

Restrictions: Canada

1. In order to comply with the speed restrictions for CMAs, unless a lower speed is specified, do exceed 40 MPH while operating a Key Train as well as a train containing at least one tank car or portable tank container in the car type DOT -111 tank cars include those that are CPC-1232 specification loaded with any of the dangerous goods listed below:

    - UN 1170 ETHANOL
    - UN 1202 DIESEL FUEL
    - UN 1203 GASOLINE
    - UN 1267 PETROLEUM CRUDE OIL
    - UN 1268 PETROLEUM DISTILLATES, N.O.S.
    - UN 1863 FUEL, AVIATION, TURBINE
    - UN 1993 FLAMMABLE LIQUID, N.O.S.
    - UN 3295 HYDROCARBONS, LIQUIDS, N.O.S.
    - UN 1987 ALCOHOLS N.O.S
    - UN 3494 PETROLEUM SOUR CRUDE OIL, FLAMMABLE, TOXIC
    - UN 3475 ETHANOL AND GASOLINE MIXTURE

    If unable to confirm if the car type is a DOT-111 including CPC-1232 specification, then comply with the speed restriction for the dangerous goods listed above.
    Note: Time Table "speed" restrictions under for Special Dangerous Commodities also apply to "Key trains".

2. Have "Key train" hold the main track at meeting or passing points unless the speed on the siding or the track to be used meets Transport Canada Class 2 requirements as per TC E-54 (operating speed not exceeding 25 MPH). In situations where the siding or track to be used does not meet this requirement above, the "Key train" may operate on the siding or track to be used at a speed not exceeding 10 MPH instead of holding the main track when it is operationally infeasible or the non-Key train is a passenger train.

3. Only cars equipped with roller bearings will be allowed in a "Key train".

4. Perform an inspection of any bearing on a "Key train" reported defective by a Wayside Defective Bearing Detector (HBD). If any such inspection confirms that a bearing on a car of a " Key train" is defective, set off that car from the " Key train" or operate the "Key train" at a safe speed not exceeding 10 MPH until the car with the defective bearing is set off. If the inspection performed on a bearing of a car of a "Key train" reported by a Wayside Defective Bearing Detector (HBD) fails to confirm a defect in a bearing, do not operate the "Key train" at a speed exceeding 25 MPH until the "Key train" as successfully passed next Wayside Defective Bearing Detector (HBD). If a defect in a bearing of the same car of a "Key train" is reported by two consecutive Wayside Defective Bearing Detectors (HBD), set off that car from the .Key

train" or operate the "Key train" at a safe speed not exceeding 10 MPH until the car with the defective bearing is set off.

5. In addition to the requirement to stop before coupling, do not exceed 4 MPH when coupling loaded thank cars of dangerous goods.

Conductor responsibility
The conductor must:

- Review the train consist and the sipping documents of all dangerous goods before departure and when cars are picked up en route to determine the "Key train" status.
- Before departure and when lifting en route, advise the RTC that the train status is or is not a "Key train".
- Ensure train documents are kept up to date.

Definitions: United States

"Key Train" – any train with loaded TIH / PIH cars in its consist, or any train with 20 or more loaded placarded cars of HazMat in its consist.

"Unit HazMat Trains" – any train that has in its consist 60 or more loads of a single hazardous material, transported in uniform cars of a single type. *Unit Oil Trains are considered Unit HazMat trains.*

"Route" – includes mainline track in and outside of Yard Limits, and industrial leads outside of Yard Limits.

Track Geometry Testing Requirements;

A minimum of one test per calendar year for all designated "Key Routes" / "Key train" routes (US).

Note: In situation where a heavy track geometry vehicle is unavailable, inspect any Key route main track on which a Key Train twice, with no more than 100 days between inspections, with light track geometry vehicle.

One additional test during the calendar year if one or more of the following apply:

- More than 50 "Key Train" movements containing TIH / PIH occur annually.
- Route operates Unit HazMat trains.
- Route has 90 lb. or smaller rail section.
- Route has sections with heavy curvature or grade. (Defined as any portion of 5 miles or greater of the route having more than 50% of the track curved and the majority of the curves 4 degrees or greater, or, track with 1.5% grade and above).

Internal Rail Flaw Defect Testing (Ultrasonically, and / or Induction);

A minimum of one test per calendar year for all designated "Key Train" routes.

One additional test during the calendar year if one or more of the following apply:

- Portions of the route have 90 lb. rail section or smaller (required to just test the smaller rail sections).
- More than 50 "Key Train" movements per year.

- A history of averaging more than 1.5 defective rails per track mile per year (only required to test the miles with over 1.5 defects per track mile per year, not the entire route).

4 tests per year (quarterly) are required on routes where more than 50 Unit HazMat trains operate per year, 3 tests per year on routes where between 50 and 25 Unit HazMat trains operate per year, and 2 tests per year on routes where less than 25 and more than 1 Unit HazMat trains operate per year.

- At locations where there are multiple tests each year, it is recommended that every other test include induction technology.

Loaded Unit HazMat Trains are restricted to 25 MPH;

Empty (residue) Unit HazMat trains can travel at timetable speed.
Empty (residue) Unit HazMat trains containing residual TIH / PIH cars are restricted to 25 MPH.

Track Inspection Requirements;

On Routes where over 50 "Key Train" operate per year a minimum of two inspections per week will be conducted with at least two days between inspections.

- In Advance of Movement (IAM) inspections are required ahead of all Unit HazMat Trains.
- Between the IAM inspection and the Unit HazMat train.
- IAM inspections are not required on tracks within Yard Limits where restricted speed is required.

Note: Special inspections for unusual events such as heavy rain, high winds, excessive hot or cold weather, etc. will occur in addition / as required

On Routes where over 50 "Key Train" operate per year the entire route requires an annual walking inspection. Inspection will focus on joint bars, gauge, switches, track alignment, drainage, and tie condition.

All Unit HazMat train routes will be "Hot Weather" readiness Certified.

- Regional VP Engineering will be responsible to review training records annually to verify CWR training for Engineering Employees has occurred within the last calendar year.
- Individual Railroad Engineering teams to review summary of hot weather requirements, procedures, for their specific railroad and validate they are in place and understood by team members.

Bridge Inspections & Requirements;

- In accordance with G&W Bridge Maintenance Program, all bridges are to be inspected once per calendar year by a qualified bridge inspector.
- If route carries more than 50 Unit HazMat trains annually, then;
  - A field review of most recent bridge inspection shall be performed by qualified bridge inspector within 4 to 8 months after the inspection; and
  - VP or AVP Structures to conduct a review of most recent bridge inspection reports each year.

Trains with loaded TIH / PIH cars in the consist passing through High Threat Urban Areas (HTUA) will reduce their authorized speed by one class of track (40 MPH to 25 MPH, or 25 MPH to 10 MPH), but no less than 10 MPH.

Note: When evaluating the type and volume of rail traffic on a route for applying these inspection protocols, evaluate the traffic that has passed over the route in the last 3 months and annualize the results. Include additions or deletions based on the anticipated traffic for the next 12 months.

Appendix "B"

Population of census metropolitan areas

St. John's (N.L).
Halifax (N.S.)
Moncton (N.B.)
Saint John (N.B.)
Saguenay (Que)
Québec (Que.)
Sherbrooke (Que.)
Trois-Rivières (Que.)
Montréal (Que.)
Ottawa-Gatineau (Ont.-Que)
Kingston (Ont.)
Peterborough (Ont.)
Oshawa (Ont.)
Toronto (Ont.)
Hamilton (Ont.)
St. Catharines-Níagara (Ont.)
Kitchener-Cambridge-Waterloo (Ont.)
Brantford (Ont.)
Guelph (Ont.)
London (Ont.)
Windsor (Ont.)
Barrie (Ont.)
Greater Sudbury (Ont.)
Thunder Bay (Ont.)
Winnipeg (Man.)
Regina (Sask.)
Saskatoon (Sask.)
Calgary (Alta.)
Edmonton (Alta.)
Kelowna (B.C.)
Abbotsford-Mission (B.C.)
Vancouver (B.C.)
Victoria (B.C.)

Source: Statistics Canada, CANSIM, Table 051-0056.
Last modified: 2015-02-11

SECTION 14 - PASSENGER TRAINS – EMERGENCY PROCEDURES

1.0 PASSENGER TRAIN EMERGENCY PROCEDURES - GENERAL

1.1 All on board passenger train employees must be trained and qualified in emergency communication procedures use of emergency equipment and supplies, and emergency response procedures.

1.2 All on board passenger train employees must make themselves familiar with the locations of emergency equipment and supplies, and with the operation of emergency exit windows and doors. These may differ with various car designs.

1.3 Every passenger train must have one employee designated as the "Person in Charge" who will have primary responsibility for the safety of the passengers and emergency response procedures. This would normally be the conductor, but it could be another designated on board employee. All on board employees must know who the Person in Charge is.

1.4 The Person in Charge, or other designated employee, must be trained and prepared to assist disabled persons on passenger trains when any car(s) are so equipped.

1.5 The Person in Charge, or other designated employee, must ensure that passengers are provided with appropriate safety briefing materials. Methods for accomplishing this include:

- on-board announcements
- video presentations
- strategically placed placards
- descriptive handouts or ticket stubs

2.0 MEDICAL EMERGENCY

2.1 Employees who have completed an accredited first-aid course and hold a current first-aid certificate are required to render emergency first-aid until arrival of medical help.

2.2 In the event of a medical emergency the following steps should be taken:

1. Assess hazards and make the area safe for yourself and others.
2. Identify yourself as a First Aider (if qualified).
3. Take charge of the situation and arrange for help (e.g. Conductor, Service Manager, Doctor etc.)
4. Assess the casualty for life-threatening conditions;
    - History (medical problems)
    - Signs (what you see)
    - Symptoms (how the casualty feels).
5. Establish priorities in the following order, and give first-aid for;
    - Stopped breathing
    - Severe bleeding
    - Shock & unconsciousness. (First-aid kits, stretchers are normally available on passenger trains, oxygen kits are available some trains.)
6. Request medical aid if required.

2.3 Once the medical condition is assessed and a need is established for external medical resources, the person in charge, or other on board employee, using correct radio procedures, must immediately contact the RTC and relay the following information:

1. Type of assistance required (ambulance, doctor etc.)
2. State of the person (conscious or unconscious.)
3. Gender.
4. Age (approximate.)
5. Condition of the person (bleeding, suspected heart attack etc.)
6. Location of the train. (If possible nearest intersecting street or known landmark as well as railway mileage. THIS INFORMATION IS VITAL FOR AMBULANCE AND EMERGENCY PERSONNEL.)
7. Location within train (car number and position in consist.)

2.4 The RTC will arrange for the medical assistance and will relay the information to the train. The RTC will also arrange to inform the appropriate officials of the emergency.

3.0 ON-BOARD FIRE

3.1 In the event of a fire, the protection of life must be of main concern to all employees working on the train.

3.2 If a fire is seen, smoke smelled or if a passenger reports a fire, the following steps must be taken:

1. STOP may be required. Remember, continued movement of the train may make the fire worse.
2. Turn off the car's blower system, to prevent the spread of smoke to other parts of the car.
3. Notify other employees on the train that a serious problem exists and assistance is required. (The exact words "IMMEDIATE ASSISTANCE" must be used. This is a code to alert all employees on the train that an emergency exists without alarming the passengers.)
4. IMMEDIATELY RELOCATE the passengers to an adjacent car, preferably toward the locomotive. (Evacuation requiring movement of the passengers onto the roadbed must be avoided unless no other means of evacuation is possible.)
5. The person in charge should proceed immediately to the affected car to coordinate the activities.
6. Conduct a quick search of the car, including lavatories, to ensure all passengers have left.
7. If the fire appears controllable, use the nearest appropriate fire extinguisher to extinguish the fire.
8. If the fire appears to be out of control and it is unlikely it can be controlled, separate the train so as to isolate the affected car.
9. Contact the RTC immediately, giving particulars of the situation and the action being taken. The RTC will first arrange to protect the train, and then arrange for the local fire department to assist.

3.3 Portable Fire Extinguisher Operating Instructions

1. Locate and remove fire extinguisher from its housing
2. Verify by gauge that it is charged (do not proceed unless needle is at 12:00 o'clock)
3. Approach fire at a close, but safe distance. Ensure you have an escape route behind you. Remove safety pin.
4. Crouch down to better see the flames.
5. Aim nozzle at base of fire and activate the extinguisher.
6. Spray in side to side motion until fire is extinguished (average discharge time is 8 seconds).
7. If fire is not readily controllable, leave car immediately.
8. Report discharge of extinguisher on appropriate defect form.

4.0 BOMB OR CBRN WEAPONS THREAT

Bomb or Chemical, Biological, Radiological, or Nuclear (CBRN) weapons threats can be divided into two categories, specific and nonspecific. Specific threats contain more detailed information, whereas non-specific threats contain little information.

4.1 Specific Threat

When the conductor or person in charge receives a radio transmission from the RTC Office stating "I HAVE A SECURITY MESSAGE FOR THE CONDUCTOR," he will isolate himself from the passengers and reply "I AM READY TO RECEIVE THE SECURITY MESSAGE." Once informed of the threat, the conductor will:

1. With the assistance of the RTC and the locomotive engineer, arrange to have the train stopped at a safe location.
2. Initiate evacuation procedures (refer to subsection 6.0) ensuring that passengers bring their personal belongings with them.
3. Use the following announcement to initiate the emergency:
   "Attention passengers: A security alert has been received. Passengers must not use any electronic device until further advised. We will be stopping at (or returning to)_____upon arrival, ALL passengers are requested to leave the train, taking all personal belongings with them. Passengers are requested to stay well clear of the train, clear of adjacent tracks and off the right of way". (When conditions or terrain will permit, passengers should be requested to move away from the railway to a point not less than 1000 feet from the line of railway.)
4. Arrange to have all available employees assist in an orderly and safe evacuation.
5. After all passengers have detrained and provided CROR rules permit, arrange to either pull the train ahead or move backward to clear the area.
6. Upon clearing the area, detrain and stand clear of the train but in a position to stop any passengers from returning and await the appropriate Law Enforcement Agency beforeconducting a thorough search of the train.
7. Should a suspect device or package be found prior to the arrival of Police
   - DO NOT TOUCH IT.
   - SECURE THE AREA AND BE PREPARED TO DIRECT POLICE TO ITS LOCATION. (Refer to item 4.3 for additional information)
   - DO NOT USE YOUR RADIO OR CELLULAR PHONE UNLESS AT LEAST 300 FEET FROM THE OBJECT.
   - DO NOT USE AN ENGINE OR CONTROL CAB RADIO UNLESS AT LEAST 300 FEET FROM THE OBJECT.
8. Assist Law Enforcement Officers by establishing a safe route when the object is being removed from the site.
9. After the train has been searched and declared safe, make the following announcement cancelling the emergency:
   "Attention passengers: The train has been searched and the security alert no longer exists. All passengers may reboard the train."
10. Advise the attending Police Agency and RTC of any passenger who refuses to reboard the train and the reason for the refusal.

Train Doors

During the search of a train, doors should be left open to help minimize the possible effects of an explosion.

Restrictions in Use of Radio
Some explosive devices are activated by radio transmissions. While searching, radio usage must be kept to a minimum. If a suspected package is found, the minimum safe distance for portable radio or cellular phone or engine or control (cab) car radio use is 300 feet.

Communication
Maintain communication with the RTC at all times.

4.2 Non-Specific Threat
Once the conductor has been informed of a NON-SPECIFIC bomb threat, he will initiate a discreet search of the train as follows. (Stopping of the train may not be required.)

Where to Search
The search should begin in the area or car identified by the caller or, if the caller does not give an exact location, in those areas which are uncontrolled or not monitored and to which the public has free access. Special attention should be given to:
- washrooms,
- vestibules,
- baggage racks,
- waste baskets,
- under seats.

The search
Prior to entering the car, conduct a visual examination of the interior for clouds of smoke, mist, gas, or vapour. Also look for signs of passengers being incapacitated or other unusual activity. If the car appears to be safe to enter, do so and conduct a visual examination of the area for anything suspicious, then:
1. Stand at opposite ends of the car and try to detect any unusual or ticking noise. (This will only be effective if the car is stopped and empty.)
2. DO NOT ACTIVATE ANY ELECTRICAL SWITCHES UNLESS ABSOLUTELY NECESSARY
3. If nothing is detected, begin the visual examination in the following manner:
    - floor to waist level, then
    - waist level to top of head, then
    - from top of head to and including the ceiling. (All compartments in the car should be checked to ensure they are secure and not tampered with.)
    - If a suspicious object is found, it must not be assumed that the remaining area is clear. Refer to item 4.3

What to look for
Materials or objects which are foreign to the area being searched, such as:
1. a backpack, briefcase or suitcase left in a washroom or other unsecured or unattended area,
2. a hidden or abandoned box or parcel,
3. an object emitting an unusual or ticking sound,
4. an object emitting a peculiar odour, mist, gas or vapour.

4.3 What to do if a suspicious object is found

1. DO NOT TOUCH IT.
2. DO NOT USE YOUR RADIO TRANSMITTER, UNLESS AT THE ESTABLISHED SAFE DISTANCE (300 feet for portable radios or cellular phones and for engine or control (cab) car radios).
3. Attempt to determine if a passenger in the immediate area has any knowledge of the item.
4 If ownership of the suspect item is not established;
   - isolate the area by preventing further access;
   - evacuate all passengers to other cars;
   - instruct all remaining personnel to evacuate the area;
   - inform the RTC of location and description of the article found. The RTC will inform the Law Enforcement Agencies of your discovery;
   - be governed by instructions from the RTC;
   - be prepared to implement guidelines contained in item 4.1 Specific Threat.

5.0 DERAILMENT

Each derailment presents a different and unique situation. The conductor will decide on the safest method of evacuation if evacuation is necessary. If the cars remain upright, the safest location for the passengers may be inside the cars. If the car is on its side, or in a dangerous location, evacuation will be necessary.

Remember:

1. Remain calm.
2. The conductor will coordinate the evacuation.
3. Notify other employees that a serious situation exists by using the words "IMMEDIATE ASSISTANCE" and give the specific location.
4. Inform passengers of the emergency and explain the evacuation plan.
5. Assist in the evacuation of the passengers.
6. Double check that all passengers have vacated the equipment.

6.0 PASSENGER EVACUATION GUIDELINES

The following information pertaining to evacuation guidelines has been prepared to familiarize employees with methods of quickly and efficiently evacuating rail passenger cars in the event of an emergency.

Note: All emergencies cannot be covered in these guidelines, therefore, the sequence of evacuation procedures and method of handling may have to be changed to suit the situation. Railway companies may issue special instructions where relevant, e.g. tunnels, bridges. These procedures are in addition to all other requirements defined in the Operating Rules, Time Tables, and General Operating Instructions, which must be adhered to at all times by operating personnel regardless of the nature of the emergency.

6.1 It is important that both the conductor and locomotive engineer be advised as quickly as possible of the nature of the emergency which may make it necessary to evacuate the train.
This is of prime importance so that the conductor can decide whether evacuation is necessary and so that the locomotive engineer can bring the train to a stop at a location where evacuation can safely take place.

6.2 Provide Emergency Stop Protection (CROR, Rule 102) so that necessary steps can immediately be taken by the RTC and crews of other trains to afford the distressed train full protection and provide assistance.

6.3 While these emergency procedures identify certain responsibility with the conductor, it may be necessary because of injury or other extenuating circumstances, for the locomotive engineer or Train Service Employees to assume the role of the conductor in coordinating the evacuation.

6.4 The method of evacuation chosen must be one offering maximum passenger safety and minimum passenger inconvenience.

- Priority of methods for evacuation
- From car to another car
- From train to station platform
- From train to public or private grade crossing
- From train to another train
- From train to roadbed

6.5 Since the location of emergency equipment and emergency exits can differ depending on the type of equipment, location of these emergency features must be checked by crew members as soon as possible after reporting for duty.

6.6 In order to recall the appropriate response to an emergency, and to minimize passenger panic, it is essential that crew members remain calm.

Stopping Locations
The locomotive engineer, in consultation with the RTC and the Person in Charge, will decide on the best location to stop, based on the urgency of the situation and the immediate safety of all passengers. If the nature of the emergency and the opportunity permit, the train should be stopped at a location which will allow passengers to detrain safely and quickly move away from the immediate area.

- Priority of locations for detraining passengers
- a station platform,
- a road crossing at grade, or
- an open area away from the roadbed. Locomotive engineer should **avoid** stopping
- in a tunnel,
- in a deep cut,
- along side a sharply sloping embankment, or
- on a bridge.

6.7 Evacuation Procedure

When the decision has been made to stop the train, the conductor must

1. Ensure that all necessary steps are/will be taken to protect the train.
2. Ensure that any closely approaching trains or engines on adjacent tracks are contacted so as not to endanger the evacuation. This protection will be arranged in cooperation with the locomotive engineer, using radio contact when possible. Both must be sure that protection has been arranged.
3. When the decision has been made to evacuate the passengers, make the announcement, briefly advising the passengers of the nature of the emergency and directions for the method of evacuation. When it is necessary to evacuate more cars than the crew members can reasonably handle, the conductor should request assistance from passengers.
4. Advise all passengers to stay well clear of adjacent tracks and off the railway right of way.

All announcements should be made slowly and distinctly in a manner which will dispel anxiety.

Notes