HEALTH AND SAFETY PLAN

CAPE CHRISTIAN PROJECT

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Qikiqtaaluk Logistics Inc.

June 2010

1 INTRODUCTION

The purpose of this plan is to provide a basis for, and to encourage management practices that are directed towards the minimization of risks and potential hazards associated with the Cape Christian Clean-up Project.

Our objective in providing this plan is to ensure that an effective occupational health and safety management system is available and that this plan is effectively communicated to all site staff. This plan will assist in the creation of a working environment where risks and potential hazards are properly identified and mitigated.

The identification of hazards, assessment of risks and implementation of risk control systems are essential processes for establishing a Health and Safety Management System. Also essential is the commitment of Project Management Team who must strive to:

- Set and verify safety objectives;
- Oversee the implementation of the system, and;
- To maintain feedback mechanisms needed to continuously improve the system.

The key elements of the System are:

- Management Commitment;
- Team Planning;
- Worker Consultation;
- Hazard Management;
- Worker Training;
- Management Supervision and Verification; and
- Site Health and Safety Committee.

Certain programs and policies have been enhanced to ensure the working environment relative to health and safety concerns. These include:

- Policy of a “Dry” camp (enhanced);
- Designation of Responsible Authorities relative to health and safety matters;
- The implementation of a comprehensive medical surveillance program and the availability of on-site emergency medical services;
- Fire Emergency Plan;
- Spill Contingency Plan;
- Availability of all pertinent health and safety and environmental regulations;
- Availability of environmental operational procedures and standards;
- First aid and CPR training; and
- Health and safety training.

This H&S Plan presents 22 sections and 8 appendices. These are:

- Section 1: Introduction
- Section 2: General Health and Safety Policies
- Section 3: General Safety Rules
- Section 4: Safety Program
- Section 5: Safety Training
- Section 6: Job Safety Analysis
- Section 7: Accident Investigation
- Section 8: Hazard Communication and Chemical Safety
- Section 9: Electrical Safety
- Section 10: Fall Prevention
- Section 11: Flammable Liquids
- Section 12: Fork Lift Safety
- Section 13: Hot Work & Welding Safety
- Section 14: Housekeeping and Material Storage
- Section 15: Personal Protective Equipment
- Section 16: Respiratory Protection
- Section 17: Tool Safety Program
- Section 18: Spill Contingency Plan
- Section 19: Contaminated Site Procedures
- Section 20: Emergency Response Procedures
- Section 21: Communication Systems
- Section 22: Vehicle Maintenance Program
- Section 23: ATV Safety
- Section 24: Wildlife Management Plan
- Section 25: Cold Stress Monitoring Program

This HASP also contains various appendices that provide supporting documents that should be considered as an integral part of the plan. These are:

- Appendix I: Employee Report of Accident, Injury or Illness
- Appendix II: Daily and Weekly Safety Inspection Forms for the Camp and the Work Site
- Appendix III: Cape Christian Camp Rules / New Employee Site Safety Orientation Checklists
- Appendix IV: Work Methodology Plans
- Appendix V: Vehicle Preventive Maintenance
- Appendix VI: Emergency Evacuation Plan
- Appendix VI: Occupational Exposure Limits

The Cape Christian Project's Health and Safety Plan is an amendable document that may evolve as the project is progressing. The Project Management Team may have to face unpredictable situations that will require new operating procedures. The safety committee will review these procedures and will ensure standards are met or exceeded to prevent work-related accidents.

1.1 DRY CAMP POLICY

With the utmost priority of ensuring the safety of camp personnel and junior trainees, Qikiqtaaluk Logistics has determined that the possession, importation, sale, consumption, and / or usage of alcohol is prohibited at Cape Christian. The policy established is Zero Tolerance. Any person that violates this policy can be removed from the Cape Christian site and can be terminated from company service.

In the interest of policy management, the Site Superintendent or Designate shall voluntarily submit to a drug and alcohol screen prior to reporting to the Cape Christian site, at random intervals during the project, and on completion of project work.

1.2 MEDICAL SURVEILLANCE PROGRAM

Qikiqtaaluk staff may have to undertake a comprehensive medical work fitness evaluation prior to reporting to the Cape Christian. The baseline fitness evaluation shall consist of:

- Work and Health history (questionnaire and interview);
- Physical Examination by Medical Doctor;
- PFT evaluation (spirometry);
- Visual acuity;
- Non-specific lab work (CBC, Hb, Hct, MCV, MCHC, Albumin, Immunoglobulins, Urea, Creatine, Bilirubin, ALT, AST, Gamma GT, LDH, Triglycerides, Urine dipstick and microanalysis); and
- Tetanus booster (if last longer than 10 years).

The purpose of the program will be to identify specific medical concerns or problems relative to employees. This will enable proper and timely planning and contingency arrangement for employees with medical problems.

An emergency medical technician will also be present at all time on site. For such services, the technicians will be certified and qualified to provide immediate medical attention to site personnel. The technicians will coordinate with the Clyde River Health Centre, the Baffin Regional Hospital in Iqaluit as well as through other medical surveillance clinics if required.

1.3 RESPONSIBLE AUTHORITY

Site personnel who are specialized in and who have appropriate training and accreditation regarding specific site operations and health and safety concerns shall be regarded as Responsible Authorities. A Responsible Authority can request a review of any operational procedure and can stop work on such a procedure until an appropriate assessment has been completed. Responsible Authorities will also be consulted regarding any identified health and safety matter. Responsible Authorities might include, but are not limited to:

- Ticketed Journeymen;
- Site Engineer(s);

- Health and Safety Officers;
- Trainers; and
- Other personnel that have appropriate training and accreditation.

Identification of who's acting as the Health and Safety Officer, as the site Medic and as other Senior Management Roles will be reviewed prior to each construction season as part of the worker orientation seminar. In addition, a list of all names fulfilling these above mentioned positions will be posted inside the camp outside the site superintendent's office, the Health and Safety office, the First Aid Station and on the Health and Safety Bulletin Board.

1.4 REGULATIONS AND STANDARDS

The project has access to the internet site CANLII which provides the full text of all Canadian federal and provincial environmental and health and safety regulations. This site also provides access to the Territorial Land Act, Territorial Land Use Regulation, and Camp Sanitation Regulation. These will be referred to by the Site Superintendent, Site Technical Advisor and other staff members, to ensure that operations conform to all applicable regulations and norms.

1.5 TRAINING AND CERTIFICATION PROGRAMS

Specific training and certification programs shall be completed by selected members of the project staff prior to, or concurrent with the initiation of site operations. These programs will include, but are not limited to:

- First aid and CPR certification program (senior staff prior to project initiation);
- HAZWOPER, hazardous materials handling training (senior staff and hazardous materials workers prior to the start-up of hazardous materials handling operations);
- Contaminated Site Worker Program; and
- WHMIS.

These programs shall be conducted by senior staff trainers.

2 GENERAL HEALTH AND SAFETY POLICIES

2.1 PURPOSE

It is policy of Qikiqtaaluk Logistics Inc. that all employees are provided with a safe and healthy place of employment. Identification of hazardous conditions may be accomplished at the planning and design stage, as a result of workplace inspections, or by employee reports. All recognized safety and health hazards shall be eliminated or controlled as quickly as possible, subject to priorities based upon the degree of risk posed by the hazards. The preferred method of hazard abatement shall be through application of engineering controls or substitution of less hazardous processes or materials. Total reliance on personal protective equipment is acceptable only when all other methods are proven to be technically and/or economically non-feasible.

2.2 RESPONSIBILITIES

Management, supervisors and employees are responsible for following all safety program requirements and safety practices. If procedures or practices are identified as needing changes, these changes shall be accomplished through normal management review practice.

2.3 HAZARD CONTROL

2.3.1 Substitution

The risk of injury or illness may be reduced by replacement of an existing process, material, or equipment with a similar item having a more limited hazard potential. Some examples include: brush painting instead of spray painting to reduce inhalation hazards; welding instead of riveting to reduce noise levels; use of safety cans instead of bottles to store flammable liquids, etc. Care must be exercised in any product or method substitution to ensure that the substitution is technically acceptable, and avoids the possibility of introducing new or unforeseen hazards.

2.3.2 Isolation

Hazards are controlled by isolation whenever an appropriate barrier or limiter is placed between the hazard and an individual who may be affected by the hazard. This isolation can be in the form of physical barriers, time separation, or distance. Examples include electrical insulation, glove boxes, acoustical containment, and remote controlled equipment.

2.3.3 Administrative Control

This method of hazard mitigation depends on effective operating practices that reduce the exposure of individuals to chemical or physical hazards. These practices may take the form of limited access to high hazard areas, preventive maintenance programs to reduce the potential for leakage of hazardous substances, or adjusted work schedules which involve a regimen of work in high hazard and low hazard areas. Adjusted work schedules are appropriate only when the hazard is recognized as having a limit below which nearly all workers may be repeatedly

exposed without adverse effect.

2.3.4 Personal Protective Equipment

This method of hazard control is least preferred because personal protective devices may reduce a worker's productivity, while affording less effective protection against the recognized hazard than other methods of control. Nevertheless, there are instances where adequate levels of risk reduction cannot be achieved through other methods, and personal protective devices must be used, either alone or in conjunction with other protective measures.

2.3.5 Hazard Control Principles

Hazardous conditions in the workplace may be prevented through appropriate actions when facilities are designed, when operating procedures are developed, and when equipment is purchased. Once hazards are identified, whether through inspection or complaint, immediate action shall be taken to avoid unreasonable danger.

2.3.6 Design Reviews

Safety and occupational health issues shall be considered, designed, and engineered into all facilities. Projects that involve potential health hazards such as toxic material, radiation, noise, or other health hazard shall be designed in accordance with established principles of good safety and industrial hygiene engineering.

2.3.7 Operating Procedures

Standard operating procedures or similar directives developed by the supervisor that are issued to direct the manner in which work is performed shall include appropriate health and safety requirements. Supervisors must submit standard operating procedures. Recommendations for changes/additions to the procedures for safety and health purposes shall be submitted in writing to department managers.

2.3.8 Purchasing Procedures

Many hazards can be avoided by incorporating appropriate specifications for purchased equipment/material and contracted efforts that involve work at company facilities. Employees responsible for purchasing or developing specifications for purchases should coordinate with the safety officer for applicable material or equipment purchases to ensure safety and health considerations have been addressed.

2.3.9 Interim Hazard Abatement Measures

During the time needed to design and implement permanent hazard control measures, immediate, temporary measures are needed. Where engineering controls are not immediately applicable, administrative controls and/or personal protective equipment are appropriate for use as interim hazard abatement measures.

2.3.10 Permanent Hazard Abatement

Engineering control methods are the preferred method of hazard control, followed by administrative control and personal protective equipment. Feasible engineering controls shall be used to reduce hazardous exposure, even when only partial reduction of exposure is possible

through engineering methods.

2.4 HAZARD CONTROL DEVELOPMENT

The following possible actions will be considered when recommendations are developed for prevention or reduction of hazards:

1. Avoiding, eliminating, or reducing deficiencies by engineering design, material selection or substitution;
2. Isolating hazardous substances, components, and operations from other activities, areas, personnel, and incompatible materials;
3. Incorporating "fail-safe" principles where failures would disable the system or cause a catastrophe through injury to personnel, damage to the equipment, or inadvertent operation of critical equipment;
4. Relocating equipment/components so that personnel access during operation, maintenance, repair or adjustment shall not result in exposure to hazards such as chemical burns, electrical shock, electromagnetic radiation, cutting edges, sharp points, or toxic atmospheres;
5. Providing suitable warning and notes of caution concerning required personnel protection in operation, assembly, maintenance, and repair instructions;
6. Providing distinctive markings on hazardous components, equipment, or facilities;
7. Requiring use of personal protective equipment when other controls do not reduce the hazard to an acceptable level;
8. Monitoring exposure to insure that engineering controls effectively reduce the hazard; and
9. Training employees to recognize hazards and take appropriate precautionary measures.

2.4.1 Hazard Reporting

Identification and reporting of potentially unsafe or unhealthy working conditions is the responsibility of all employees. All employees must report unsafe or unhealthy working conditions to their immediate supervisor who will promptly investigate the situation and take appropriate corrective actions. Supervisors will contact the Safety Office for assistance as necessary. Supervisors will keep the reporting employee informed of all actions taken. Any employee may submit a written report of an unsafe or unhealthy working condition directly to the Safety Officer.

2.4.2 Signs and Tags

Signs and tags are not intended as substitutes for preferred abatement methods such as engineering controls, substitution, isolation, or safe work practices. Rather, they are additional safety guidance and increase the employee's awareness of potentially hazardous situations. Tags are temporary means of warning all concerned staff of hazardous conditions, defective equipment, etc. Tags are not to be considered as a complete warning method, but should only be used until a positive means can be employed to eliminate all hazards; for example, a "Do Not Start" tag is affixed to a machine and is used only until the machine can be locked out, de-energized, or inactivated. Danger Signs shall be used where an immediate hazard exists and

specific precautions are required to protect personnel or property. The sign shall be of red, black, and white colors. Warning Indications or Notice Signs should be placed on damaged equipment, and immediate arrangements should be made for the equipment to be taken out of service and sent to be repaired. Caution Signs shall be used to warn of a potential hazard or to caution against unsafe practices, and to prescribe the precaution that will be taken to protect personnel and property from mishap probability. The sign shall be of yellow and black colors. All Exit Signs shall be utilized to clearly identify the means of egress from a building or facility. Where the exit is not apparent, signs shall have an arrow indicating the direction of the exit. Biological Hazard Warning Signs shall be used to signify the actual or potential presence of a biological hazard and to identify equipment, containers, rooms, experimental animals, etc., which contain or are contaminated with viable hazardous agents. The symbol on these signs shall be the standard fluorescent orange or orange-red color.

2.4.3 Hazard Communication

On site, employees may perform operations which commonly require the use of chemicals that have inherent chemical and physical hazards. General office activities may also involve working with products which contain regulated chemicals. Hazard Communication Standard requires employers to provide information to their employees concerning the hazardous chemicals in the workplace through a formal WHMIS training program, and the provision materials safety data sheets, product label and warning signs. The site Health and Safety Officer shall be responsible for the implementation of the WHMIS program.

2.5 HAZARD COMMUNICATION PROGRAM REQUIREMENTS

2.5.1 Noise

Employee exposure to noise of sufficient intensity and duration can result in hearing damage. Noise induced hearing loss rarely results from just one exposure; it can progress unnoticed over a period of years. Initial noise induced hearing loss occurs at the higher frequencies where the consonant portion of speech is found, making communications difficult. Engineering controls such as mufflers on heavy equipment exhausts or on air release valves are required where possible. If engineering solutions cannot reduce the noise, administrative controls such as increasing the distance between the noise source and the worker or rotation of jobs between workers in the high noise area should be used if possible.

2.5.2 Housekeeping

All places of employment including outside areas should be kept as clean as the nature of the work allows, but must be kept free and clear of debris, trash, scrap, spills or other extraneous materials which could create a health hazard or cause an accident. Proper layout, spacing and arrangement of equipment, facilities, and machinery are essential to good housekeeping, allowing orderly operation and avoiding congestion. Maintain the floor of every work area so far as practicable, in a dry condition. Where wet processes are used, maintain drainage and provide removable false floors, platforms, mats, or other dry standing places. When necessary or appropriate, provide waterproof footgear. To facilitate cleaning, every floor, working place, and passageway will be as smooth as feasible but allowing for the need to provide non-skid flooring where appropriate. Floors shall not be cleaned with flammable materials or materials

creating significant toxic hazards.

2.6 EMERGENCY EYEWASH FACILITIES

Emergency eyewash facilities meeting the requirements of ANSI Z358.1 shall be provided in all areas where the eyes of any employee may be exposed to corrosive materials. All such emergency facilities shall be located where they are easily accessible to those in need.

3 GENERAL SAFETY RULES

3.1 PURPOSE

Qikiqtaaluk Logistics' primary objectives are, but are not limited to, the assurance of the safety and health of our employees, and to minimize our client's (PWGSC/INAC) liability. Our goal is to provide safe and healthful working conditions for all Company Employees. Safety Rules have been developed with input from Supervision and Employees. While held to a minimum, the rules address behaviours and work practices that can lead to accidents and injuries. Each Employee should become familiar with and follow General and Departmental Safety Rules. Supervisors must enforce Safe Work practices through strict adherence to Safety Rules. Most accidents can be prevented if everyone uses assigned safety equipment and follows the established safety rules. To operate a safe and successful business, we must work as a team to THINK SAFE, WORK SAFE AND BE SAFE.

3.2 COMMUNICATION OF SAFETY RULES

Communication of safety rules is accomplished by:

- Discussion during New Hire Orientation
- Publication in the New Hire Orientation Handout
- Posting throughout the facility
- Seasonal refresher training
- On-the-spot corrections and reinforcement by supervisors

3.3 ADDITIONAL OPERATING SAFETY RULES

The Company has additional safety rules for specific operations and departments that apply to those engaged in hazardous work areas or operations. These are, but are not limited to:

- Accident Investigation
- Fall Prevention
- Safety Committee Program
- Safety Training
- Personal Protection Equipment
- Respiratory Protection
- Hazard Communication & Chemical Safety
- Flammable Liquid
- Housekeeping & Material Storage
- Welding Safety
- Forklift Safety
- Electrical Safety
- Tool Safety
- Electrical Safety

3.4 POSTING OF GENERAL SAFETY RULES

General Safety Rules will be posted in conspicuous areas.

3.5 GENERAL SAFETY RULES

1. Hard hats, safety glasses, steel toed boots and a safety vest shall be worn at all times. Exceptions are: inside cabs of vehicles, and inside camp when not working and outside of camp after work hours.
2. Report all work injuries and illnesses immediately to your supervisor or the camp Health and Safety Officer.
3. Report all Unsafe Acts or Unsafe Conditions to your Supervisor.
4. Smoking is permitted only in the designated “Smoking Areas”.
5. The use of ATVs requires the permission of your supervisor. The use of a helmet with ATVs is mandatory. An inspection check list must be completed prior to operating the ATV.
6. Speed limits are 5 km/hr in camp, and 30 km/hr on the roads for all equipment, vehicles and ATVs.
7. The use of seat belts is mandatory in vehicles when they are in motion.
8. Smoking is not permitted in vehicles.
9. Unauthorised personnel shall not enter contaminated zones.
10. Use, possession, sale or being under the influence of illegal drugs, misuse of prescription drugs and/or alcohol us not permitted on site, at any time. Offenders will be immediately terminated and removed from the site.
11. All workers are to stop work if they are unsure about proper procedures to follow and check with their supervisors.
12. Only authorized and trained Employees may repair or adjust machinery and equipment. Lock and Tag-Out Procedures must be followed before removing any machine guards or working on powered machinery and equipment. Replace all guards when the job is completed.
13. Only qualified and certified Employed may work on or near Exposed Energized Electrical Parts or Electrical Equipment. Follow Electrical Safety Rules when working with electrically powered machinery and equipment.
14. Only authorized and trained Employees may dispense or use chemicals. All employees that handle chemicals must have completed the site “Workplace Hazardous Material Information System” (WHIMIS) course.
15. Keep work areas clean and aisles clear. Do not block emergency exits and equipment.
16. Wear and use the prescribed Personal Protective Safety Equipment. This includes foot protection, head protection, gloves, etc.
17. No loud noise in camp after 10:30 pm and all personnel should be in their rooms after 11:00 pm
18. Be bear aware! Use the buddy system. ATV excursions require a bear monitor and hourly radio checks and permission from the site superintendent
19. You are obligated to meet for a morning meeting in the recreation room at 7:00 am sharp.

20. You should know the location of the first aid room and health and safety office.
21. Gathering point in case of an emergency or fire alarm is the GARAGE. Be visible for personnel counts and follow orders from the site superintendent or camp supervisor.

4 SAFETY PROGRAM

As part of the overall Cape Christian safety program, safety procedures have been incorporated in this document. Also, a safety committee, involving staff of the Cape Christian project, will be formed in 2008. A description of the safety committee follows.

4.1 SAFETY COMMITTEE

The Cape Christian Health & Safety Committee is an important part of the Qikiqtaaluk Logistics safety management effort. Managers and supervisors can gain valuable assistance in their areas by a joint effort with their committee members.

4.2 GOALS OF THE SAFETY COMMITTEE

- Involve employees in safety management;
- Lower the rate and severity of accidents and injuries;
- Maintain a safe workplace; and
- Involve employee participation in safety programs.

4.3 SAFETY COMMITTEE FORMATION

The committee should be large enough to represent all departments at the facility, but have the most efficient number of members to assist in accomplishment of committee goals. Membership on the committee is to be voluntary and will meet any existing labour agreements. Volunteer committee membership may rotate every four (4) to six (6) weeks. Standing members to the committee will include a representative from Management, Maintenance, Engineering and Safety. The purpose of the standing membership is to provide continuity, lend experience and provide a resource for the Committee. The Committee Chairperson is elected. The Committee Chairperson will conduct the meetings, develop agendas and minutes.

4.4 COMMITTEE OPERATION

The Safety Committee will:

- Meet on a regular basis, at least weekly;
- Develop short and long term goals;
- Discuss accident prevention methods;
- Review previous accidents and injuries;
- Conduct a weekly safety inspection of the site;
- Recommend changes to safety procedures and policies; and
- Post the minutes of meetings in general areas around the camp.

4.5 DUTIES AND RESPONSIBILITIES

4.5.1 Chairperson
The Chairperson will lead the meeting and will report Committee activities to Management.

4.5.2 Safety Committee Members
Safety Committee Members have the following responsibilities:

- Attend each weekly meeting;
- Discuss safety activities and unsafe acts/conditions; and
- Encourage all Employees to work safely.

4.5.3 Safety Officer
QL will have a Health and Safety Officer on site at all times. This position is not necessarily full time. The duties of the Safety Officer at the Cape Christian site are as following:

- Ensure that the Health and Safety Plan is implemented;
- Prepare accident/incident/near miss reports;
- Document daily activities related to the safety program;
- Conduct safety orientation sessions to all new personnel on site;
- Conduct site inspections on a daily basis;
- Recommend alternatives in operating procedures;
- Produce Health and Safety Committee meeting minutes; and
- Act as an information resource to the Safety Committee

4.6 RECORDS

Records of all Safety Committee Meetings and actions taken shall be maintained by the Safety Officer. The Safety Officer reports to the Site Superintendent and ultimately to the PWGSC representative, in case of unresolved issues. QL is responsible for providing information regarding safety concerns to PWGSC. Should the Safety officer be not satisfied with QL's response/action through the Site Superintendent, he shall then communicate directly with the PWGSC representative on site.

4.7 TRAINING

Each Safety Committee Member will be provided the necessary training in:

- Function of the committee;
- Safety Programs; and
- Safety Policies.

5 SAFETY TRAINING

5.1 PURPOSE

Training is one of the most important elements of any health & safety program. Training is designed to enable employees to learn their jobs properly and to reinforce safety policies and procedures. Safety Training also provides an opportunity to communicate safety principles and commitment of management to a safe work place.

5.2 FIRST AID AND CPR TRAINING

Selected senior staff should complete a comprehensive certification course in first aid and CPR techniques.

The Site Safety Officer in cooperation with the Medic should be responsible for this type of training at the job site and ensuring there are sufficient numbers of trained employees at each work site.

5.3 NEW EMPLOYEE SAFETY ORIENTATION

A New Employee Safety Orientation Class is a part of the overall orientation program that all new hires must attend. This orientation is conducted by the Health & Safety Officer. The safety training in these classes consists, but not limited to the listed topics below:

- General Safety Rules & Policies;
- Hazard Communication;
- Emergency Plans: Routes & Assembly Locations; and
- Procedures for safety violations, accidents, near-miss.

After completion of Safety Orientation Class, the new hire's supervisor will provide additional specific safety training applicable to the assigned tasks. This training will consist of, but is not limited to:

- Emergency plans, evacuation routes, assembly locations and emergency actions;
- Rules for reporting safety violations, accidents, and near-misses;
- Safe Operating Procedures;
- Location & use of Emergency Eye Wash & Shower Stations;
- Location and use of Fire Alarm Pull Boxes;
- Use of tools & equipment, lifting & material handling equipment;
- Machine & Tool Guards, Emergency Stop Control Locations & Use;
- Proper Ergonomic procedures & lifting techniques for the tasks assigned;
- Safety equipment & personal protective equipment;
- Hazard Communication: Specific hazards for work area chemicals; and
- General Hazardous Waste Operations.

Record of this training will be recorded on the Job Safety Training Checklist. This record will be filled out by the Employee signed off by the Health & Safety Officer and filed in the Employee's Personnel Record.

5.4 SEASONAL TRAINING TOPICS

The list below details areas that may require annual retraining for Employees, Maintenance Personnel, Supervisors, and Sub-contractors:

- Annual Review of Safety Policies and Rules;
- Hazard Communication/Chemical Safety;
- Emergency Action Procedures (including evacuation);
- Personal Protective Equipment;
- Electrical Safe Work Practices;
- Respiratory Protection;
- Powered Industrial Truck Operation;
- General Hazardous Waste Operations;
- First Aid; and
- C.P.R.

6. JOB SAFETY ANALYSIS

6.1 HOW TO SELECT JOBS FOR A JOB SAFETY ANALYSIS

Ideally, all jobs should be subjected to a JSA. In some cases there are practical constraints posed by the amount of time and effort required to do a JSA. Another consideration is that each JSA will require revision whenever equipment, raw materials, processes, or the environment change. For these reasons, it is usually necessary to identify which jobs are to be analyzed. Even if analysis of all jobs is planned, this step ensures that the most critical jobs are examined first.

Factors to be considered in setting a priority for analysis of jobs include:

- Accident frequency and severity: jobs where accidents occur frequently or where they occur infrequently but result in disabling injuries.
- Potential for severe injuries or illnesses: the consequences of an accident, hazardous condition, or exposure to harmful substance are potentially severe.
- Newly established jobs: due to lack of experience in these jobs, hazards may not be evident or anticipated.
- Modified jobs: new hazards may be associated with changes in job procedures.
- Infrequently performed jobs: workers may be at greater risk when undertaking non-routine jobs, and a JSA provides a means of reviewing hazards.

6.2 JOB SAFETY ANALYSIS PROCESS

(Ref: Canadian Centre for Occupational Health and Safety, 2008)

A job safety analysis (JSA) is a procedure which helps integrate accepted safety and health principles and practices into a particular task or job operation. In a JSA, each basic step of the job is to identify potential hazards and to recommend the safest way to do the job. Other terms used to describe this procedure are job hazard analysis (JHA) and job hazard breakdown.

The terms "job" and "task" are commonly used interchangeably to mean a specific work assignment, such as "operating a grinder," "using a pressurized water extinguisher," or "changing a flat tire." JSAs are not suitable for jobs defined too broadly, for example, "overhauling an engine"; or too narrowly, for example, "positioning car jack."

Four basic stages in conducting a JSA are:

- Selecting the job to be analyzed
- Breaking the job down into a sequence of steps
- Identifying potential hazards
- Determining preventive measures to overcome these hazards

After a job has been chosen for analysis, the next stage is to break the job into steps. **A job step is defined as a segment of the operation necessary to advance the work.** See

examples below.

Care must be taken not to make the steps too general. Missing specific steps and their associated hazards will not help. On the other hand, if they are too detailed, there will be too many steps. A rule of thumb is that most jobs can be described in less than ten steps. If more steps are required, you might want to divide the job into two segments, each with its separate JSA, or combine steps where appropriate. As an example, the job of changing a flat tire will be used in this document.

An important point to remember is to **keep the steps in their correct sequence**. Any step which is out of order may miss serious potential hazards or introduce hazards which do not actually exist.

Each step is recorded in sequence. Make notes about what is done rather than how it is done. Each item is started with an action verb. Appendix A illustrates a format which can be used as a worksheet in preparing a JSA. Job steps are recorded in the left hand column, as shown below:

Sequence of Events	Potential Accidents or Hazards	Preventive Measures
Park vehicle		
Remove spare and tool kit		
Pry off hub cap and loosen lug bolts (nuts)		
And so on.....		

This part of the analysis is usually prepared by knowing or watching a worker do the job. The observer is normally the immediate supervisor. For a more thorough analysis often happens by having another person, preferably a member of the joint occupational health and safety committee, participate in the observation. Key points are less likely to be missed in this way.

The job observer should have experienced and be capable in all parts of the job. To strengthen full co-operation and participation, the reason for the exercise must be clearly explained. The JSA is neither a time and motion study in disguise, nor an attempt to uncover individual unsafe acts. **The job, not the individual, is being studied in an effort to make it safer by identifying hazards and making modifications to eliminate or reduce them.** The worker's experience contributes in making job and safety improvements.

The job should be observed during normal times and situations. For example, if a job is routinely done only at night, the JSA review should also be done at night. Similarly, only regular tools and equipment should be used. The only difference from normal operations is the fact that the worker is being observed.

When completed, the breakdown of steps should be discussed by all the participants (always including the worker) to make that all basic steps have been noted and are in the correct order. Once the basic steps have been recorded, potential hazards must be identified at each step. Based on observations of the job, knowledge of accident and injury causes, and personal experience, list the things that could go wrong at each step.

A second observation of the job being performed may be needed. Since the basic steps have already been recorded, more attention can now be focused on each potential hazard. At this stage, no attempt is made to solve any problems which may have been detected.

To help identify potential hazards, the job analyst may use questions such as these (this is not a complete list):

- Can any body part get caught in or between objects?
- Do tools, machines, or equipment present any hazards?
- Can the worker make harmful contact with moving objects?
- Can the worker slip, trip, or fall?
- Can the worker suffer strain from lifting, pushing, or pulling?
- Is the worker exposed to extreme heat or cold?
- Is excessive noise or vibration a problem?
- Is there a danger from falling objects?
- Is lighting a problem?
- Can weather conditions affect safety?
- Is harmful radiation a possibility?
- Can contact be made with hot, toxic, or caustic substances?
- Are there dusts, fumes, mists, or vapours in the air?

Potential hazards are listed in the middle column of the worksheet, numbered to match the corresponding job step. For example:

Sequence of Events	Potential Accidents or Hazards	Preventive Measures
Park vehicle	a) Vehicle too close to passing traffic b) Vehicle on uneven, soft ground c) Vehicle may roll.	
Remove spare and tool kit	a) Strain from lifting spare.	
Pry off hub cap and loosen lug bolts (nuts)	a) Hub cap may pop off and hit you b) Lug wrench may slip	
And so on.....	a) ...	

Again, all participants should jointly review this part of the analysis.

The final stage in a JSA is to determine ways to eliminate or control the hazards identified. The generally accepted measures, in order of preference, are:

1. Eliminate the hazard
This is the most effective measure. These techniques should be used to eliminate the hazards:

- Choose a different process
- Modify an existing process
- Substitute with less hazardous substance
- Improve environment (ventilation)
- Modify or change equipment or tools

2. Contain the hazard
If the hazard cannot be eliminated, contact might be prevented by using enclosures, machine guards, worker booths or similar devices.

3. Revise work procedures
Consideration might be given to modifying steps which are hazardous, changing the sequence of steps, or adding additional steps (such as locking out energy sources).

4. Reduce the exposure
These measures are the least effective and should only be used if no other solutions are possible. One way of minimizing exposure is to reduce the number of times the hazard is encountered. An example would be modifying machinery so that less maintenance is necessary. The use of appropriate personal protective equipment may be required. To reduce the severity of an accident, emergency facilities, such as eyewash stations, may need to be provided.

In listing the preventive measures, do not use general statements such as "be careful" or "use caution". Specific statements which describe both what action is to be taken and how it is to be performed are preferable. The recommended measures are listed in the right hand column of the worksheet, numbered to match the hazard in question. For example:

Sequence of Events	Potential Accidents or Hazards	Preventive Measures
Park vehicle	d) Vehicle too close to passing traffic e) Vehicle on uneven, soft ground f) Vehicle may roll.	a) Drive to area well clear of traffic. Turn on emergency flashers b) Choose a firm, level parking area c) Apply the parking brake; leave transmission in PARK; place blocks in front and back of the wheel diagonally opposite to the flat
Remove spare and tool kit	b) Strain from lifting spare.	a) Turn spare into upright position in the wheel well. Using your legs and standing as close as possible, lift spare out of truck and roll to flat tire.
Pry off hub cap and loosen lug bolts (nuts)	c) Hub cap may pop off and hit you d) Lug wrench may slip	a) Pry off hub cap using steady pressure b) Use proper lug wrench; apply steady pressure slowly.
And so on.....	a) ...	a) ...

JSA is a useful technique for identifying hazards so that workers can take measures to eliminate or control hazards. **Once the analysis is completed, the results must be communicated to all workers who are, or will be, performing that job.** The side-by-side format used in JSA worksheets is not an ideal one for instructional purposes. Better results can be achieved by using a narrative-style communication format. For example, the work procedure based on the partial JSA developed as an example in this document might start out like this:

1. Park vehicle.
    a. Drive vehicle off the road to an area well clear of traffic, even if it requires rolling on a flat tire. Turn on the emergency flashers to alert passing drivers so that they will not hit you.
    b. Choose a firm and level area for parking. You can jack up the vehicle to prevent rolling.
    c. Apply the parking brake, leave the transmission in PARK, place blocks in front and back of the wheel diagonally opposite the flat. These actions will also help prevent the vehicle from rolling.
2. Remove spare and tool kit.
    a. To avoid back strain, turn the spare up into an upright position in its well. Stand as close to the trunk as possible and slide the spare close to your body. Lift out and roll to flat tire.
3. Pry off hub cap, loosen lug bolts (nuts).
    a. Pry off hub cap slowly with steady pressure to prevent it from popping off and striking you.
    b. Using the proper lug wrench, apply steady pressure slowly to loosen the lug bolts

(nuts) so that the wrench will not slip, get lost or and hurt your knuckles.

4. And so on.

6.2.1 Sample form for Job Safety Analysis Worksheet

Job Safety Analysis Worksheet		
Job:		
Analysis By:	Reviewed By:	Approved By:
Date:	Date:	Date:
Sequence of Steps	**Potential Accidents or Hazards**	**Preventative Measures**
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

6.2.2 Sample forms for Tasks and Job Inventory

Tasks with Potential Exposure to Hazardous Materials or Physical Agents		
Analysis By:	Reviewed By:	Approved By:
Date:	Date:	Date:
Tasks	**Name of Material or Physical Agent**	**Location**

Job Inventory of Hazardous Chemicals		
Job Name:		
Analysis By:	Reviewed By:	Approved By:
Date:	Date:	Date:
Name of Chemical	**Route of Entry and Physical State**	**Controls**

7 INCIDENT INVESTIGATION

7.1 PURPOSE

Incident prevention is the key to eliminating the possibility of injury to employees and property losses. Learning from past incidents is one of the key elements in incident prevention. This chapter addresses the procedures to be followed for all incidents resulting in employee injury or property damage.

7.2 RESPONSIBILITIES

7.2.1 Management

- Conduct incident prevention and investigation training for supervisors;
- Ensure all incidents and injuries are investigated;
- Ensure immediate and long term corrective actions are taken to prevent re-occurrence;
- Ensure incident reporting to upper management and PWGSC;
- Maintain Incident Reports permanently on file; and
- Provide all necessary medical care for injured workers.

7.2.2 Employees

- Immediately report all incidents & injuries to their supervisor;
- Assist as requested in all incident investigations; and
- Report all hazardous conditions and near-misses.

7.3 SUPERVISOR INVOLVEMENT

In most cases, the Health and Safety Officer conducts the investigation in cooperation with the work supervisors. Direct supervisors are familiar with employee's work environment & assigned tasks. The Supervisor is the person who must take the incident situation under control and immediately eliminate or control hazards to others.

7.4 IMMEDIATE STEPS

1. Assess access to area, and if necessary, first eliminate or control hazards;
2. Provide First Aid for any injured persons;
3. Document incident scene information to determine the cause; and
4. Interview witnesses immediately.

7.5 INCIDENT PREVENTION

Incidents are usually complex. An incident may have 10 or more events that can be causes. A detailed analysis of an incident will normally reveal three cause levels: basic, indirect, and direct. At the lowest level, an incident results only when a person or object receives an amount of energy or hazardous material that cannot be absorbed safely. This energy or hazardous material is the DIRECT CAUSE of the incident. The direct cause is usually the result of one or more unsafe acts or unsafe conditions, or both. Unsafe acts and conditions are the INDIRECT CAUSES or symptoms. In turn, indirect causes are usually traceable to poor management policies and decisions, or to personal or environmental factors. These are the BASIC CAUSES. In spite of their complexity, most incidents are preventable by eliminating one or more causes. Incident investigations determine not only what happened, but also how and why. The information gained from these investigations can prevent recurrence of similar or perhaps more disastrous incidents. Incident investigators are interested in each event as well as in the sequence of events that led to an incident. The incident type is also important to the investigator. The recurrence of incidents of a particular type or those with common causes shows areas needing special incident prevention emphasis.

7.6 INVESTIGATIVE PROCEDURES

The actual procedures used in a particular investigation depend on the nature and results of the incident. In general, responsible officials will appoint an individual to be in charge of the investigation. The investigator uses most of the following steps:

1. Define the scope of the investigation;
2. Select the investigators. Assign specific tasks to each (preferably in writing);
3. Present a preliminary briefing to the investigating team, including:
    a. Description of the incident, with damage estimates;
    b. Normal operating procedures;
    c. Maps (local and general);
    d. Location of the incident site;
    e. List of witnesses; and
    f. Events that preceded the incident.
4. Visit the incident site to get updated information;
5. Inspect the incident site:
    a. Secure the area. Do not disturb the scene unless a hazard exists.
    b. Prepare the necessary sketches and photographs. Label each carefully and keep accurate records.
6. Interview each victim and witness. Also, interview those who were present before the incident and those who arrived at the site shortly after the incident. Keep accurate records of each interview. Use a tape recorder if desired and if approved.
    a. Determine:
        i. What was not normal before the incident?
        ii. Where the abnormality occurred;
        iii. When it was first noted; and

iv. How it occurred.

7. Analyze the data obtained in step 7. Repeat any of the prior steps, if necessary.
   a. Determine:
      i. Why the incident occurred?
      ii. A likely sequence of events and probable causes (direct, indirect, basic); and
      iii. Alternative sequences.
8. Check each sequence against the data from step 7;
9. Determine the most likely sequence of events and the most probable causes;
10. Conduct a post-investigation briefing; and
11. Prepare a summary report, including the recommended actions to prevent a recurrence. Distribute the report according to applicable instructions. An investigation is not complete until all data are analyzed and a final report is completed. In practice, the investigative work, data analysis, and report preparation proceed simultaneously over much of the time spent on the investigation.

All reports must be signed by the Health & Safety Officer and the injured parties if possible. All interviews must be signed by the interviewer and the interviewee.

7.7 FACT FINDING

Gather evidence from many sources during an investigation. Get information from witnesses and reports as well as by observation. Interview witnesses as soon as possible after an incident. Inspect the incident site before any changes occur. Take photographs and make sketches of the incident scene. Record all pertinent data on maps. Get copies of all reports. Documents containing normal operating procedures, flow diagrams, maintenance charts, or reports of difficulties or abnormalities are particularly useful. Keep complete and accurate notes in a bound notebook. Record pre-incident conditions, the incident sequence, and post-incident conditions. In addition, document the location of victims, witnesses, machinery, energy sources, and hazardous materials. In some investigations, a particular physical or chemical law, principle, or property may explain a sequence of events. Include laws in the notes taken during the investigation or in the later analysis of data. In addition, gather data during the investigation that may lend itself to analysis by these laws, principles, or properties. An appendix in the final report can include an extended discussion.

7.8 INTERVIEWS

In general, experienced personnel should conduct interviews. If possible, the team assigned to this task should include an individual with a legal background. In conducting interviews, the team should:

- Appoint a speaker for the group;
- Get preliminary statements as soon as possible from all witnesses;
- Locate the position of each witness on a master chart (including the direction of view);
- Arrange for a convenient time and place to talk to each witness;
- Explain the purpose of the investigation (incident prevention) and put each witness at

ease;
- Listen, let each witness speak freely, and be courteous and considerate;
- Take notes without distracting the witness. Use a tape recorder only with consent of the witness;
- Use sketches and diagrams to help the witness;
- Emphasize areas of direct observation. Label hearsay accordingly;
- Be sincere and do not argue with the witness;
- Record the exact words used by the witness to describe each observation. Do not "put words into a witness' mouth";
- Word each question carefully and be sure the witness understands;
- Identify the qualifications of each witness (name, address, occupation, years of experience, etc.); and
- Supply each witness with a copy of his or her statements.

Signed statements are desirable. After interviewing all witnesses, the team should analyze each witness' statement. They may wish to re-interview one or more witnesses to confirm or clarify key points. While there may be inconsistencies in witnesses' statements, investigators should assemble the available testimony into a logical order. Analyze this information along with data from the incident site. Not all people react in the same manner to a particular stimulus. For example, a witness within close proximity to the incident may have an entirely different story from one who saw it at a distance. Some witnesses may also change their stories after they have discussed it with others. The reason for the change may be additional clues.

A witness who has had a traumatic experience may not be able to recall the details of the incident. A witness who has a vested interest in the results of the investigation may offer biased testimony. Finally, eyesight, hearing, reaction time, and the general condition of each witness may affect his or her powers of observation. A witness may omit entire sequences because of a failure to observe them or because their importance was not realized.

7.9 PROBLEM SOLVING TECHNIQUES

Incidents represent problems that must be solved through investigations. Several formal procedures exist to solve problems of any degree of complexity. This section discusses two of the most common procedures: Change Analysis and Job Safety Analysis.

7.9.1 Change Analysis

As its name implies, this technique emphasizes change. To solve a problem, an investigator must look for deviations from the norm. Consider all problems to result from some unanticipated change. Make an analysis of the change to determine its causes. Use the following steps in this method:

1. Define the problem (What happened?);
2. Establish the norm (What should have happened?);
3. Identify, locate, and describe the change (What, where, when, to what extent);
4. Specify what was and what was not affected;
5. Identify the distinctive features of the change;

6. List the possible causes; and
7. Select the most likely causes.

7.9.2 Job Safety Analysis

Job safety analysis (JSA) is part of many existing incident prevention programs. In general, JSA breaks a job into basic steps, and identifies the hazards associated with each step. The JSA also prescribes controls for each hazard. A JSA is a chart listing these steps, hazards, and controls. Review the JSA during the investigation if a JSA has been conducted for the job involved in an incident. Perform a JSA if one is not available. Perform a JSA as a part of the investigation to determine the events and conditions that led to the incident.

7.9.3 Investigation Report

An incident investigation is not complete until a report is prepared, signed and submitted to proper authorities. An incident report should be clear and concise. The supervisor who will conduct the investigation shall use the Incident report form, found in Appendix I.

The purpose of the investigation is to prevent future incidents. The following outline has been found especially useful in developing the information to be included in the formal report:

1. Background Information:
    a. Where and when the incident occurred;
    b. Who and what was involved; and
    c. Operating personnel and other witnesses;
2. Account of the Incident (What happened?):
    a. Sequence of events;
    b. Extent of damage;
    c. Incident type; and
    d. Agency or source (of energy or hazardous material).
3. Discussion (Analysis of the Incident - HOW; WHY):
    a. Direct causes (energy sources; hazardous materials);
    b. Indirect causes (unsafe acts and conditions); and
    c. Basic causes (management policies; personal or environmental factors).
4. Recommendations (to prevent a recurrence) for immediate and long-term action to remedy:
    a. Basic causes;
    b. Indirect causes; and
    c. Direct causes (such as reduced quantities or protective equipment or structures).

7.9.4 Possible Causes

Obvious incident causes are most probably symptoms of a “root cause” problem. Some examples of Unsafe Acts and Unsafe Conditions which may lead to incidents are:

- Unsafe Acts:
    - Unauthorized operation of equipment;
    - Running, and/or Horse Play;
    - Not following proper procedures;
    - By-passing safety devices;

  - Not using protective equipment; and
  - Under influence of drugs or alcohol.
- Unsafe Conditions:
  - Ergonomic Hazards;
  - Environmental hazards;
  - Inadequate housekeeping;
  - Blocked walkways;
  - Improper or damaged Personal Protection Equipment (PPE); and
  - Inadequate machine guarding.

7.9.5 Recommendations

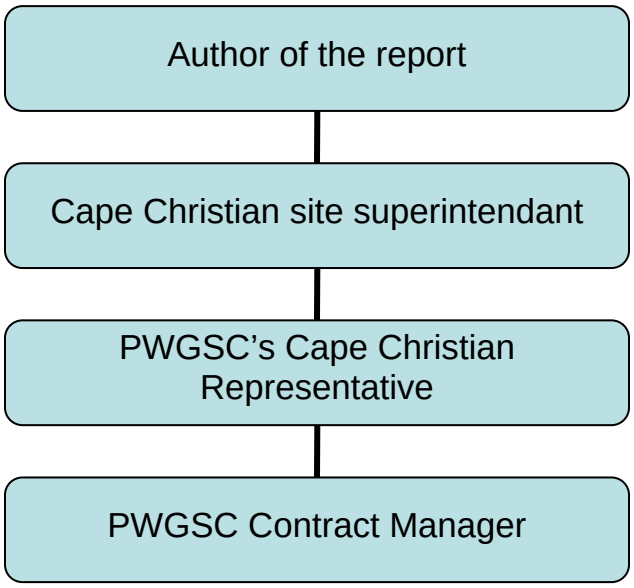
As a result of the finding is there a need to make changes to:

- Employee training;
- Work Stations Design; and
- Policies or procedures.

7.10 LINE OF COMMUNICATION

The communication of the incident report to all levels of management is critical to ensure that changes will be made to prevent the occurrence of similar incidents in the future. The completed incident investigation reports will therefore be communicated along the following line of communication:

Figure 1: Lines of Communication



7.11 RECORDS

All incident reports will be maintained on file permanently. They shall receive timely review by the site Project Management Team to ensure proper corrective actions have been taken. The First Report of Injury form will be completed within 24 hours of notification of injuries or illnesses.

7.12 INCIDENT REPORT TEMPLATE

The following incident reporting template should be completed whenever there is an incident or near-miss incident at the work site.

Incident Report / Near-Miss

Date : _____ Time : _____

Description – Event, Activity, Place, # of people involved, etc. (Please include a sketch of the incident area showing the layout of the area, and the location of any people or equipment at the time incident that were involved in the incident or who observed it)

_____

_____

_____

_____

_____

_____

Actions Taken

_____

_____

_____

_____

_____

Suggestion for Improvement

_____

_____

_____

Reported by: _____ Signature: _____

Witnessed by: _____ Signature:_____

Supervisor:_____ Signature:_____

H&S Officer:_____ Signature:_____

8 HAZARD COMMUNICATION & CHEMICAL SAFETY

8.1 PURPOSE

This document serves as the Qikiqtaaluk Logistics Inc.'s Hazard Communication Program. It provides detailed safety guidelines and instructions for receipt, use and storage of chemicals at our facility by employees and contractors.

8.2 RESPONSIBILITIES

8.2.1 Management

- Ensure compliance with this program;
- Conduct immediate corrective action for deficiencies found in the program;
- Maintain an effective Hazard Communication training program; and
- Make this plan available to employees or their designated representative.

8.2.2 Purchasing Agent

- Obtain, from the manufacturer, MSDS for chemicals purchased from retail sources.

8.2.3 Safety Officer

- Ensure all received containers are properly labelled and that labels are not removed or defaced;
- Ensure all shipped containers are properly labelled;
- Ensure received Material Safety Data Sheets (MSDS) are properly distributed;
- Maintain a list of hazardous chemicals using the identity that is referenced on the MSDS;
- Monitor the effectiveness of the program;
- Monitor employee training to ensure effectiveness;
- Keep Project Management informed of necessary changes;
- Ensure that on-site MSDSs are available for all chemical, as required by law; and
- Monitor facility for proper use, storage and labelling of controlled products.

8.2.4 Supervisors

- Comply with all specific requirements of the program;
- Provide specific chemical safety training for assigned employees;
- Ensure chemicals are properly used, stored and labelled;
- Ensure only the minimum amount of hazardous chemicals necessary is kept at work stations; and
- Ensure that up-to-date MSDSs are readily accessible to all employees in the work area.

8.2.5 Employees

- Comply with chemical safety requirements of this program;
- Report any problems with storage or use of chemicals;
- Immediately report spills or suspected spills of chemicals;

- Use only those chemicals for which they have been trained; and
- Use chemicals only for specific assigned tasks in the proper manner.

8.2.6 Sub-Contractors

- Comply will all aspects of this program;
- Coordinate information with the Safety Officer;
- Ensure Contractor employees are properly trained;
- Notify the Safety Officer before bringing any controlled substances onto the job-site; and
- Monitor and ensure proper storage and use of chemicals by Contractor employees.

8.3 GENERAL PROGRAM INFORMATION

This written Hazard Communication Plan (HAZCOM) has been developed based on OSHA Hazard Communication Standard and consists of the following elements:

- Identification of Hazardous Materials;
- Product Warning Labels;
- Material Safety Data Sheets (MSDS);
- Written Hazard Communication Program; and
- Effective Employee Training.

Some chemicals are explosive, corrosive, flammable, or toxic. Other chemicals are relatively safe to use and store but may become dangerous when they interact with other substances. To avoid injury and/or property damage, persons who handle chemicals in any area must understand the hazardous properties of the chemicals. Before using a specific chemical, safe handling methods and health hazards must always be reviewed. Supervisors are responsible for ensuring that the equipment needed to work safely with chemicals is accessible and maintained for all employees on all shifts.

8.4 EMPLOYEE TRAINING

8.4.1 Subsequent Orientation Training

As required, employees shall receive safety orientation training covering the elements of the HAZCOM and Right to Know Program. This training will consist of general training covering:

- Location and availability of the written Hazard Communication Program;
- Location and availability of the List of Chemicals used on site;
- Methods and observation used to detect the presence or release of a hazardous chemical;
- The specific physical and health hazard of all chemicals;
- Specific control measures for protection from physical or health hazards;
- Explanation of the chemical labelling system; and
- Location and use of MSDS.

8.4.2 Job Specific Training

Employees will receive on the job training from the Safety Officer. This training will cover the proper use, inspection and storage of necessary personal protective equipment and chemical

safety training for the specific chemicals they will be using or will be working around.

8.4.3 Immediate On-the-Spot Training

This training will be conducted by the Safety Officer for any employee that requests additional information or exhibits a lack of understanding of the safety requirements.

8.4.4 Non-Routine Tasks

Non-routine tasks are defined as working on, near, or with unlabeled piping, unlabeled containers of an unknown substance, confined space entry where a hazardous substance may be present and/or a one-time task using a hazardous substance differently than intended (example: using a solvent to remove stains from tile floors).

Steps for Non-Routine Tasks:

1. Hazard Determination;
2. Determine Precautions;
3. Specific Training & Documentation; and
4. Perform Task.

All non-routine tasks will be evaluated by the Site Superintendent and Safety Officer before the task commences, to determine all hazards present. This determination will be conducted with quantitative/qualitative analysis (air sampling, toxic gas detection, substance identification/analysis, etc., as applicable). If needed, equipment shall be leased or sub-contracted, if not readily available at the site.

Once the hazard determination is made, the Site Superintendent and Safety Officer will determine the necessary precautions needed to either remove the hazard, change to a non-hazard, or protect from the hazard (use of personal protective equipment) to safeguard the Employees present..

8.5 OFF-SITE USE OR TRANSPORTATION OF CHEMICALS

When controlled products are to be transported, the transporter or Site Superintendant must verify if such products can be legally transported, under the Transportation of Dangerous Goods Regulation (TDGR). A person certified in TDGR must verify what provisions are needed for the transportation of products. This person should also complete Shipping Declarations.

8.6 GENERAL CHEMICAL SAFETY

Assume all chemicals are hazardous. The number of hazardous chemicals and the number of reactions between them is so large that prior knowledge of all potential hazards cannot be assumed. Use chemicals in as small quantities as possible to minimize exposure and reduce possible harmful effects.

8.6.1 Task Evaluation

Each task that requires the use of chemicals should be evaluated to determine the potential

hazards associated with the work. This hazard evaluation must include the chemical or combination of chemicals that will be used in the work, as well as other materials that will be used near the work. If a malfunction during the operation has the potential to cause serious injury or property damage, a Safe Operational Procedure (SOP) should be prepared and followed. Operations must be planned to minimize the generation of hazardous wastes.

8.6.2 Chemical Storage

The separation of chemicals (solids or liquids) during storage is necessary to reduce the possibility of unwanted chemical reactions caused by accidental mixing. Explosives should be stored separately outdoors. Use either distance or barriers (e.g., trays) to isolate chemicals into the following groups:

- Flammable Liquids: store in approved flammable storage lockers, or another suitable area or container on site.
- Acids: treat as flammable liquids
- Bases: do not store bases with acids or any other material
- Other liquids: ensure other liquids are not incompatible with any other chemical in the same storage location.

Chemicals will not be stored in the same refrigerator used for food storage. Refrigerators used for storing chemicals must be appropriately identified by a label on the door.

8.6.3 Container Labels

It is extremely important that all containers of chemicals are properly labelled. This includes every type of container from a 5,000 gallon storage tank to a spray bottle of degreaser. The following requirements apply:

- All controlled product containers will have the appropriate label, tag or marking prominently displayed, that clearly indicates the identity, safety concerns and health hazards that are associated with the product.
- Portable containers which contain a small amount of chemical need not be labelled if they are used immediately that shift, but must be under the strict control of the employee using the product.
- All warning labels, tags, etc., must be maintained in a legible condition and not be defaced. Weekly Inspections by the Health & Safety Officer will check for compliance of this rule.
- Incoming chemicals are to be checked for proper labelling.

8.6.4 Emergencies and Spills

In case of an emergency, implement the proper Emergency Action Plan

1. Evacuate people from the area;
2. Isolate the area;
3. If the material is flammable, turn off ignition and heat sources;
4. Only personnel specifically trained in emergency response are permitted to participate in chemical emergency procedures beyond those required to evacuate the area; and
5. Alert the Site Superintendent or the Health & Safety Officer, who will determine what

other measures are needed to mitigate the situation (as described in the spill contingency plan).

8.6.5 Housekeeping

- Maintain the smallest possible inventory of chemicals to meet immediate needs;
- Periodically review stock of chemicals on hand;
- Ensure that storage areas, or equipment containing large quantities of chemicals, are secure from accidental spills;
- Rinse emptied bottles that contain acids or inflammable solvents before disposal;
- Recycle unused laboratory chemicals wherever possible;
- DO NOT Place hazardous chemicals in salvage or garbage receptacles;
- DO NOT Pour chemicals onto the ground; and
- DO NOT Dispose of highly toxic, malodorous chemicals down sinks or sewer drains.

8.6.6 Sub-Contractors

All sub-contractors working at the job-site are required to follow the requirements of this program. The Company will provide sub-contractors with information with respect to:

- Required personal protective clothing;
- Location of MSDS;
- Precautions to be taken to protect contractor employees;
- Potential exposure to hazardous substances;
- Chemicals used in or stored in areas where they will be working;
- Location and availability of Material Safety Data Sheets; and
- Labelling system for chemicals.

8.7 DEFINITIONS

- Chemical:
  - Any element, chemical compound, or mixture of elements and/or compounds.
- Combustible liquid:
  - Means any liquid having a flash point at or above 100 ºF (37.8 ºC), but below 200 ºF (93.3 ºC). Exception: any mixture having components with flash points of 200 ºF (93.3 ºC), or higher, the total volume of which make up 99 percent or more of the total volume of the mixture.
- Compressed gas:
  - Any compound that exhibits:
    - A gas or mixture of gases having, in a container, an absolute pressure exceeding 40 psi at 70 ºF.
    - A gas or mixture of gases having, in a container, an absolute pressure exceeding 104 psi at 130 ºF regardless of the pressure at 70 ºF.
    - A liquid having a vapour pressure exceeding 40 psi at 100 ºF.
- Container:
  - Any bag, barrel, bottle, box, can, cylinder, drum, reaction vessel, storage tank, or the like that contains a hazardous chemical. For purposes of this section, pipes or piping systems, and engines, fuel tanks, or other operating systems in a

vehicle, are not considered to be containers.

- Employee:
  - A worker who may be exposed to hazardous chemicals under normal operating conditions or in foreseeable emergencies. Workers such as office workers who encounter hazardous chemicals only in non-routine, isolated instances are not covered.
- Employer:
  - A person engaged in a business where chemicals are either used, distributed, or are produced for use or distribution, including a contractor or subcontractor.
- Explosive:
  - A chemical that causes a sudden, almost instantaneous release of pressure, gas, and heat when subjected to sudden shock, pressure, or high temperature.
- Exposure or exposed:
  - An employee is subjected in the course of employment to a chemical that is a physical or health hazard, and includes potential (e.g. accidental or possible) exposure. Subjected in terms of health hazards includes any route of entry (e.g. inhalation, ingestion, skin contact or absorption).
- Flammable:
  - a chemical that falls into one of the following categories:
    - "Aerosol, flammable" means an aerosol that yields a flame projection exceeding 18 inches at full valve opening, or a flashback (a flame extending back to the valve) at any degree of valve opening;
    - "Gas, flammable" means:
      - (A) A gas that, at ambient temperature and pressure, forms a flammable mixture with air at a concentration of thirteen (13) percent by volume or less; or
      - (B) A gas that, at ambient temperature and pressure, forms a range of flammable mixtures with air wider than twelve (12) percent by volume, regardless of the lower limit;
    - "Liquid, flammable" means any liquid having a flash point below 100 ºF., except any mixture having components with flash points of 100 ºF. or higher, the total of which make up 99 percent or more of the total volume of the mixture.
    - "Solid, flammable" means a solid, other than a blasting agent or explosive, that is liable to cause fire through friction, absorption of moisture, spontaneous chemical change, or retained heat from manufacturing or processing, or which can be ignited readily and when ignited burns so vigorously and persistently as to create a serious hazard. A chemical shall be considered to be a flammable solid if it ignites and burns with a self-sustained flame at a rate greater than one-tenth of an inch per second along its major axis.

- Flash point:
  - The minimum temperature at which a liquid gives off a vapour in sufficient concentration to ignite.

- Hazardous chemical:
  - Any chemical this is a physical hazard or a health hazard.
- Hazard warning:
  - Any words, pictures, symbols, or combination appearing on a label or other appropriate form of warning which convey the specific physical and health hazard(s), including target organ effects, of the chemical(s) in the container(s). (See the definitions for "physical hazard" and "health hazard" to determine the hazards which must be covered.)
- Health hazard:
  - A chemical for which there is evidence that acute or chronic health effects may occur in exposed employees. The term "health hazard" includes chemicals which are carcinogens, toxic or highly toxic agents, reproductive toxins, irritants, corrosives, sensitizers, hepatotoxins, nephrotoxins, and neurotoxins, agents which act on the hematopoietic system and agents which damage the lungs, skin, eyes, or mucous membranes.
- Identity:
  - Any chemical or common name which is indicated on the material safety data sheet (MSDS) for the chemical. The identity used shall permit cross-references to be made among the required list of hazardous chemicals, the label and the MSDS.
- Immediate use:
  - The hazardous chemical will be under the control of and used only by the person who transfers it from a labelled container and only within the work shift in which it is transferred.
- Label:
  - Any written, printed, or graphic material displayed on or affixed to containers of hazardous chemicals.
- Material safety data sheet (MSDS):
  - Written or printed material concerning a hazardous chemical which is prepared in accordance with OSHA Standard 1910.1200 requirements.
- Mixture:
  - Any combination of two or more chemicals if the combination is not, in whole or in part, the result of a chemical reaction.
- Oxidizer:
  - Means a chemical other than a blasting agent or explosive that initiates or promotes combustion in other materials, thereby causing fire either of itself or through the release of oxygen or other gases.
- Physical hazard:
  - A chemical that it is a combustible liquid, a compressed gas, explosive, flammable, an organic peroxide, an oxidizer, pyrophoric, unstable (reactive) or water-reactive.

- Pyrophoric:
  - A chemical that will ignite spontaneously in air at a temperature of 130 ºF. or below.

- Specific chemical identity:
    - The chemical name, Chemical Abstracts Service (CAS) Registry Number, or any other information that reveals the precise chemical designation of the substance.
- Unstable (reactive):
    - A chemical which in the pure state, or as produced or transported, will vigorously polymerize, decompose, condense, or will become self-reactive under conditions of shocks, pressure or temperature.
- Use:
    - To package, handle, react, emit, extract, generate as a by-product, or transfer.
- Water-reactive:
    - A chemical that reacts with water to release a gas that is either flammable or presents a health hazard.
- Work area:
    - A room or defined space on site where hazardous chemicals are produced or used, and where employees are present.
- Workplace:
    - An establishment, job site, or project, at one geographical location containing one or more work areas.

8.8 MSDS INFORMATION

Material Safety Data Sheets are provided by the chemical manufacturer to provide additional information concerning safe use of the product. Each MSDS provides:

- Common Name and Chemical Name of the material;
- Name, address and phone number of the manufacturer;
- Emergency phone numbers for immediate hazard information;
- Date the MSDS was last updated;
- Listing of hazardous ingredients;
- Chemical hazards of the material; and
- Information for identification of chemical and physical properties.

Information Chemical Users must know:

- Fire and/or Explosion Information:
    - Material Flash Point, auto-ignition temperature and upper/lower flammability limits;
    - Proper fire extinguishing agents to be used;
    - Fire fighting techniques; and
    - Any unusual fire or explosive hazards.
- Chemical Reaction Information:
    - Stability of the chemical;
    - Conditions and other materials which can cause reactions with the chemical; and
    - Dangerous substances that can be produced when the chemical reacts.
- Control Measures:
    - Engineering Controls required for safe product use;
    - Personal protective equipment required for use of product;

  - Safe storage requirements and guidelines; and
  - Safe handling procedures.
- Health Hazards:
  - Permissible Exposure Limit (PEL) and Threshold Limit Value (TLV);
  - Acute or Chronic symptoms of exposure;
  - Main routes of entry into the body;
  - Medical conditions that can be made worse by exposure;
  - Cancer causing properties if any; and
  - Emergency and First Aid treatments.
- Spill & Leak Procedures:
  - Clean up techniques;
  - Personal Protective Equipment to be used during cleanup; and
  - Disposal of waste & cleanup material.

8.9 EMPLOYEE USE OF MSDS

For MSDS use to be effective, employees must:

- Know the location of the MSDS;
- Understand the major points for each chemical;
- Check MSDS when more information is needed or questions arise;
- Be able to quickly locate the emergency information on the MSDS; and
- Follow the safety practices provided on the MSDS.

9 ELECTRICAL SAFETY

9.1 PURPOSE

The Electrical Safety program is designed to prevent electrically related injuries and property damage. This program also provides for proper training of maintenance employees to ensure they have the requisite knowledge and understanding of electrical work practices and procedures. Only employees qualified in this program may conduct adjustment, repair or replacement of electrical components or equipment. Electricity has long been recognized as a serious workplace hazard, exposing employees to such dangers as electric shock, electrocution, fires and explosions.

9.2 RESPONSIBILITIES

9.2.1 Management

- Provide training for qualified and unqualified employees;
- Conduct inspections to identify electrical safety deficiencies;
- Guard and correct all electrical deficiencies promptly; and
- Ensure all new electrical installations meet codes and regulations.

9.2.2 Employees

- Report electrical deficiencies immediately;
- Not work on electrical equipment unless authorized and trained; and
- Properly inspect all electrical equipment prior to use.

9.3 HAZARD CONTROL

9.3.1 Engineering Controls

- All electrical distribution panels, breakers, disconnects, switches, junction boxes shall be completely enclosed;
- Water tight enclosure shall be used where there is possibility of moisture entry either from operations or weather exposure;
- Electrical distribution areas will be guarded against accidental damage by locating in specifically designed rooms, use of substantial guard posts and rails and other structural means;
- A clear approach and 3 foot side clearance shall be maintained for all distribution panels;
- All conduits shall be fully supported throughout its length. Non-electrical attachments to conduit are prohibited; and
- All non-rigid cords shall be provided strain relief where necessary.

9.3.2 Administrative Controls

- Only trained and authorized employees may conduct repairs to electrical equipment;
- Contractors performing electrical work must be hold a license for the rated work;

- Areas under new installation or repair will be sufficiently guarded with physical barriers and warning signs to prevent unauthorized entry;
- Access to electrical distribution rooms is limited to those employees who have a need to enter;
- All electrical control devices shall be properly labelled;
- Work on energized circuits is prohibited unless specifically authorized by senior facility management; and
- All qualified employees will follow established electrical safety procedures and precautions.

9.3.3 Protective Equipment

- Qualified employees will wear electrically rated safety shoes/boots; and
- Tools used for electrical work shall be properly insulated.

9.4 ELECTRICAL EQUIPMENT

9.4.1 Examination

Electrical equipment shall be free from recognized hazards that are likely to cause death or serious physical harm to employees. Safety of equipment shall be determined using the following considerations:

- Suitability for installation and use in conformity with the provisions of this subpart;
- Suitability of equipment for an identified purpose may be evidenced by listing or labelling for that identified purpose;
- Mechanical strength and durability, including, for parts designed to enclose and protect other equipment, the adequacy of the protection thus provided;
- Electrical insulation;
- Heating effects under conditions of use;
- Arcing effects;
- Classification by type, size, voltage, current capacity, and specific use; and
- Other factors which contribute to the practical safeguarding of employees using or likely to come in contact with the equipment.

9.4.2 Identification of Disconnecting Means and Circuits

Each disconnecting means for motors and appliances shall be legibly marked to indicate its purpose. Each service, feeder, and branch circuit, at its disconnecting means or over current device, shall be legibly marked to indicate its purpose. These markings shall be of sufficient durability to withstand the environment involved.

A disconnecting means is a switch that is used to disconnect the conductors of a circuit from the source of electric current. Disconnect switches are important because they enable a circuit to be opened, stopping the flow of electricity, and thus can effectively protect workers and equipment. Each disconnect switch or over current device required for a service, feeder, or branch circuit must be clearly labelled to indicate the circuit's function and the label or marking should be located at the point where the circuit originates. For example, on a panel that controls several motors or on a motor control center, each disconnect must be clearly marked to indicate the

motor to which each circuit is connected. All labels and markings must be durable enough to withstand weather, chemicals, heat, corrosion, or any other environment to which they may be exposed.

9.5 DEFINITION OF TERMS

- Qualified Worker:
  - An employee trained and authorized to conduct electrical work.
- Unqualified:
  - Employees who have not been trained or authorized by management to conduct electrical work.

9.6 TRAINING

9.6.1 Training for Unqualified Employees

Training for Unqualified Employees is general electrical safety precautions to provide an awareness and understanding of electrical hazards.

9.7 ELECTRICAL SAFETY RULES FOR NON-QUALIFIED WORKERS

1. Do not conduct any repairs to electrical equipment.
2. Report all electrical deficiencies to your supervisor.
3. Do not operate equipment if you suspect and electrical problem.
4. Water and electricity do not mix.
5. Even low voltages can kill or injure you.
6. Do not use cords or plugs if the ground prong is missing.
7. Do not overload electrical receptacles.

9.8 PERSONAL PROTECTIVE EQUIPMENT

Employees working in areas where the potential for contact with exposed electrical sources is present, and likely, will be provided, and shall use, Personal Protective Equipment (PPE). The following rules apply to the use and care of PPE:

1. PPE shall be used where contact with exposed electrical sources are present and likely.
2. PPE shall be designed for the work being performed and environment in which it is used.
3. PPE shall be visually inspected and/or tested before use. Any defects or damage shall be replaced, repaired or discarded.
4. In cases where the insulating capabilities of the PPE may be damaged during the work, a protective outer cover, such as leather, must be used.
5. Employees shall wear non-conductive head protection wherever there is a danger of injury from electrical burns or shock from contact with exposed energized parts.
6. Employee shall wear protective eye/face equipment whenever there is a danger from electrical arcs or flashes or from flying objects resulting from an electrical explosion.

9.8.1 Electrical PPE Inspection Schedule

The following table presents the schedule for inspection of electrical PPE

Table 1: Electrical PPE Inspection Schedule

Type of equipment	When to test
Rubber insulating line hose	Upon indication that insulating value is suspect.
Rubber insulating covers	Upon indication that insulating value is suspect.
Rubber insulating blankets	Before first issue and every 12 months
Rubber insulating gloves	Before first issue and every 6 months
Rubber insulating sleeves	Before first issue and every 12 months

9.9 ELECTRICAL LOCKOUT & TAG OUT REQUIREMENTS

9.9.1 Application of locks and tags

A lock and a tag shall be placed on each disconnecting means used to de-energize circuits and equipment on which work is to be performed, except as provided for below.

1. The lock shall be attached so as to prevent persons from operating the disconnecting means unless they resort to undue force or the use of tools.
2. Each tag shall contain a statement prohibiting unauthorized operation of the disconnecting means and removal of the tag.
3. If a lock cannot be applied a tag may be used without a lock.
4. A tag used without a lock must be supplemented by at least one additional safety measure that provides a level of safety equivalent to that obtained by use of a lock. Examples of additional safety measures include the removal of an isolating circuit element, blocking of a controlling switch, or opening of an extra disconnecting device.
5. A lock may be placed without a tag only under the following conditions:
   a. Only one circuit or piece of equipment is de-energized,
   b. The lockout period does not extend beyond the work shift, and
   c. Employees exposed to the hazards associated with reenergizing the circuit or equipment is familiar with this procedure.

9.10 WORKING AT ELEVATED LOCATIONS

Any person working on electrical equipment on an elevated platform must take necessary precautions to prevent a fall from reaction to electrical shock or other causes. A second person, knowledgeable as a safety watch, must assume the best possible position to assist the worker in case of an accident. Portable ladders shall have non-conductive side rails if they are used where the employee or the ladder could contact exposed energized parts.

9.11 GENERAL PROTECTIVE EQUIPMENT AND TOOLS

General Protective Equipment and Tools shall be used when in the proximity of, or working on, exposed energized parts. The following rules apply:

1. When working on or near exposed energized parts, Qualified Employees shall use insulated tools or handling equipment suitable for the voltage present and working environment. In cases where the insulation may be damaged, a protective outer layer should be employed.
2. Fuse handling equipment, insulated for the circuit voltage, shall be used to remove or install fuses when the terminal is energized.
3. Ropes and other hand lines used near exposed energized equipment shall be non-conductive.

9.12 WARNINGS AND BARRICADES

Warnings and barricades shall be employed to alert unqualified Employees of the present danger related to exposed energized parts. The following rules apply:

1. Safety signs, warning tags, etc., must be used to warn Unqualified Employees of the electrical hazards present, even temporarily, that may endanger them.
2. Non-conductive barricades shall be used with safety signs to prevent Unqualified Employees access to exposed energized parts or areas.
3. Where barricades and warning signs do not provide adequate protection from electrical hazards, an Attendant shall be stationed to warn and protect Employees.

9.13 POWERED EQUIPMENT SAFETY RULES

Electrical equipment is defined as cord or plug-type electrical devices which include the use of flexible or extension cords. Examples of portable electrical equipment included powered hand tools, powered bench tools, fans, radios, etc. The following safety rules apply to portable electrical equipment (PEE):

1. PEE shall be handled in such a manner as to not cause damage. Power cords may not be stapled or otherwise hung in a way that may cause damage to the outer jacket or insulation.
2. PEE shall be visually inspected for damage, wear, cracked or spilt outer jackets or insulation, etc., before use or before each shift. PEE that remains connected once put in place need not be inspected until relocated. Any defects; such as cracked or split outer jackets or insulation must be repaired, replaced or placed out of service.
3. Always check the compatibility of cord sets and receptacles for proper use.
4. Ground type cord sets may only be used with ground type receptacles when used with equipment requiring a ground type conductor.
5. Attachment plugs and receptacle may not be altered or connected in a way that would prevent the proper continuity of the equipment grounding conductor. Adapters may not be used if they interrupt the continuity of the grounding conductor.
6. Only portable electrical equipment that is double insulated or designed for use in areas that are wet or likely to contact conductive liquids may be used.

7. Employees that are wet or have wet hands may not handle PEE (plug-in, un-plug, etc.). Personal protective equipment must be used when handling PEE that are wet or covered with a conductive liquid.
8. Locking-type connectors shall be properly secured after connection to a power source.

9.14 ELECTRICAL CIRCUIT SAFETY PROCEDURES

Electrical power and lighting circuits are defined as devices specifically designed to connect, disconnect or reverse circuits under a power load condition. When these circuits are employed, the following rules apply:

1. Cable connectors (not of load-break type) fuses, terminal plugs or cable splice connectors may not be used, unless an emergency, to connect, disconnect or reverse in place of proper electrical circuits.
2. After a protective circuit is disconnected or opened, it may not be connected or closed until it has been determined that the equipment and circuit can be safely energized.
3. Over current protectors of circuits or connected circuits may not be modified, even on a temporary basis, beyond the installation safety requirements.
4. Only Qualified Employees may perform test on electrical circuits or equipment.
5. Test equipment and all associated test leads, cables, power cords, probes and connectors shall be visually inspected for external damage before use. Any damage or defects shall be repaired before use or placed out of service.
6. Test equipment shall be rated to meet or exceed the voltage being tested and fit for the environment in which it is being used.
7. Where flammable or ignitable materials are stored, even occasionally, electrical equipment capable of igniting them may not be used unless measures are taken to prevent hazardous conditions from developing.

9.15 STANDARD OPERATING PROCEDURE

9.15.1 Electrical Pre-Work Procedure

Except in extreme cases, work on electrical equipment will be done with all electrical circuits in the work area de-energized by following the Lockout/Tag Out procedure. When working on or near energized electrical circuits with less than 30 volts to ground, the equipment need not be de-energized if there will be no increased exposure to electrical burns or to explosion from electric arcs. To prepare for work on electrical systems or components, the following procedure applies: Caution: Treat all electrical circuits as "Live" until they have been Tagged and Locked Out and tested by the following procedure.

1. Lockout and Tag Out all sources of electrical power.
2. Verify de-energized condition before any circuits or equipment are considered and worked as de-energized be following the procedure outlined below:
   a. A qualified person shall operate the equipment operating controls or otherwise verify that the equipment cannot be restarted.
   b. Verify proper operation of the Voltmeter at a live electrical source of the same

rated voltage as the circuit to be worked.

c. Using the Voltmeter, check all exposed circuits phase to phase and phase to ground for evidence of voltage/current in the circuit.
d. Conduct work on the circuit only after determining that there is no voltage in any of the exposed circuits.
e. If voltage is detected in any exposed circuit, STOP, inform supervisor and determine source and procedure to eliminate voltage.

3. Conduct work.
4. Close up all exposed circuits, boxes, controls, equipment.
5. Remove Lockout/Tag Out.
6. Obtain supervisor permission to energize circuits.

9.15.2 Working on or Near Exposed Energized Circuits

In the rare situation when energized equipment (or working in near proximity to energized equipment) can not be de-energized, the following work practices must be used to provide protection:

Caution: Unqualified Employees are prohibited from working on or near exposed energized circuits.

1. Lockout and Tag Out all circuits possible.
2. Treat all circuits as energized.
3. Remove all conductive clothing and jewellery (rings, watches, wrist/neck chains, metal buttons, metal writing instruments, etc.).
4. Use proper personal protective equipment, shields and/or barriers to provide effective electrical insulation from energized circuits. This may include electrically rated insulated gloves, aprons, rubber soled shoes, insulated shields, insulated tools, etc. *
5. Provide adequate lighting. Do not enter areas with exposed energized parts unless illumination (lighting) is provided so that Employee may work safely. Do not reach around obstructions of view or lighting (blindly) into areas where exposed energized parts are located.
6. Employees entering a Confined Space with exposed energized parts must use protective barriers, shields, or equipment or insulated materials rated at or above the present voltage to avoid contact.
7. Doors or other hinged panels shall be constructed and secured to prevent them from swinging into an Employee and causing contact with exposed energized parts.
8. Housekeeping in areas of exposed energized parts may not be completed in areas with close contact unless adequate safeguards (insulation equipment or barriers) are present. Conductive cleaning material (Steel Wool, Silicon Carbide, etc.) or liquids may not be used unless procedures (Lock and Tag Out, etc.) are in place and followed.
9. Station a safety observer outside work area. The sole function of this person is to quickly de-energize all sources of power or pull worker free from electrical work area with a non-conductive safety rope if contact is made with an energized electrical

circuit.

10. A person qualified in CPR must be readily available to the scene.

9.15.3 Re-energizing Electrical Circuits After Work Completed

These requirements shall be met, in the order given, before circuits or equipment are reenergized, even temporarily.

1. A qualified person shall conduct tests and visual inspections, as necessary, to verify that all tools, electrical jumpers, shorts, grounds, and other such devices have been removed, so that the circuits and equipment can be safely energized.
2. Warn employees exposed to the hazards associated with reenergizing the circuit or equipment to stay clear of circuits and equipment.
3. Remove each lock and tag. They shall be removed by the employee who applied it or under his or her direct supervision. However, if this employee is absent from the workplace, then the lock or tag may be removed by a qualified supervisor designated to perform this task provided that:
   a. The supervisor ensures that the employee who applied the lock or tag is not available at the workplace, and
   b. The supervisor ensures that the employee is aware that the lock or tag has been removed before he or she resumes work at that workplace.
4. Conduct a visual determination that all employees are clear of the circuits and equipment.

10 FALL PREVENTION

10.1 PURPOSE

Over the past 20 years falls have accounted for the largest amount of serious injuries and workplace deaths. Most of these incidents were due to the lack of fall protection equipment and the improper use of fall protection equipment.

The regulations require that a worker be protected from falling when working from an unguarded work area more than 3 metres above the nearest permanent safe level, above any surface or thing that could cause injury upon contact and above any open-top tank, pit or vat.

Workers must be adequately trained in the safe use and limitations of personal fall protection equipment and systems, including harnesses, lanyards, safety nets, static lines and lifelines.

The selection of the particular fall protection system is dependent upon the circumstances and the job task. Ideally, the choice of a protection system will be one that removes the risk of falling entirely. For example, it is preferable to provide a fixed barrier to prevent a worker from falling, than personal protective equipment (safety harness and lifeline). In this way, the worker is never in a position where an actual fall may occur. Otherwise, the worker must rely on the personal protective equipment system to safely arrest the fall.

10.2 DEFINITIONS

Anchor - a secure point of attachment for lifelines or lanyards that is capable of withstanding the loads:

- fall restraint - 800 lbs
- fall arrest - 5000 lbs

Control zone - the area between an unguarded edge and a defined line which is set back a safe distance. (Minimum 2 m or 6 1/2 ft)

Exceptional Hazard - an additional hazard over and above the normal hazard of falling to the surface below, for example, falling onto protruding reinforcing steel.
Fall Distance - the distance from the point where the worker would fall to the point where the fall would be arrested.

Fall Arrest - stopping a fall which has occurred before the worker hits the surface below.

Fall Restraint - the use of a work positioning system to prevent workers from falling from the position in which they are working or a travel restriction system to prevent workers from travelling to an edge from which they may fall.

Free Fall - The distance from the point where the worker would begin to fall to the point where

the fall arrest system begins to cause deceleration of the fall.

Full-body Harness - a configuration of connected straps to distribute a fall arresting force over at least the thigh, shoulders and pelvis, with provisions for attaching a lanyard, lifeline or other components.

Horizontal Lifeline - a rail, wire rope or synthetic cable that is installed in a horizontal plane between two anchors and used for attachment of a worker's lanyard or lifeline while permitting the worker to move horizontally.

Lanyard - a flexible line of webbing, rope, or cable used to secure a safety belt or full body harness to a lifeline or anchor.

Lifeline - a line from a fixed anchor or between two horizontal anchors and used for attachment of a worker's lanyard, safety belt, full body harness or other device.

Personal Fall Protection System - a fall protection system which uses a safety belt or full body harness to secure each worker to an individual anchor by means of lanyards, vertical lifelines, or other connecting equipment.

Shock Absorber - a component whose primary function is to dissipate energy and limit deceleration forces which are imposed on the body during fall arrest.

Swing Fall Hazard - the hazard of swinging and colliding with an obstruction or the ground following a fall by a worker connected to a lifeline at an angle to the anchor location.
Work Procedures - the prevention of fall injuries by the control zone or safety monitor systems under this system or other systems established by an employer to minimize the risks from not using a fall protection system.

10.2 RESPONSIBILITIES

10.2.1 Management

- Ensure a written Fall Protection Program is in place.
- Ensure supervisors and workers are trained.
- Ensure that a Fall Protection System is being used.
- Ensure a Fall Restraint system is in place when applicable.
- If a Fall Restraint cannot be used, ensure a Fall Arrest system is in place.
- Ensure all equipment is safe, maintained, inspected and used correctly.
- Investigate any hazards or potential hazards.
- Review the program annually.

10.2.1 Supervisor Responsibilities

- Review the Fall Protection Program.
- Investigate any hazards or potential hazards and make recommendations.
- Advise workers on any existing or potential hazards and ensure workers are following

the program.
- Keep records of all workers trained for the fall protection program.
- Ensure all workers affected, read and have a copy of the fall protection program.
- Ensure that all workers are provided with the appropriate equipment.
- Ensure all workers inspect, maintain, and use the equipment in the recommended methods.
- Enforce all Fall Protection Procedures.

10.2.3 Employees
- Review the Fall Protection Program.
- Follow all Fall Protection Program procedures.
- Inspect and maintain all Fall Protection equipment.
- Report any hazards or potential hazards to supervisors.
- Ensure the equipment is used as the manufacturer recommends.

10.3 CATEGORIES OF FALLS
- Fall to work surface (i.e. slips)
- Fall against an object
- Fall from moving vehicle/equipment
- Fall from stairs, ramps and ladders
- Fall from one work level to the other
- Fall from edge of work level
- Fall into/through an opening

10.4 HAZARD CONTROL

When assessing the workplace for fall hazards, it is important to undertake a complete risk evaluation. This evaluation can be done in the form of job hazard analysis, where the work task is broken down into a number of distinguishable steps. The steps are then analyzed to determine the hazards and identify preventative measures to protect against the hazards.

It is necessary to use a process such as this to determine where there is a risk of falls in the workplace. Once the hazards have been identified, preventative measures can be undertaken to protect against such falls.

10.4.1 Engineering Controls
- Proper construction of elevated locations;
- Use of hand, knee and toe rails where required;
- Proper design of fixed ladders & stairs; and
- Adequate lighting in all areas.

10.4.2 Administrative Controls
- Training for all employees who work at elevated location;
- Routine inspections of ladders, stairs, walking and working surfaces;
- Following Housekeeping Program requirements; and

- Immediate cleanup of material spills.

10.5 GENERAL REQUIREMENTS

10.5.1 Housekeeping

Simple Housekeeping methods can prevent slip-trip-fall hazards. The following rules will be applied:

1. All work areas, passageways, storerooms, and service rooms shall be kept clean and orderly and in a sanitary condition.
2. The floor of every area shall be maintained in a clean and, so far as possible, a dry condition. Where wet processes are used, drainage shall be maintained and gratings, mats, or raised platforms shall be provided.
3. Every floor, work area and passageway shall be kept free from protruding nails, splinters, holes, or loose boards.

10.5.2 Aisles and Passageways

The following rules will apply to elevated Aisles and Passageways:

1. Aisles and passageways shall be kept clear and in good repair with no obstruction across or in aisles that could create a hazard.
2. Permanent aisles and passageways shall be appropriately marked.
3. Where mechanical handling equipment is used, aisles shall be sufficiently wide. Improper aisle widths coupled with poor housekeeping and vehicle traffic can cause injury to employees, damage the equipment and material, and can limit egress in emergencies.

10.5.3 Floor Loading Protection

Load rating limits shall be marked on plates and conspicuously posted. It shall be unlawful to place, cause, or permit to be placed, on any floor or roof of a building, or other structure, a load greater than that for which such floor or roof is approved.

10.5.4 Guarding Floor & Wall Openings

Floor openings and holes, wall openings and holes, and the open sides of platforms may create hazards. People may fall through the openings or over the sides to the level below. Objects, such as tools or parts, may fall through the holes and strike people or damage machinery on lower levels.

10.5.5 Protection for Floor Openings

Standard railings shall be provided on all exposed sides of a stairway opening, except at the stairway entrance. For infrequently used stairways, where traffic across the opening prevents the use of a fixed standard railing, the guard shall consist of a hinged floor opening cover of standard strength and construction along with removable standard railings on all exposed sides, except at the stairway entrance. A "standard railing" consists of top rail, mid rail, and posts, and shall have a vertical height of 42 inches nominal from the upper surface of top rail to floor, platform, runway, or ramp level. Nominal height of mid rail is 21 inches. A "standard toe board" is 4 inches nominal in vertical height, with not more than ¼-inch clearance above floor level.

Floor openings may be covered rather than guarded with rails. When the floor opening cover is removed, a temporary guardrail shall be in place, or an attendant shall be stationed at the opening to warn personnel. Every floor hole into which persons can accidentally walk shall be guarded by either:

1. A standard railing with toe board, or
2. A floor hole cover of standard strength and construction.

While the cover is not in place, the floor hole shall be constantly attended by someone or shall be protected by a removable standard railing.

10.5.6 Protection of Open-Sided Floors, Platforms, and Runways

Every open-sided floor or platform 4 feet or more above adjacent floor or ground level shall be guarded by a standard railing on all open sides, except where there is an entrance to a ramp, stairway, or fixed ladder. The railing shall be provided with a toe board beneath the open sides wherever:

1. Persons can pass,
2. There is moving machinery, or
3. There is equipment with which falling materials could create a hazard.

Every runway shall be guarded by a standard railing, or the equivalent, on all sides 4 feet or more above floor or ground level. Wherever tools, machine parts, or materials are likely to be used on the runway, a toe board shall also be provided on each exposed side.

10.6 PORTABLE LADDERS

The chief hazard when using a ladder is falling. A poorly designed, maintained, or improperly used ladder may collapse under the load placed upon it and cause the employee to fall. A ladder is an appliance consisting of two side rails joined at regular intervals by crosspieces on which a person may step to ascend or descend. The various types of portable ladders include:

1. Stepladder:
   a. A self-supporting portable ladder, non-adjustable in length, having flat steps and hinged back.
2. Single Ladder:
   a. A non self-supporting portable ladder, nonadjustable in length, consisting of but one section. Its size is designed by overall length of the side rail.
3. Extension Ladder:
   a. A non self-supporting portable ladder adjustable in length.

10.6.1 Portable Ladder Requirements

The following requirements apply to portable ladders:

- Portable stepladders longer than 20 feet shall not be used.
- Stepladders shall be equipped with a metal spreader or locking device of sufficient size and strength to securely hold the front and back sections in open position.
- Single ladders longer than 30 feet shall not be used.
- Extension ladders longer than 60 feet shall not be used.

- Ladders shall be maintained in good condition at all times.
- Ladders shall be inspected frequently and those which have developed defects shall be withdrawn from service for repair or destruction and tagged or marked as "Dangerous, Do Not Use."

Proper use of ladders is essential in preventing accidents. Even a good ladder can be a serious safety hazard when used by workers in a dangerous way.

10.6.2 Portable Ladder Safety Precautions

The following rules apply to the use of portable ladders:

1. Ladders shall be placed with a secure footing, or they shall be lashed, or held in position.
2. Ladders used to gain access to a roof or other area shall extend at least 3 feet above the point of support.
3. The foot of a ladder shall, where possible, be used at such a pitch that the horizontal distance from the top support to the foot of the ladder is one-quarter of the working length of the ladder (the length along the ladder between the foot and the support).
4. The worker shall always face the ladder when climbing up or down.
5. Short ladders shall not be spliced together to make long ladders.
6. Ladders shall never be used in the horizontal position as scaffolds or work platforms.
7. The top of a regular stepladder shall not be used as a step.
8. Use both hands when climbing and descending ladders.
9. Metal ladders shall never be used near electrical equipment.

10.7 FIXED LADDERS

A fixed ladder is a ladder permanently attached to a structure, building or equipment. A point to remember is that fixed ladders, with a length of more than 20 feet to a maximum unbroken length of 30 feet shall be equipped with cages or a ladder safety device. A "cage" is a guard that is fastened to the side rails of the fixed ladder or to the structure to encircle the climbing space of the ladder for the safety of the person who must climb the ladder. Cages shall extend a minimum of 42 inches above the top of a landing, unless other acceptable protection is provided. Cages shall extend down the ladder to a point not less than 7 feet and not more than 8 feet above the base of the ladder.

10.8 SCAFFOLDING SAFETY

The following rules/procedures shall apply to the use of scaffolding:

1. The footing or anchorage for scaffolds shall be sound, rigid and capable of carrying the maximum intended load without settling or displacement. Unstable objects, such as barrels, boxes, loose brick, or concrete blocks shall not be used to support scaffolds or planks.
2. Scaffolds and their components shall be capable of supporting at least four times the maximum intended load.
3. Scaffolds shall be maintained in a safe condition and shall not be altered or moved

horizontally while they are in use or occupied.

4. Damaged or weakened scaffolds shall be immediately repaired and shall not be used until repairs have been completed.
5. A safe means must be provided to gain access to the working platform level through the use of a ladder, ramp, etc.
6. Overhead protection must be provided for personnel on a scaffold exposed to overhead hazards.
7. Guardrails, mid-rails, and toe boards must be installed on all open sides and ends of platforms more than 10 feet above the ground or floor. Wire mesh must be installed between the toe board and the guardrail along the entire opening, where persons are required to work or pass under the scaffolds.
8. Employees shall not work on scaffolds during storms or high winds or when covered with ice or snow.

10.9 CONTROL MEASURES

10.9.1 Fall Protection Systems Categories

- Surface protection (non-slip flooring)
- Fixed barriers (handrails, guardrails)
- Surface opening protection (removable covers, guardrails)
- Travel restraint systems (safety line and belt)
- Fall arrest systems (safety line and harness)
- Fall containment systems (safety nets)

The selection of the particular fall protection system to control the hazard to the worker is dependent upon the circumstances and the job task.

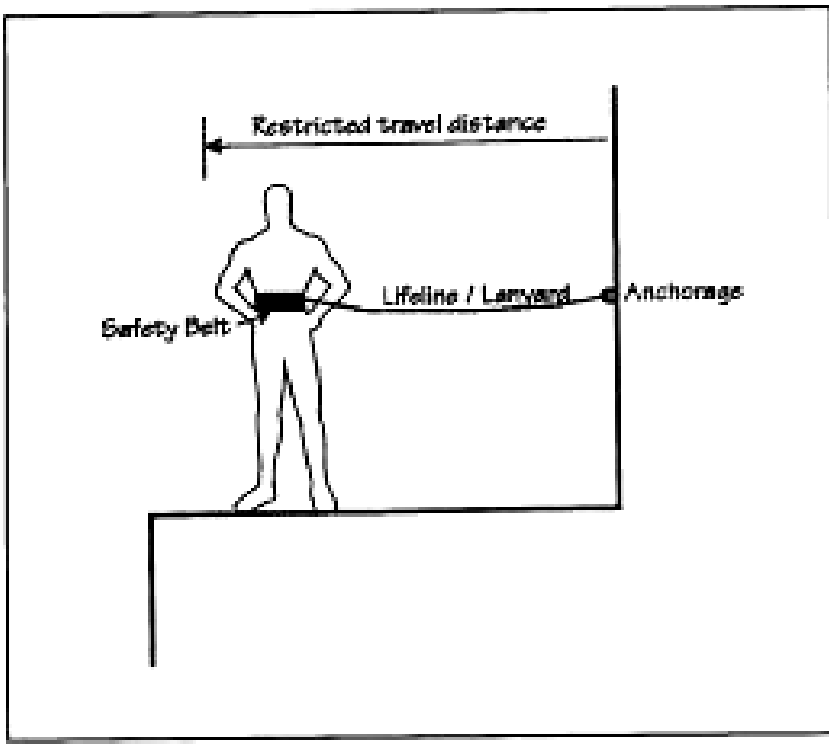
Ideally, the choice of a protection system will be one that removes the risk of falling entirely. For example, it is preferable to provide a fixed barrier to prevent a worker from falling, than personal protective equipment (safety harness and lifeline). In this way, the worker is never in a position where and actual fall may occur. Otherwise, the worker must rely on the personal protective equipment system to safely arrest the fall.

10.9.2 Travel Restraint Systems

Safety Belts/Lifelines/Lanyards/Anchorage

A travel restraint system is intended to limit a worker's movement so the worker is unable to reach a location where there is risk of falling.

The restraint system is made up of a safety belt (or safety harness), lifeline and/or lanyard and anchor. The safety belt is secured to a lifeline that has a fixed length, which is attached to a secure anchor. The length of the lifeline is such that the worker can only proceed to within approximately 1 meter of an opening or edge. Under no circumstances should a travel restraint system be rigged so that a worker is in a position to fall.

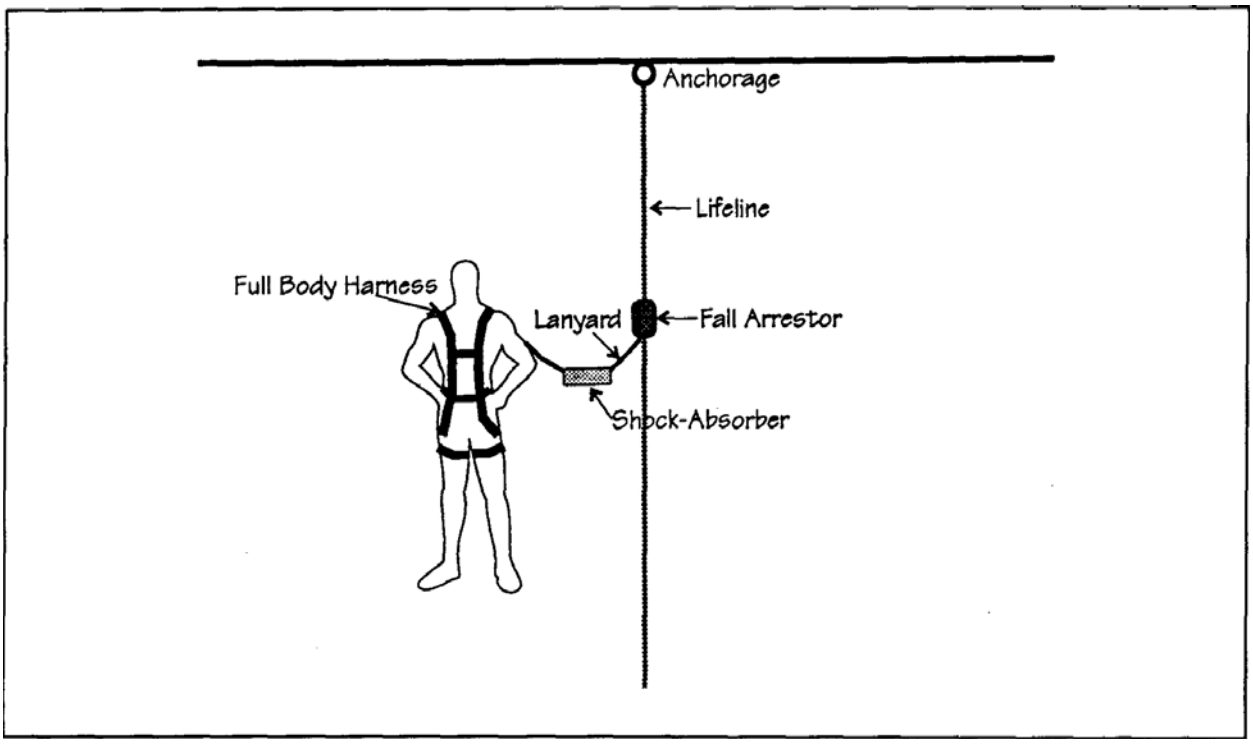


10.9.3 Fall Arrest Systems

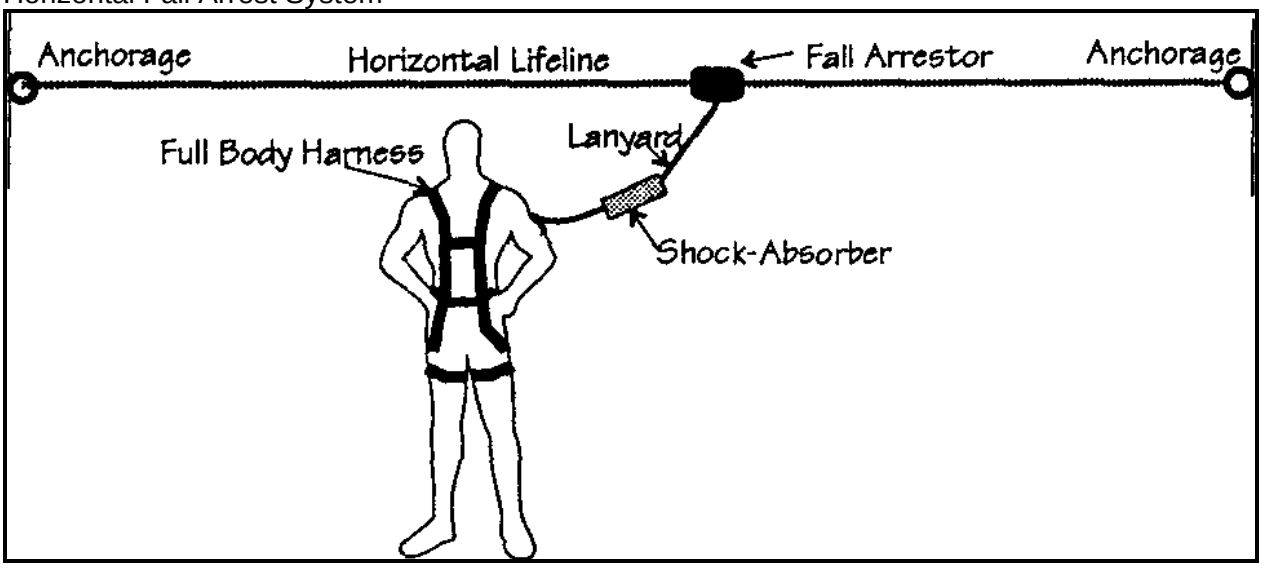
A fall arrest system differs from a travel restraint system. Unlike travel restraint, a fall arrest system does not prevent a fall; it reduces the chance of injury when a fall takes place.

A complete fall arrest system consists of an anchorage point, lifeline, fall arrestor, lanyard, shock absorber, and full body safety harness.

A 100kg (220 lb.) worker free falling 1.0 metres (3 ft.) generates an impact force of approximately 12kN (2700 lbs).

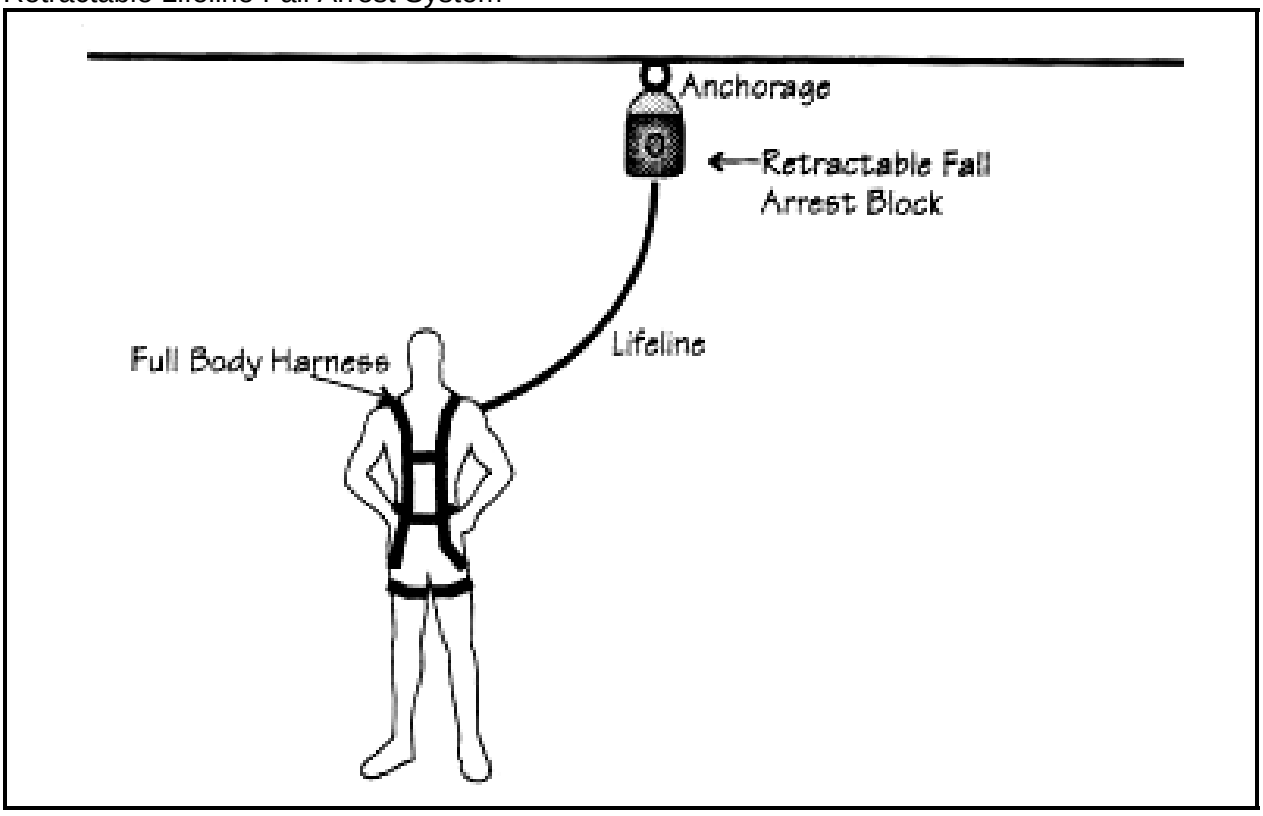


Horizontal Fall Arrest System

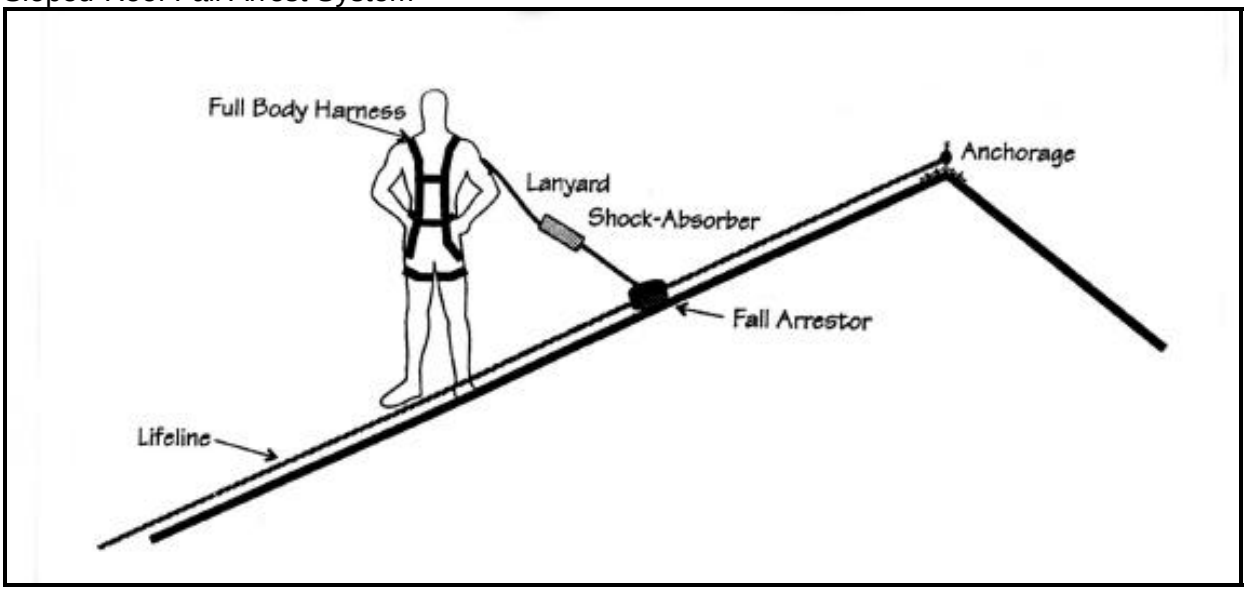


NOTE: A fall arrest system must be rigged to limit the fall of a worker to a maximum of 1.0 m (3 ft)

Retractable Lifeline Fall Arrest System



Sloped-Roof Fall Arrest System



10.9.4 Inspection Essentials

Fall-arrest systems can only prevent fatal falls if they are used properly.
Correct use includes inspection. Your life depends on it.

Harness

- Always check the tag for date of manufacture. Most web-type harnesses have a service life of five years. If the harness doesn't have a tag, don't use it.
- Look for cuts, fraying, broken stitching, and other damage to webbing.
- Check for chemical or heat damage.
- Inspect metal buckles for distortion, cracks, and sharp or rough edges. All buckles should slide easily for adjustment.
- Check for worn, cut, or frayed fibres where buckles attach to harness.
- Inspect D-ring for distortion, cracks, sharp or rough edges, and chemical or heat damage.
- Ensure that the plate holding the D-ring in position is free from cracks, heat damage, and other defects. The plate must keep the D-ring from sliding out of place.

Lanyard

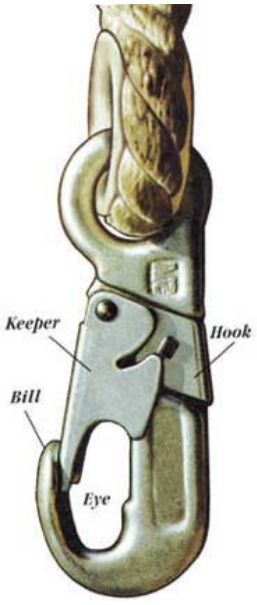
Most lanyards have a service life of five years. Check tag for date of manufacture. Inspect lanyard for worn, broken, or cut fibres; signs of stretching; evidence of chemical or heat damage; and cracked or distorted connecting hardware.

Shock Absorber

A shock absorber should carry a tag indicating date of last inspection. If the tag is missing, return the absorber to your supervisor for advice on its suitability. If the absorber is made with tear-away stitching designed to absorb fall-arrest load, make sure stitching is intact.

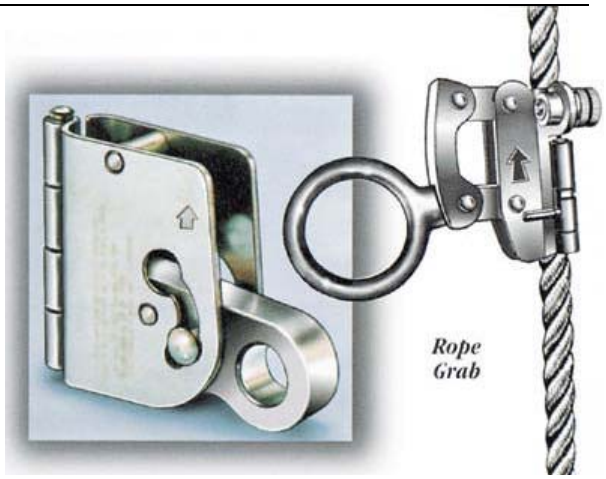
Snap Hook

- Check for cracks and corroded or pitted surfaces.
- Ensure that bill and eye sections are not twisted or bent.
- Check that locking mechanism works properly. Push the keeper into the open position with the mechanism still engaged. If the keeper opens, discard the snap hook immediately.
- Ensure that spring has enough tension to close keeper securely. Open the keeper and release. The keeper should sit into the bill without binding.



Rope Grab

- Make sure that grabs are installed right side up. Most grabs feature a directional arrow to indicate proper orientation.
- Ensure that proper size lifeline is used. The required size is marked on the rope grab.
- Mount the grab on the lifeline. Pull the grab down sharply. The grab should lock within 30 cm (12 inches).

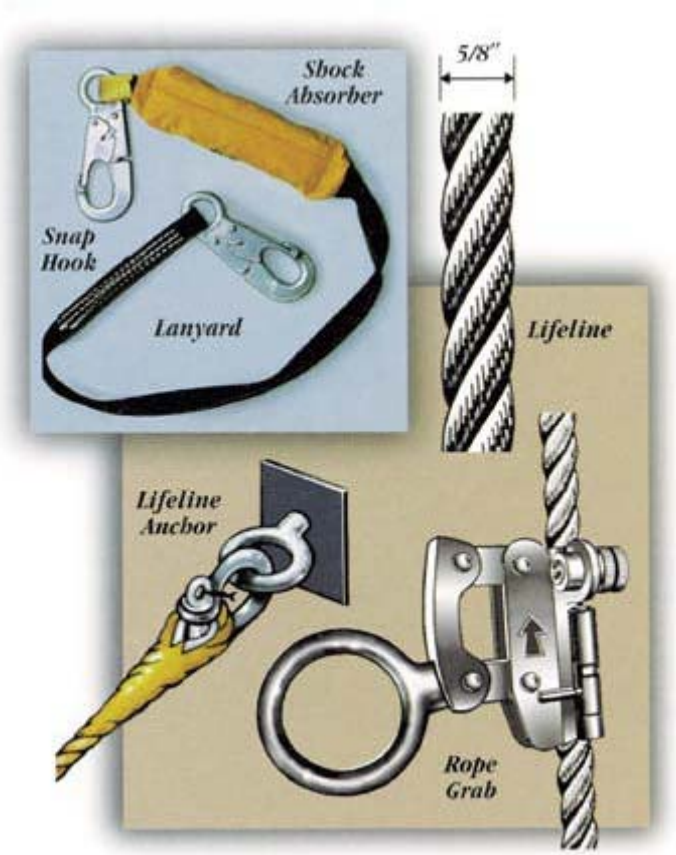


Lifeline

Lifelines must be at least 16mm diameter polypropylene or material of equal strength. Inspect lines from end to end before installation. Look for cuts, burns, fraying, and chemical or heat damage. Signs of decreased diameter may indicate that line has been involved in a fall arrest and should be discarded.

Lifeline Anchorage

- Ensure that lifelines are securely attached to solid anchor points.
- Whenever possible, attach only one lifeline to each anchor.
- Never anchor to bundles of material that may be moved or depleted through use. Do not anchor to exposed rebar unless embedment length is adequate.



10.9.5 Fall Protection Planning

- Identify all fall hazards anticipated during the course of the project.
- Describe the method of access to the work area.
- Describe the methods of material and toll handling used on elevated surfaces.
- Establish procedures for inspecting fall protection equipment.
- Identify the tasks and applications requiring worker fall protection.
- Match tasks and applications to appropriate fall protection systems.
- Describe assembly, maintenance, inspection and disassembly procedures for the fall protection systems used.
- Describe procedures for handling, storing, and securing fall protection equipment.
- Describe methods of securing lanyards and lines.
- Identify anchor locations.
- Identify areas where workers may be exposed to falling objects and define measures for protecting them.
- List workers who have been trained to use safety equipment on the job site.
- Describe how workers injured by falls will be rescued and if need be, medically treated.
- Post emergency phone numbers and make all workers aware of them.
- Describe equipment available for rescue and retrieval.
- Post essential elements of the fall protection plan, it utilized, at the worksite and, make all workers aware of them.

10.9.6 Fall Protection Plan Worksheet

The following fall protection plan worksheet should be completed prior to any work in elevated areas.

Fall Protection Plan

Work Area/Location: _____

Describe work to be done: _____

_____

_____

Fall hazards to be protected against: _____

_____

_____

_____

_____

_____

Fall protection systems used: i.e. guardrails, travel restraint, fall arrest

_____

_____

_____

_____

_____

Rescue plan: i.e. ladder truck, man basket, high angle rescue team

_____

_____

_____

Workers trained and informed:

Have all workers been trained in the safe use of the fall protection equipment? Yes No

Have all affected workers been made aware of this plan? Yes No

Supervisor's signature: _____ Date: _____

11 FLAMMABLE LIQUIDS

11.1 PURPOSE

Proper Storage and use of flammable liquids can significantly reduce the possibility of accidental fires and injury to employees. Material Safety Data Sheet (MSDS) for flammable liquids for the Cape Christian Remediation Project will be available on site.

11.2 RESPONSIBILITIES

11.2.1 Management

- Provide proper storage for flammable liquids;
- Ensure proper training is provided to employees who work with flammable liquids; and
- Ensure containers are properly labelled.

11.2.2 Supervisors

- Provide adequate training in the use and storage of flammable liquids;
- Monitor for proper use and storage;
- Keep only the minimum amount required on hand; and
- Ensure MSDS are current for all flammable liquids.

11.2.3 Employees

- Follow all storage and use requirements;
- Report deficiencies in storage and use to supervisors; and
- Immediately report spills to supervisors.

11.3 HAZARD CONTROL

11.3.1 Engineering Controls

Engineering controls are defined as:

- Properly designed flammable storage areas;
- Ventilated Storage areas; and
- Grounding Straps on Drums and dispensing points.

11.3.2 Administrative Controls

Administrative controls are defined as:

- Designated storage areas;
- Limiting amount of flammable liquids in use and storage;
- Employee Training;
- Limited & controlled access to bulk storage areas; and
- Posted Danger, Warning and Hazard Signs.

11.3 DEFINITIONS

- Flammable Liquid:
  - a liquid with a flashpoint below 1,000 ºF
- Class IA:
  - flashpoint below 730 ºF and boiling point below 1,000 ºF
- Class IB:
  - flashpoint below 730 ºF and boiling point above 1,000 ºF
- Class IC:
  - flash at or above 730 ºF and below 1,000 ºF
- Combustible Liquids:
  - a liquid having a flash point at or above 1,000 ºF.
- Class II Combustibles:
  - flashpoint above 1,000 ºF and below 1,400 ºF
- Class III Combustibles:
  - flashpoint at or above 1,400 ºF
- Subclass IIIA:
  - flashpoint at or above 1,400 ºF and below 2,000 ºF
- Subclass IIIB:
  - flashpoint at or above 2,000 ºF

11.4 SUBSTITUTION

Flammable liquids sometimes may be substituted by relatively safe materials in order to reduce the risk of fires. Any substituted material should be stable and nontoxic and should either be non-flammable or have a high flashpoint.

11.5 STORAGE & USAGE OF FLAMMABLE LIQUIDS

Flammable and combustible liquids require careful handling at all times. The proper storage of flammable liquids within a work area is very important in order to protect personnel from fire and other safety and health hazards. The following rules apply to the storage of flammable liquids:

1. Storage of flammable liquids shall be in approved flammable storage lockers or in low value structures. Do not store other combustible materials near flammable storage areas or lockers
2. Bulk drums of flammable liquids must be grounded.
3. Portable containers of gasoline or diesel are not to exceed 5 gallons
4. Safety cans used for dispensing flammable or combustible liquids shall be kept at a point of use.
5. Appropriate fire extinguishers are to be mounted within 75 feet of exterior areas containing flammable liquids, and within 10 feet of any inside storage area for such materials.
6. Storage rooms for flammable and combustible liquids must have explosion-proof light fixtures.
7. Bulk storage of gasoline or diesel are kept in above ground tanks. Tank areas are

diked to contain accidental spills. Tanks shall be labelled. All tank areas shall be designated no smoking, no hot work and no open flame areas.

8. No flames, hot work or smoking is permitted in flammable or combustible liquid storage areas.
9. The maximum amount of flammable liquids that may stored in a building are:
   a. 20 gallons of Class IA liquids in containers
   b. 100 gallons of Class IB, IC, II, or III liquids in containers
   c. 500 gallons of Class IB, IC, II, or III liquids in a single portable tank.
10. Flammable liquid transfer areas are to be separated from other operations by distance or by construction having proper fire resistance.
11. When not in use flammable liquids shall be kept in covered containers.
12. Class I liquids may be used only where there are no open flames or other sources of ignition within the possible path of vapour travel.
13. Flammable or combustible liquids shall be drawn from or transferred into vessels, containers, or portable tanks within a building only through a closed piping system, from safety cans, by means of a device drawing through the top, or from a container or portable tanks by gravity through an approved self-closing valve. Transferring by means of air pressure on the container or portable tanks shall be prohibited.
14. Maintenance and operating practices shall be in accordance with established procedures which will tend to control leakage and prevent the accidental escape of flammable or combustible liquids. Spills shall be cleaned up promptly.
15. Combustible waste material and residues in a building or unit operating area shall be kept to a minimum, stored in covered metal receptacles and disposed of daily.
16. Rooms in which flammable or combustible liquids are stored or handled by pumps shall have exit facilities arranged to prevent occupants from being trapped in the event of fire.
17. Inside areas in which Class I liquids are stored or handled shall be heated only by means not constituting a source of ignition, such as steam, hot water or forced central systems located away from the area.

11.6 CABINETS

Not more than 120 gallons of Class I, Class II, and Class IIIA liquids may be stored in a storage cabinet. Of this total, not more than 60 gallons may be Class I and II liquids. Not more than three such cabinets (120 gallons each) may be located in a single fire area except in an industrial area.

11.7 CONTAINERS

The capacity of flammable and combustible liquid containers will be in accordance with the table below.

Table 2: Maximum allowable capacity of containers and portable tanks

	Flammable Liquids		Combustible Liquids		
Container	**0.042**	**1B**	**1C**	**II**	**II**
Glass or approved plastic[1]	1 pt[2]	1 qt[2]	1 gal	1 gal	1 gal
Metal (Other than DOT drums)	1 gal	5 gal	5 gal	5 gal	5 gal
Safety Cans	5 gal	5 gal	5 gal	5 gal	5 gal
Metal drums (DOT specifications)	60 gal	60 gal	60 gal	60 gal	60 gal
Approved portable tanks	660 gal	660 gal	660 gal	660 gal	660 gal

[1] = Nearest metric size is also acceptable for the glass and plastic containers
[2] = One gallon or nearest metric equivalent size may be used if metal and labelled with their contents.

11.8 STORAGE INSIDE BUILDINGS

Where approved storage cabinets or rooms are not provided, inside storage will comply with the following basic conditions:

1. The storage of any flammable or combustible liquid shall not physically obstruct a means of egress from the building or area.
2. Containers of flammable or combustible liquids will remain tightly sealed except when transferred, poured or applied. Remove only that portion of liquid in the storage container required to accomplish a particular job.
3. If a flammable and combustible liquid storage building is used, it will be a one-story building devoted principally to the handling and storing of flammable or combustible liquids. The building will have 2-hour fire-rated exterior walls having no opening within 10 feet of such storage.
4. Flammable paints, oils, and varnishes in 1 or 5 gallon containers, used for building maintenance purposes, may be stored temporarily in closed containers outside approved storage cabinets or room if kept at the job site for less than 10 calendar days.

11.9 DESIGNATED FLAMMABLE MATERIALS STORAGE AREAS

The designated flammable materials storage areas are the following:

- Bermed Area to the South East of the Garage holding POL materials in drums
- A marine Shipping container beside the garage which holds materials for use day to day in the garage as well as jerry cans of gasoline and diesel
- The blue metal shack in front of the camp that holds propane fired barbecues
- Jimi Arey Storm Shelter

12 FORK LIFT SAFETY

12.1 PURPOSE

Material handling is a significant safety concern. During the movement of products and materials there are numerous opportunities for personal injury and property damage if proper procedures and caution are not used. This chapter applies to all powered industrial trucks, hoists & lifting gear. The information in this chapter shall be used to train prospective industrial truck operators and provide the basis for refresher and annual retraining.

12.2 PRE-QUALIFICATIONS FOR POWERED INDUSTRIAL TRUCK (PIT) OPERATORS

All candidates for PIT operators must meet the following basic requirements prior to starting initial or annual training:

1. Must have no adverse vision problems that cannot be corrected by glasses or contacts;
2. No adverse hearing loss that cannot be corrected with hearing aids;
3. No physical impairments that would impair safe operation of the PIT;
4. No neurological disorders that affect balance or consciousness; and
5. Not taking any medication that affects perception, vision, or physical abilities.

12.3 TRAINING

Training for Powered Industrial Truck (PIT) Operators shall be conducted by an experienced operator, selected by Management. All operational training shall be conducted under close supervision. All training and evaluation must be completed before an operator is permitted to use a Powered Industrial Truck (forklift, etc) without continual & close supervision. Trainees may operate a powered industrial truck only:

1. Under the direct supervision of persons, selected by management, who have the knowledge, training, and experience to train operators and evaluate their competence; and;
2. Where such operation does not endanger the trainee or other employees.

12.4 TRAINING CONTENT

Training consists of a combination of formal instruction, practical training (demonstrations performed by the trainer and practical exercises performed by the trainee), and evaluation of the operator's performance in the workplace.

Initial Training: Powered industrial truck operators shall receive initial training in the following topics:

1. Truck-related training topics:
   a. Operating instructions, warnings, and precautions for the types of truck the

operator will be authorized to operate.
   b. Differences between the truck and the automobile.
   c. Truck controls and instrumentation: where they are located, what they do, and how they work
   d. Engine or motor operation.
   e. Steering and manoeuvring.
   f. Visibility (including restrictions due to loading).
   g. Fork and attachment adaptation, operation, and use limitations.
   h. Vehicle capacity.
   i. Vehicle stability.
   j. Any vehicle inspection and maintenance that the operator will be required to perform.
   k. Refuelling and/or charging and recharging of batteries.
   l. Operating limitations.
   m. Any other operating instructions, warnings, or precautions listed in the operator's manual for the types of vehicle that the employee is being trained to operate.
2. Workplace-related topics:
   a. Surface conditions where the vehicle will be operated.
   b. Composition of loads to be carried and load stability.
   c. Load manipulation, stacking, and unstacking.
   d. Narrow aisles and other restricted places where the vehicle will be operated.
   e. Hazardous (classified) locations where the vehicle will be operated.
   f. Ramps and other sloped surfaces that could affect the vehicle's stability.
   g. Closed environments and other areas where insufficient ventilation or poor vehicle maintenance could cause a build-up of carbon monoxide or diesel exhaust.
   h. Other unique or potentially hazardous environmental conditions in the workplace that could affect safe operation.

12.5 REFRESHER TRAINING AND EVALUATION:

Refresher training, including an evaluation of the effectiveness of that training, shall be conducted to ensure that the operator has the knowledge and skills needed to operate the powered industrial truck safely. Refresher training in relevant topics shall be provided to the operator when:

1. The operator has been observed to operate the vehicle in an unsafe manner.
2. The operator has been involved in an accident or near-miss incident.
3. The operator has received an evaluation that reveals that the operator is not operating the truck safely.
4. The operator is assigned to drive a different type of truck.
5. A condition in the workplace changes in a manner that could affect safe operation of the truck.
6. Once every season, an evaluation will be conducted of each powered industrial truck operator's performance.

12.6 SAFE OPERATING PROCEDURES (SOP) & RULES

The following is a list of Safe Operating Procedures (SOP) & Rules for Powered Industrial Trucks (PITs):

1. Only authorized and trained personnel will operate PITs.
2. All PITs will be equipped with a headache rack, fire extinguisher, rotating beacon, back-up alarm and seat belts. Seat belts will be worn at all times by the Operator.
3. The operator will perform daily pre- and post-trip inspections.
4. Any safety defects (such as hydraulic fluid leaks; defective brakes, steering, lights, or horn; and/or missing fire extinguisher, lights, seat belt, or back-up alarm) will be reported for immediate repair or have the PIT taken "Out of Service".
5. Operators will follow the proper recharging or refuelling safety procedures.
6. Loads will be tilted back and carried no more than 6 inches from the ground. Loads that restrict the operator's vision will be transported backwards.
7. PITs will travel no faster than 8 kilometres per hour (5 miles per hour) or faster than a normal walk.
8. Hard hats will be worn by PIT Operators in high lift areas.
9. Operator will sound horn and use extreme caution when meeting pedestrians, making turns and cornering.
10. If PITs are used as a man lift, an appropriate man lift platform (cage with standard rails and toe-boards) will be used.
11. Aisle will be maintained free from obstructions, marked and wide enough (six foot minimum) for vehicle operation.
12. Lift capacity will be marked on all PITs. Operator will assure load does not exceed rated weight limits.
13. When un-attended, PITs will be turned off, forks lowered to the ground and parking brake applied.
14. All PITs (with exception of pallet jacks) will be equipped with a multi-purpose dry chemical fire extinguisher. (Minimum rating; 2A:10B:C)
15. Operators are instructed to report all accidents, regardless of fault and severity, to Management. Management will conduct an accident investigation.
16. When loading rail cars and trailers, dock plates will be used. Operators will assure dock plates are in good condition and will store on edge when not in use.
17. Rail cars and trailers will be parked squarely to the loading area and have wheels chocked in place. Operators will follow established Docking/Un-Docking Procedures.

12.7 OPERATIONS

The following rules apply to the operation of Powered Industrial Trucks (PITs):

1. If at any time a powered industrial truck is found to be in need of repair, defective, or in any way unsafe, the truck shall be taken out of service until it has been restored to safe operating condition.
2. Trucks shall not be driven up to anyone standing in front of a bench or other fixed object.
3. No person shall be allowed to stand or pass under the elevated portion of any truck,

whether loaded or empty.

4. Unauthorized personnel shall not be permitted to ride on powered industrial trucks.
5. Arms or Legs shall not be placed between the uprights of the mast or outside the running lines of the truck.
6. A safe distance shall be maintained from the edge of ramps or platforms while on any elevated dock, or platform or freight car. Trucks shall not be used for opening or closing freight doors.
7. There shall be sufficient headroom under overhead installations, lights, pipes, sprinkler system, etc.
8. An overhead guard shall be used as protection against falling objects. It should be noted that an overhead guard is intended to offer protection from the impact of small packages, boxes, bagged material, etc., representative of the job application, but not to withstand the impact of a falling capacity load.
9. A load backrest extension shall be used whenever necessary to minimize the possibility of the load or part of it from falling rearward.
10. Trucks shall not be parked so as to block fire aisles, access to stairways, or fire equipment.

12.8 TRAVELING

The following rules apply to the movement of Powered Industrial Trucks (PITs):

1. All traffic regulations shall be observed, including authorized speed limits. A safe distance shall be maintained approximately three truck lengths from the truck ahead, and the truck shall be kept under control at all times.
2. The right of way shall be yielded to ambulances, fire trucks, or other vehicles in emergency situations.
3. Other trucks traveling in the same direction at intersections, blind spots, or other dangerous locations shall not be passed.
4. The driver shall be required to slow down and sound the horn at cross aisles and other locations where vision is obstructed. If the load being carried obstructs forward view, the driver shall be required to travel with the load trailing.
5. Railroad tracks shall be crossed diagonally wherever possible. Parking closer than 8 feet from the center of railroad tracks is prohibited.
6. The driver shall be required to look in the direction of, and keep a clear view of the path of travel.
7. Grades shall be ascended or descended slowly. When ascending or descending grades in excess of 10 percent, loaded trucks shall be driven with the load upgrade. On all grades the load and load engaging means shall be tilted back if applicable, and raised only as far as necessary to clear the road surface.
8. Under all travel conditions the truck shall be operated at a speed that will permit it to be brought to a stop in a safe manner.
9. Stunt driving and horseplay shall not be permitted.
10. The driver shall be required to slow down for wet and slippery floors.
11. Duckboards, or bridge plates, shall be properly secured before they are driven over. Duckboards or bridge plates shall be driven over carefully and slowly and their rated

capacity never exceeded.

12. Running over loose objects on the roadway surface shall be avoided.
13. While negotiating turns, speed shall be reduced to a safe level by means of turning the hand steering wheel in a smooth, sweeping motion. Except when manoeuvring at a very low speed, the hand steering wheel shall be turned at a moderate, even rate.

12.9 LOADING

When operating Powered Industrial Trucks (PITs) the following rules will apply to loading of the PITs:

1. Only stable or safely arranged loads shall be handled. Caution shall be exercised when handling off-center loads which cannot be centered.
2. Only loads within the rated capacity of the truck shall be handled.
3. The long or high (including multiple-tiered) loads which may affect capacity shall be adjusted.
4. Trucks equipped with attachments shall be operated as partially loaded trucks when not handling a load.
5. A load engaging means shall be placed under the load as far as possible; the mast shall be carefully tilted backward to stabilize the load.
6. Extreme care shall be used when tilting the load forward or backward, particularly when high tiering. Tilting forward with load engaging means when elevated shall be prohibited except to pick up a load. An elevated load shall not be tilted forward except when the load is in a deposit position over a rack or stack. When stacking or tiering, only enough backward tilt to stabilize the load shall be used.

12.10 FUELLING SAFETY

The following rules apply to fuelling Powered Industrial Trucks (PITs):

1. Fuel tanks shall not be filled while the engine is running. Spillage shall be avoided.
2. Spillage of oil or fuel shall be carefully washed away or completely evaporated and the fuel tank cap replaced before restarting engine.
3. No truck shall be operated with a leak in the fuel system until the leak has been corrected.
4. Open flames shall not be used for checking electrolyte level in storage batteries or gasoline level in fuel tanks.

12.11 MAINTENANCE OF POWERED INDUSTRIAL TRUCKS

The following rules apply to the maintenance of Powered Industrial Trucks (PITs):

1. Any power-operated industrial truck not in safe operating condition shall be removed from service. All repairs shall be made by authorized personnel.
2. Those repairs to the fuel and ignition systems of industrial trucks which involve fire hazards shall be conducted only in locations designated for such repairs.
3. Trucks in need of repairs to the electrical system shall have the battery disconnected prior to such repairs.

4. All parts of any such industrial truck requiring replacement shall be replaced only by parts equivalent as to safety with those used in the original design.
5. Industrial trucks shall not be altered so that the relative positions of the various parts are different from what they were when originally received from the manufacturer, nor shall they be altered either by the addition of extra parts not provided by the manufacturer or by the elimination of any parts. Additional counter-weighting of fork trucks shall not be done unless approved by the truck manufacturer.
6. Industrial trucks shall be examined before being placed in service, and shall not be placed in service if the examination shows any condition adversely affecting the safety of the vehicle. Such examination shall be made at least daily. Where industrial trucks are used on a round-the-clock basis, they shall be examined prior to use each shift. Defects when found shall be immediately reported and corrected.
7. When the temperature of any part of any truck is found to be in excess of its normal operating temperature, thus creating a hazardous condition, the vehicle shall be removed from service and not returned to service until the cause for such overheating has been eliminated.
8. Industrial trucks shall be kept in a clean condition, free of lint, excess oil, and grease. Non-combustible agents should be used for cleaning trucks. Low flash point (below 100 deg. F.) solvents shall not be used. High flash point (at or above 100 deg. F.) solvents may be used.

12.12 POWERED INDUSTRIAL TRUCK PRE-USE CHECKLIST

A check of the following items (as applicable) is to be conducted by the operator prior to use each shift:

Lights

1. Lights;
2. Horn;
3. Brakes;
4. Leaks;
5. Warning Beacon;
6. Backup Warning Alarm; and
7. Fire Extinguisher.

If any deficiencies are noted, the unit is to be placed OUT OF SERVICE until the problem has been corrected. Additionally, it is the operator's responsibility to notify the immediate supervisor and fill out a maintenance request.

13 HOT WORK & WELDING SAFETY

13.1 PURPOSE

Welding and Hot Work, such as brazing or grinding present a significant opportunity for fire and injury. All precautions of this program must be applied prior to commencing any welding or hot work by company employees or contractors.

13.2 DEFINITIONS

- Welding/Hot Works Procedures:
  - Any activity which results in sparks, fire, molten slag, or hot material which has the potential to cause fires or explosions.
- Examples of Hot Works:
  - Cutting, Brazing, Soldering, Thawing Pipes, Torch Applied Roofing, Grinding and Welding.
- Special Hazard Occupancies:
  - Any area containing Flammable Liquids, Dust Accumulation, Gases, Plastics, Rubber and Paper Products.

13.3 HOT WORK PROCEDURES

Health and Safety regulations require fire prevention actions for welding/hot works:

1. Where practicable all combustibles shall be relocated at least 35 feet from the work site. Where relocation is impractical, combustibles shall be protected with flame proof covers, shielded with metal, guards, curtains, or wet down material to help prevent ignition of material.
2. Ducts, conveyor systems, and augers that might carry sparks to distant combustibles shall be protected or shut down.
3. Where cutting or welding is done near walls, partitions, ceilings, or a roof of combustible construction, fire-resistant shields or guards shall be provided to prevent ignition.
4. If welding is to be done on a metal wall, partition, ceiling, or roof, precautions shall be taken to prevent ignition of combustibles on the other side, due to conduction or radiation of heat. Where combustibles cannot be relocated on the opposite side of the work, a fire watch person shall be provided on the opposite side of the work.
5. Welding shall not be attempted on a metal partition, wall, ceiling or roof having a covering nor on walls having combustible sandwich panel construction.
6. Cutting or welding on pipes or other metal in contact with combustible walls, partitions, ceilings, or roofs shall not be undertaken if the work is close enough to cause ignition.
7. In areas where there is dust accumulation of greater than 1/16 inch within 35 feet of the area where welding/hot works will be conducted. All dust accumulation should be

cleaned up following the housekeeping program of the facility before welding/hot works are permitted.

8. Suitable extinguishers shall be provided and maintained ready for instant use.
9. A fire watch person shall be provided during and for 2 hours past the completion of the welding project.
10. Cutting or welding shall not be permitted in the following situations:
    a. In areas not authorized by management.
    b. In the presence of potentially explosive atmospheres
    c. In areas near the storage of large quantities of exposed, readily ignitable materials.

13.4 WELDING & HOT WORK FIRE PREVENTION MEASURES

A designated welding area should be established to meet the following requirements:

1. Floors swept and clean of combustibles within 35 feet of work area.
2. Flammable and combustible liquids and materials will be kept 35 feet. from work area.
3. Adequate ventilation providing 20 air changes per hour, such as a suction hood system should be provided to the work area.
4. At least one 10 pound dry chemical fire extinguisher should be within access of the 35 feet. of work area.
5. Protective dividers such as welding curtains or non-combustible walls will be provided to contain sparks and slag to the combustible free area.

Requirements for welding conducted outside the designated welding area:

1. Portable welding curtains or shields must be used to protect other workers in the welding area.
2. Plastic materials be covered with welding tarps during welding procedures
3. Fire Watch must be provided for all hot work operations.

13.5 WELDING STANDARD OPERATING PROCEDURES

The following pages list the Welding Standard Operating Procedures (SOP) and are applicable for all electric and gas welding. These SOPs shall be posted at each Designated Welding & Hot Work Area for quick reference and review.

13.5.1 SOP - Electric Welding

The following rules shall apply prior to the start of any Electric Welding:

1. Perform Safety Check on all equipment:
    a. Ensure fire extinguisher is charged and available
    b. Ensure electrical cord, electrode holder and cables are free from defects (no cable splices are allowed with in 10 feet of the electrode holder.
    c. Ensure PPE (welding hood, gloves, rubber boots/soled shoes, aprons) are available and have no defects.
    d. Ensure the welding unit is properly grounded.

e. All defective equipment must be repaired or replaced before use.
2. Remove flammables and combustibles
3. No welding is permitted on or near containers of flammable material, combustible material or unprotected flammable structures.
4. Place welding screen or suitable barricade around work area to provide a fire safety zone and prevent injuries to passersby (Do not block emergency exits or restrict ventilation)
5. Ensure Adequate Ventilation and Lighting

The following rules will apply when executing Hot Work procedures for Electric Welding:

1. Set Voltage Regulator no higher than the following for:
   a. Manual Alternating Current Welders - 80 volts
   b. Automatic Alternating Current Welders - 100 volts
   c. Manual or automatic Direct Current Welders -100 volts
2. Uncoil and spread out welding cable
3. To avoid overheating, ensure proper contact of work leads and connections, remove any metal fragments from magnetic work clamps (to avoid electric shock do not wrap welding cables around a body part and avoid welding in wet conditions)
4. Fire watch for one hour after welding & until all welds have cooled
5. Perform final fire watch.

13.5.2 SOP: Gas Welding

The following rules will apply prior to the start of Gas Welding:

1. Perform Safety Check on all equipment
   a. Ensure tanks have gas and fittings are tight
   b. Ensure fire extinguisher is charged and available
   c. Ensure hoses have no defects or leaks
   d. Ensure PPE (welding hood, gloves, rubber boots/soled shoes, aprons) are available and have no defects.
   e. All defective equipment must be repaired or replace before use.
2. Remove flammables and combustibles
3. No welding is permitted on or near containers of flammable material, combustible material or unprotected flammable structures.
4. Place welding screen or suitable barricade around work area to provide a fire safety zone and prevent injuries to passersby (Do not block emergency exits or restrict ventilation)
5. Use an authorized Air Filtering Respirator, if required
6. Ensure Adequate Ventilation and Lighting

The following rules will apply when executing Hot Work procedures for Gas Welding:

1. Open Valves on Oxygen and Gas tanks to desired flow
2. At the end of the work shut tank valves & relieve hose pressure. Store hoses
3. Fire watch for one hour after welding & until all welds have cooled
4. Perform final fire watch.

13.6 HOT WORK PERMIT PROCESS

Hot work operations include tasks such as welding, brazing, torch cutting, grinding, and torch soldering. These operations create heat, sparks and hot slag that have the potential to ignite flammable and combustible materials in the area surrounding hot work activities. Thus, in order to avoid potentially dangerous situations involving hot work operations a hot work permitting process will be put into place at Cape Christian.

13.6.1 Persons involved in the Process

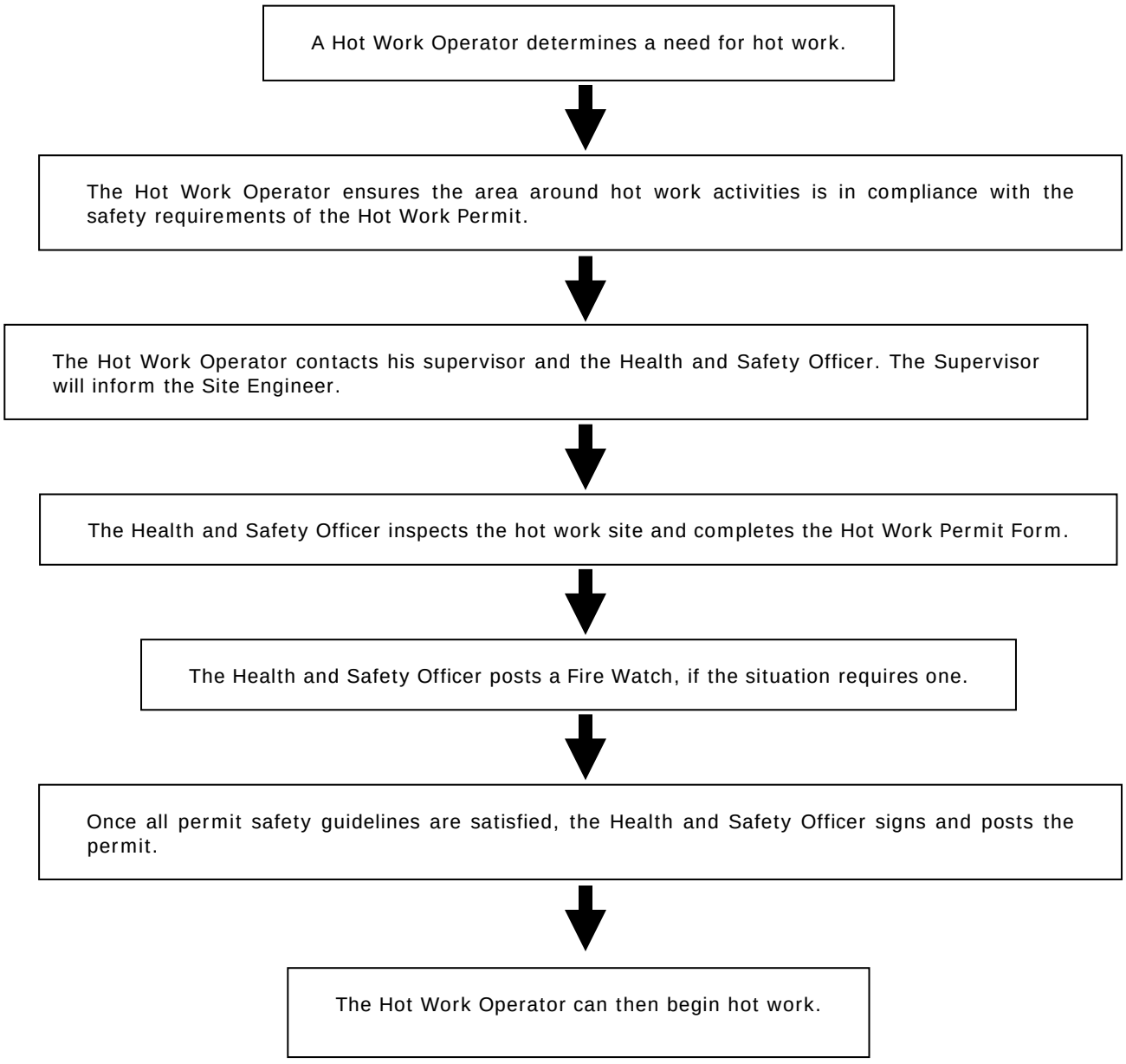
Supervisors: Oversee the Hot Work Permit program for hot work operations under their supervision.

The Health and Safety Officer (HSO): Inspects hot work sites prior to the start of hot work operations using the checklist found on the Hot Work Permit Form. When a fire watch is required, the HSO will designate an employee to serve as Fire Watch. Once all requirements on the form have been satisfied and the form is signed by a HSO, the document becomes a Hot Work Permit and must be posted in the area where hot work is to be performed.

Hot Work Operators (HWOs): Are employees who perform hot work operations. A HWO must always obtain a Hot Work Permit before beginning hot work.

Fire Watch: Is a person posted to monitor the safety of hot work operations and watch for fires. Fire Watches are posted by a Permit Authorising Individual (PAI) if the situation requires one, during hot work, and for at least 30 minutes after work has been completed. Any employee who has successfully completed hot work safety training can serve as the Fire Watch. See section 13.6.3 for information regarding when a Fire Watch is required.

13.6.2 Hot Work Permit Process Flowchart



13.6.3 Safety Measures Required By the Hot Work Permit

The 10 meter (35 feet) Rule

- All flammable and combustible materials within a 10 meter (35 foot) radius of hot work must be removed.
- When flammable and combustible materials within a 10 meter (35 foot) of hot work cannot be removed they must be covered with flame retardant tarps and a fire watch must be posted.
- Floors and surfaces within a 10 meter (35 foot) radius of the hot work area must be swept free of combustible dust or debris.
- All openings or cracks in the walls, floors, or ducts that are potential travel passages for sparks, heat and flames must be covered.

Fire Detection and Suppression

- A fire extinguisher must be readily available and accessible.
- If hot work it to be taken place inside the Camp, the entire Camp smoke detection and alarms systems cannot be shut down. Instead smoke detectors in the area of hot work may be covered for the duration of hot work to prevent false alarms.

Fire Watch

A Fire Watch must be posted by a Permit Authorising Individual (PAI) if the following conditions exist:

- Combustible materials cannot be removed from within a 10 meter (35 foot) radius of the hot work
- wall or floor openings within a 10 meter (35 foot) radius of hot work expose combustible materials in adjacent areas, including concealed spaces in walls or floors
- combustible materials are adjacent to the opposite side of partitions, walls, ceilings or roofs and are likely to be ignited

General Guidelines

- Work should be performed using alternative methods other than hot work whenever possible.
- Hot work should be performed in designated hot work areas whenever it is practical.
- A Hot Work Permit is valid for one day and one area and should be posted in the area of hot work for the duration of the activity.
- A copy of every permit shall be filed by the Supervisor in a location designated by the Health and Safety Officer.
- The Site Engineer and Health and Safety Officer are to be informed prior to any hot work operations.

13.6.4 Hot Work Permit

The following hot work permit needs to be completed prior to the start of any hot works that meet permitting requirements.

HOT-WORK PERMIT

Applies Only to Area Specified Below

Date: _____/_____/_____ Location (be very specific): _____

Nature of Job: _____

The above location has been examined; the precautions checked below have been taken to prevent fire.

Precautions

The Health and Safety Officer must inspect the proposed work area and check precautions to prevent fire.

General Precautions

- ☐ Fire extinguishers and/or water pump on location
- ☐ Cutting and welding equipment in good condition (e.g., power source, welding leads, torches, etc.)
- ☐ Engineer, supervisor, and H&S Officer notified

Precautions within 10 meters (35 feet) of Work

- ☐ Floors swept clean of combustibles
- ☐ Combustible floors wet down, covered with damp sand, metal, or fireproof sheets
- ☐ No combustible materials or flammable liquids
- ☐ Combustibles and flammable liquids protected with fire-proof tarpaulins or metal shields
- ☐ All wall and floor openings covered
- ☐ Fireproof tarpaulins suspended beneath work to collect sparks and protect pedestrians

Work on Walls or Ceilings

- ☐ Construction non-combustible and without combustible covering or insulation
- ☐ Combustibles moved away from opposite side

Work on Enclosed Equipment/Confined Spaces

- ☐ Equipment cleaned of all combustibles (example: grease, oil, flammable vapours).
- ☐ Containers purged of flammable vapours/liquids
- ☐ Adequate air flow through enclosed equipment to be provided while cutting and welding is done
- ☐ Follow Confined Space guidelines

Fire Watch

- ☐ To be provided during and for 30 minutes after operation, including any coffee or lunch breaks
- ☐ Supplied with extinguishers or small hose
- ☐ Trained in use of equipment and in sounding alarms

I have personally examined the above and certify that the checked precautions have been taken.

Signed: _____ (Hot Work Operator)

Signed: _____ (Health and Safety Officer)

Permission is Granted for this Work

Permit Expires on _____/_____/_____ at _____ : _____ AM/PM

Signed: _____ (Health and Safety Officer)

Time Started: ____ : _____ AM/PM _____ : _____ AM/PM

Final Check-Up

Work area and all adjacent areas to which sparks and heat might have spread (such as floors above and below and on opposite sides of walls were inspected for at least 30 minutes after the work was completed and were found fire safe.

Signed: _____ (Health and Safety Officer)

14 HOUSEKEEPING & MATERIAL STORAGE

14.1 PURPOSE

Attention to general cleanliness, storage and housekeeping can prevent numerous accidents. This chapter covers items not discussed in other areas and is not intended to cover all specific housekeeping requirements. Good housekeeping efforts are a part of Qikiqtaaluk Logistics' fire prevention and accident prevention program.

14.2 MANAGEMENT AND EMPLOYEE RESPONSIBILITY

All Employees share the responsibility for maintaining good housekeeping practice and following the established housekeeping procedures. The Site Superintendent, Supervisors (i.e. Foreman), Health & Safety Officer, Site Medic and Safety Committee will be responsible to monitor housekeeping as part of their facility safety inspection procedures, note any hazards or areas of non-compliance, initiate clean-up procedures and provide follow-up. Management has the additional responsibility to provide disciplinary action when necessary to reinforce compliance with this program.

14.3 SMOKING POLICY

Smoking is not permitted inside any enclosed space including vehicles, any camp buildings and/or within 10 feet of material storage. Smoking is permitted outside except near fuel storage areas (>10 meters) and not within 3 metres of any building entrance or exit. To prevent fires and keep the floors neat and orderly, all cigarette/cigar ashes and butts are to be disposed in the provided butt cans or ashtrays only.

14.4 DEPARTMENT AND AREA HOUSEKEEPING PROCEDURES

14.4.1 Offices

Office areas are to be kept neat and orderly. The following general rules apply to prevent injuries and maintain a professional appearance.

1. All aisles, emergency exits, fire extinguishers, etc., will be kept clear (a minimum of three feet of either side) of material storage (temporary and permanent) at all times.
2. Storage areas will be maintained orderly at all times. When supplies are received, the supplies will be stored properly.
3. Spills will be cleaned-up immediately and wastes disposed of properly.
4. All waste receptacles will be lined with a plastic trash bag to avoid direct contact while handling. Custodial Employees will use rubber gloves and compaction bar when handling wastes.
5. Keep file and desk drawers closed when not attended to avoid injuries. Open only one drawer at a time to prevent tipping of file cabinets.
6. At the end of the business day, turn off all office equipment (lamps, PCs, etc.) and

lights to save energy and prevent fires.

14.4.2 Working Areas

Working areas will be kept neat and orderly, during operations and as follows:

1. All aisles, emergency exits, fire extinguishers, eye wash stations, etc., will be kept clear (a minimum of three feet in front of and to either side) of material storage at all times.
2. Spills will be cleaned up immediately.
3. All refuse and waste materials will be placed in the recognized waste containers for disposal.

14.4.3 Rest Rooms, Locker Rooms & Break Areas

Rest rooms, recreation rooms and cafeteria are provided for all Employees. The following rules will apply:

1. Employees are expected to clean-up after themselves as a common courtesy to fellow Employees.
2. Flammable materials (fire works, explosives, gasoline, etc.) may not stored in rest rooms, recreation rooms and cafeteria
3. All waste receptacles will be lined with a plastic trash bag to avoid direct contact while handling and Custodial Employees will use rubber gloves and compaction bar when handling wastes.
4. All refuse and waste materials will be placed in the recognized waste containers for disposal.

14.4.4 Maintenance Areas

The following rules apply to any maintenance areas on site:

1. All aisles, emergency exits, fire extinguishers, etc., will be kept clear (a minimum of three feet of either side) of material storage (temporary and permanent) at all times.
2. Storage Areas will be maintained orderly at all times:
   a. Pipe stock stored horizontally on racks and sorted by size;
   b. Metal stock stored horizontally on racks and sorted by size;
   c. Sheet metal stock stored vertically in racks and sorted by type;
   d. All fittings, etc., stored in bins on shelves and sorted by type and use; and
   e. All flammables stored in Cabinets and self-closing cans where necessary.
3. Spills will be cleaned-up immediately by the person responsible and wastes disposed properly.
4. All refuse and waste materials will be placed in the recognized waste containers for disposal.

14.5 MATERIAL STORAGE

Proper storage procedures are required for dry, raw materials, finished product flammables and compressed gases storage to prevent fires, keep exits and aisles clear and avoid injuries and illnesses. General rules for material storage are as follows:

Materials and Finished Products Storage

1. Materials may not be stored any closer than 18 inches to walls. A minimum of 3 feet

side clearance will be maintained around doorways and emergency exits. Passageways and aisle will be properly marked and a minimum of six feet in width.
2. Aisles and passageways will be kept clear of debris. All spills of materials will be immediately cleaned-up by the person responsible.
3. All platforms and racks will have maximum load capacity displayed. The weight of stored material will not exceed the rated load capacity.

14.5.1 Flammable Storage

The following rules will apply to the storage of all flammables:

1. All flammables will be stored in storage cabinets or shall be stored outside, in approved containers.
2. Fuels, solvents and other flammables (not stored in original shipping containers) will be stored in self-closing containers with flame arresters. Flammables may not be stored in open containers (open parts baths, etc.).
3. Flammable storage areas will be kept dry and well ventilated. No storage of combustible materials, open flames or exposed electrical components is permitted in the flammable storage area.
4. Flammable or combustible materials may not be stored in electrical rooms. Electrical rooms must be kept clean and dry at all times.

14.5.2 Compressed Gas Storage Safety

The following rules will apply to the storage of Compressed Gases:

1. Inspect bottle for defects & proper marking/labels:
   a. Ensure stamped date on bottle has not expired.
   b. Inspect valve assembly and adapter thread area.
   c. Marked with contents and if empty/full.
2. Ensure MSDS is on file or with shipment.
   a. Follow MSDS requirements for storage.
3. Cylinder cap securely in place when not in use.
4. Stored up-right and secured to a stationary structure in a shaded and well ventilated area.
5. Cylinders not stored within 50 feet of exposed electrical components or combustible materials.
6. Cylinders are protected from accidental rupture.
7. Chemically reactive gases not stored within 50 feet of each other.
8. Must be secured to a cart or cylinder trolley.
9. Cap securely fastened.
10. Inspect valve adapter threads.
11. Inspect all fasteners, hoses & regulators prior to hooking up to cylinder.
12. Use only for approved purposes.
13. Use in up-right position.
14. Fasten cylinder to structure or cart.
15. Regulators must be of same rated pressure as cylinder.
16. Keep cylinder valve shut when not in use; don't depend on regulators.
17. Cylinders must be secured during storage to prevent them from falling over.

15 PERSONAL PROTECTIVE EQUIPMENT

15.1 PURPOSE

Qikiqtaaluk Logistics will provide all Employees with required Personal Protective Equipment (PPE) to suit the task and known hazards. This chapter covers the requirements for Personal Protective Equipment with the exception of PPE used for respiratory protection or PPE required for hazardous material response to spills or releases.

15.2 GENERAL RULES

15.2.1 Design
All personal protective equipment shall be of safe design and construction for the work to be performed.

15.2.2 Hazard assessment and equipment selection
Hazard analysis procedures shall be used to assess the workplace to determine if hazards are present, or are likely to be present, which would necessitate the use of personal protective equipment (PPE). If such hazards are present, or likely to be present, the following actions will be taken:

1. Select, and have each affected Employee use, the proper PPE;
2. Communicate selection decisions to each affected Employee; and
3. Select PPE that properly fits each affected employee.

15.2.3 Defective and damaged equipment
Defective or damaged personal protective equipment shall not be used.

15.2.4 Training
All Employees who are required to use PPE shall be trained to know at least the following:

1. When PPE is necessary;
2. What PPE is necessary;
3. How to properly don, remove, adjust, and wear PPE;
4. The limitations of the PPE; and
5. The proper care, maintenance, useful life and disposal of the PPE.

Each affected Employee shall demonstrate an understanding of the training and the ability to use PPE properly, before being allowed to perform work requiring the use of PPE.

15.2.5 Minimum PPE Requirements
All workers working outside of the camp will be required to wear or have available at all times the following PPE:

- Eye and face protection: safety glasses with side shields;
- Head protection: class A helmet;

- Foot protection: safety boots with impact, compression and puncture protection;
- Hand protection: safety gloves, adapted to intended application;
- Visibility: Hi-visibility vest or coverall.

15.3 PERSONAL PROTECTIVE EQUIPMENT SELECTION

15.3.1 Controlling hazards

Apart from the minimum requirements prescribed as a general rule, more specific PPE could be necessary, depending on the nature of the work performed by a worker. The following section will state selection guidelines that will enable workers to properly select PPE, according to the work they will perform.

PPE devices alone should not be relied on to provide protection against hazards, but should be used in conjunction with guards, engineering controls, and sound manufacturing practices.

15.3.2 Selection guidelines

The general procedure for selection of protective equipment is to:

1. Become familiar with the potential hazards and the type of protective equipment that is available, and what it can do; i.e., splash protection, impact protection, etc.;
2. Compare the hazards associated with the environment; i.e., impact velocities, masses, projectile shape, radiation intensities, with the capabilities of the available protective equipment;
3. Select the protective equipment which ensures a level of protection greater than the minimum required to protect employees from the hazards
4. Fit the user with the protective device and give instructions on care and use of the PPE. It is very important that end users be made aware of all warning labels for and limitations of their PPE.

15.3.3 Fitting the Device

Careful consideration must be given to comfort and fit. PPE that fits poorly will not afford the necessary protection. Continued wearing of the device is more likely if it fits the wearer comfortably. Protective devices are generally available in a variety of sizes. Care should be taken to ensure that the right size is selected.

15.3.4 Devices with adjustable features

Adjustments should be made on an individual basis for a comfortable fit that will maintain the protective device in the proper position. Particular care should be taken in fitting devices for eye protection against dust and chemical splash to ensure that the devices are sealed to the face. In addition, proper fitting of helmets is important to ensure that it will not fall off during work operations. In some cases a chin strap may be necessary to keep the helmet on an employee's head. (Chin straps should break at a reasonably low force, however, so as to prevent a strangulation hazard). Where manufacturer's instructions are available, they should be followed carefully.

15.4 EYE AND FACE PROTECTION

Each affected employee shall use appropriate eye or face protection when exposed to eye or face hazards from flying particles, molten metal, liquid chemicals, acids or caustic liquids, chemical gases or vapours, or potentially injurious light radiation. Each affected employee shall use eye protection that provides side protection when there is a hazard from flying objects. Detachable side protectors are acceptable. Each affected employee who wears prescription lenses while engaged in operations that involve eye hazards shall wear eye protection that incorporates the prescription in its design, or shall wear eye protection that can be worn over the prescription lenses without disturbing the proper position of the prescription lenses or the protective lenses. Eye and face PPE shall be distinctly marked to facilitate identification of the manufacturer. Each affected employee shall use equipment with filter lenses that have a shade number appropriate for the work being performed for protection from injurious light radiation. The following table is a listing of appropriate shade numbers for various operations:

Table 3: Filter Lenses for Protection Against Radiant Energy

Operations	Electrode Size 1/32”	Arc Current	Protective Shade
Shielded metal arc welding	Less than 3	Less than 60	7
	3-5	60-160	8
	5-8	160-250	10
	More than 8	250-550	11
Torch brazing	N/A	N/A	3
Torch soldering	N/A	N/A	2

Note: as a rule of thumb, start with a shade that is too dark to see the weld zone. Then go to a lighter shade which gives sufficient view of the weld zone without going below the minimum. In oxyfuel gas welding or cutting where the torch produces a high yellow light, it is desirable to use a filter lens that absorbs the yellow or sodium line in the visible light of the (spectrum) operation.

The following table provides general guidance for the proper selection of eye and face protection to protect against hazards associated with the listed hazard "source" operations.

Table 4: Selection chart guidelines for eye and face protection

Source	Hazard	Protection
IMPACT - Chipping, grinding machining, masonry work, woodworking, sawing, drilling, chiselling, powered fastening, riveting, and sanding	Flying fragments, objects, large chips, particles, sand, dirt, etc.	Spectacles with side protection, goggles, face shield For severe exposure, use face shield
HEAT-Furnace operation and arc welding	Hot sparks	Face shields, spectacles with side protection. For severe exposure use face shield.
CHEMICALS-Acid and chemical handling, degreasing, plating	Splash	Goggles, eyecup and cover types. For severe exposure, use face shield.
DUST - Woodworking, buffing, general buffing, general dusty conditions.	Nuisance dust	Goggles, eye cup and cover type

15.5 SELECTION GUIDELINES FOR HEAD PROTECTION

All head protection is designed to provide protection from impact and penetration hazards caused by falling objects. Head protection is also available which provides protection from electric shock and burn. When selecting head protection, knowledge of potential electrical hazards is important. Class A helmets, in addition to impact and penetration resistance, provide electrical protection from low-voltage conductors (they are proof tested to 2,200 volts). Class B helmets, in addition to impact and penetration resistance, provide electrical protection from high-voltage conductors (they are proof tested to 20,000 volts). Class C helmets provide impact and penetration resistance (they are usually made of aluminum which conducts electricity), and should not be used around electrical hazards. Where falling object hazards are present, helmets must be worn. Some examples include: working below other workers who are using tools and materials which could fall; working around or under conveyor belts which are carrying parts or materials; working below machinery or processes which might cause material or objects to fall; and working on exposed energized conductors.

15.6 FOOT PROTECTION

15.6.1 General requirements

Each affected employee shall wear protective footwear when working in areas where there is a danger of foot injuries due to falling or rolling objects, objects piercing the sole, and where

employee's feet are exposed to electrical hazards.

15.6.2 Selection guidelines for foot protection

Safety shoes and boots provide both impact and compression protection. Where necessary, safety shoes can be obtained which provide puncture protection. In some work situations, metatarsal protection should be provided, and in other special situations electrical conductive or insulating safety shoes would be appropriate. Safety shoes or boots with impact protection would be required for carrying or handling materials such as packages, objects, parts or heavy tools, which could be dropped; and for other activities where objects might fall onto the feet. Safety shoes or boots with compression protection would be required for work activities involving skid trucks (manual material handling carts), around bulk rolls (such as paper rolls), and around heavy pipes, all of which could potentially roll over an employee's feet. Safety shoes or boots with puncture protection would be required where sharp objects such as nails, wire, tacks, screws, large staples, scrap metal etc., could be stepped on by employees causing a foot injury.

15.7 HAND PROTECTION

15.7.1 General requirements

Hand protection is required when employees' hands are exposed to hazards such as those from skin absorption of harmful substances; severe cuts or lacerations; severe abrasions; punctures; chemical burns; thermal burns; and harmful temperature extremes.

15.7.2 Selection guidelines for hand protection

Selection of hand PPE shall be based on an evaluation of the performance characteristics of the hand protection relative to the task(s) to be performed, conditions present, duration of use, the hazards and potential hazards identified. Gloves are often relied upon to prevent cuts, abrasions, burns, and skin contact with chemicals that are capable of causing local or systemic effects following dermal exposure. There is no glove that provides protection against all potential hand hazards, and commonly available glove materials provide only limited protection against many chemicals. Therefore, it is important to select the most appropriate glove for a particular application and to determine how long it can be worn, and whether it can be reused. It is also important to know the performance characteristics of gloves relative to the specific hazard anticipated; e.g., chemical hazards, cut hazards, flame hazards, etc. Before purchasing gloves, request documentation from the manufacturer that the gloves meet the appropriate test standard(s) for the hazard(s) anticipated. Other factors to be considered for glove selection in general include:

1. As long as the performance characteristics are acceptable, in certain circumstances, it may be more cost effective to regularly change cheaper gloves than to reuse more expensive types.
2. The work activities of the employee should be studied to determine the degree of dexterity required, the duration, frequency, and degree of exposure of the hazard, and the physical stresses that will be applied.

15.7.3 Selection of gloves for protection against chemical hazards

The following steps will be followed in the Selection of gloves for protection against chemical hazards:

1. The toxic properties of the chemical(s) must be determined; in particular, the ability of the chemical to cause local effects on the skin and/or to pass through the skin and cause systemic effects.
2. Generally, any "chemical resistant" glove can be used for dry powders;
3. For mixtures and formulated products (unless specific test data are available), a glove should be selected on the basis of the chemical component with the shortest breakthrough time, since it is possible for solvents to carry active ingredients through polymeric materials.
4. Employees must be able to remove the gloves in such a manner as to prevent skin contamination.

15.8 VISIBILITY

15.8.1 General requirements

Hi-visibility clothing is required when employees are exposed to hazards such as those from vehicles and heavy equipment.

15.8.2 Selection guidelines for hi-visibility clothing.

High visibility clothing provides protection from moving vehicles and heavy equipment by maximizing the workers' visibility, therefore minimizing risks of a collision. Where necessary, hi-visibility vests and coveralls will be made available to all workers.

16 RESPIRATORY PROTECTION

16.1 GENERAL

In the Respiratory Protection Program, hazard assessment and selection of proper respiratory PPE is conducted in the same manner as for other types of PPE. In the control of those occupational diseases caused by breathing air contaminated with harmful dusts, fogs, fumes, mists, gases, smokes, sprays, or vapours, the primary objective shall be to prevent atmospheric contamination. This shall be accomplished as far as feasible by accepted engineering control measures (for example, enclosure or confinement of the operation, general and local ventilation, and substitution with less toxic materials). When effective engineering controls are not feasible, or while they are being instituted, appropriate respirators shall be used.

16.2 RESPONSIBILITIES

All Employees shall follow the requirements of the Respiratory Protection Program.

16.2.1 Management

- implement the requirements of this program;
- provide a selection of respirators as required;
- enforce all provisions of this program; and
- appoint a Specific Designated individual to conduct the respiratory protection program.

16.2.2 Safety Officer

- review sanitation/storage procedures;
- ensure respirators are properly stored, inspected and maintained;
- monitor compliance for this program;
- provide training for affected Employees;
- review compliance and ensure monthly inspection of all respirators; and
- provide respirator fit testing.

16.3 HEALTH & SAFETY OFFICER

A Health & Safety Officer who is qualified by appropriate training or experience that is commensurate with the complexity of the program to administer or oversee the respiratory protection program and conduct the required evaluations of program effectiveness will be designated.

16.4 PROGRAM EVALUATION

Evaluations of the workplace are necessary to ensure that the written respiratory protection program is being properly implemented; this includes consulting with employees to ensure that they are using the respirators properly. Evaluations shall be conducted as necessary to ensure

that the provisions of the current written program are being effectively implemented and that it continues to be effective. Program evaluation will include discussions with employees required to use respirators to assess the employees' views on program effectiveness and to identify any problems. Any problems that are identified during this assessment shall be corrected. Factors to be assessed include, but are not limited to:

1. Respirator fit (including the ability to use the respirator without interfering with effective workplace performance);
2. Appropriate respirator selection for the hazards to which the employee is exposed;
3. Proper respirator use under the workplace conditions the employee encounters; and
4. Proper respirator maintenance.

16.5 RECORD KEEPING

Qikiqtaaluk Logistics Inc. will retain written information regarding medical evaluations, fit testing, and the respirator program. This information will facilitate employee involvement in the respirator program, assist Qikiqtaaluk Logistics Inc. in auditing the adequacy of the program, and provide a record for compliance determinations.

16.6 TRAINING AND INFORMATION

Effective training for employees who are required to use respirators is essential. The training must be comprehensive, understandable, and recur annually or more often if necessary. Training will be provided prior to requiring the employee to use a respirator in the workplace. The training shall ensure that each employee can demonstrate knowledge of at least the following:

1. Why the respirator is necessary and how improper fit, usage, or maintenance can compromise the protective effect of the respirator;
2. Limitations and capabilities of the respirator;
3. How to use the respirator effectively in emergency situations, including situations in which the respirator malfunctions;
4. How to inspect, put on and remove, use, and check the seals of the respirator;
5. What the procedures are for maintenance and storage of the respirator;
6. How to recognize medical signs and symptoms that may limit or prevent the effective use of respirators; and
7. The general requirements of this program;

Training will be conducted by the site Health & Safety Officer or other more qualified personnel. Training is divided into the following sections:

1. Classroom Instruction:
    a. Overview of the Company Respiratory Protection Program & OSHA Standard;
    b. Respiratory Protection Safety Procedures;
    c. Respirator Selection;
    d. Respirator Operation and Use;
    e. Why the respirator is necessary;
    f. How improper fit, usage, or maintenance can compromise the protective effect;

g. Limitations and capabilities of the respirator.;
h. How to use the respirator effectively in emergency situations, including respirator malfunctions;
i. How to inspect, put on and remove, use, and check the seals of the respirator;
j. What the procedures are for maintenance and storage of the respirator;
k. How to recognize medical signs and symptoms that may limit or prevent the effective use of respirators; and
l. Change out schedule and procedure for air purifying respirators.

2. Fit Testing:
   a. Hands-on respirator Training;
   b. Respirator Inspection;
   c. Respirator cleaning and sanitizing;
   d. Record Keeping;
   e. Respirator Storage;
   f. Respirator Fit Check; and
   g. Emergencies.

16.6.1 Retraining

Retraining shall be conducted annually and when:

1. Changes in the workplace or the type of respirator render previous training obsolete;
2. Inadequacies in the employee's knowledge or use of the respirator indicate that the employee has not retained the requisite understanding or skill; and
3. Other situation arises in which retraining appears necessary to ensure safe respirator use.

16.7 BASIC RESPIRATORY PROTECTION SAFETY PROCEDURES

The following procedures will apply when using respirators:

1. Only authorized and trained Employees may use Respirators. Those Employees may use only the Respirator that they have been trained on and properly fitted to use.
2. Only Physically Qualified Employees may be trained and authorized to use Respirators. A pre-authorization and annual certification by a qualified physician will be required and maintained. Any changes in an Employees health or physical characteristics will be reported to the Health & Safety Officer and will be evaluated by a qualified physician.
3. Only the proper prescribed respirator or Self-Contained Breathing Apparatus (SCBA) may be used for the job or work environment. Air cleansing respirators may be worn in work environments when oxygen levels are between 19.5 percent to 23.5 percent and when the appropriate air cleansing canister, as determined by the Manufacturer and approved by NIOSH or MESA, for the known hazardous substance is used. SCBAs will be worn in oxygen deficient and oxygen rich environments (below 19.5 percent or above 23.5 percent oxygen).
4. Employees working in environments where a sudden release of a hazardous substance is likely will wear an appropriate respirator for that hazardous substance

(example: organic vapour respirator for handling PCB liquid).

5. Only SCBAs will be used in oxygen deficient environments, environments with an unknown hazardous substance or unknown quantity of a known hazardous substance or any environment that is determined "Immediately Dangerous to Life or Health" (IDLH).
6. Employees with respirators loaned on "permanent check out" will be responsible for the sanitation, proper storage and security. Respirators damaged by normal wear will be repaired or replaced by the Company when returned.
7. The last Employee using a respirator and/or SCBA that are available for general use will be responsible for proper storage and sanitation. Monthly, and after each use, all respirators will be inspected with documentation to assure its availability for use.
8. All respirators will be located in a clean, convenient and sanitary location.
9. In the event that Employees must enter a confined space, work in environments with hazardous substances that would be dangerous to life or health should an Respiratory Protective Equipment (RPE) fail (a SCBA is required in this environment), and/or conduct a HAZMAT entry, a "buddy system" detail will be used with a Safety Watchman with constant voice, visual or signal line communication. Employees will follow the established Emergency Response Program and/or Confined Space Entry Program when applicable.
10. Management will establish and maintain surveillance of jobs and work place conditions and degree of Employee exposure or stress to maintain the proper procedures and to provide the necessary RPE.
11. Management will establish and maintain safe operation procedures for the safe use of RPE with strict enforcement and disciplinary action for failure to follow all general and specific safety rules. Standard Operation Procedures for General RPE use will be maintained as an attachment to the Respiratory Protection Program and Standard Operation Procedures for RPE use under emergency response situations will be maintained as an attachment to the Emergency Response Program.

16.8 SELECTION OF RESPIRATORS

Qikiqtaaluk Logistics Inc. has evaluated the respiratory hazard(s) in contaminated soil areas, identified relevant workplace and user factors and has based respirator selection on these factors. Also included are estimates of employee exposures to respiratory hazard(s) and an identification of the contaminant's chemical state and physical form. This selection has included appropriate protective respirators for use in IDLH atmospheres, and has limited the selection and use of air-purifying respirators. All selected respirators are NIOSH-certified.

16.8.1 Filter Classifications

These classifications are marked on the filter or filter package:

- N-Series: Not Oil Resistant
  - Approved for non-oil particulate contaminants
  - Examples: dust, fumes, mists not containing oil
- R-Series: Oil Resistant
  - Approved for all particulate contaminants, including those containing oil

  - Examples: dusts, mists, fumes
  - Time restriction of 8 hours when oils are present
- P-Series: Oil Proof
  - Approved for all particulate contaminants including those containing oil
  - Examples: dust, fumes, mists
  - See Manufacturer's time use restrictions on packaging

16.8.2 Respirators for IDLH atmospheres

The following respirators will be used in IDLH atmospheres:

- A full face piece pressure demand SCBA certified by NIOSH for a minimum service life of thirty minutes, or
- A combination full face piece pressure demand supplied-air respirator (SAR) with auxiliary self-contained air supply.
- Respirators provided only for escape from IDLH atmospheres shall be NIOSH-certified for escape from the atmosphere in which they will be used.

16.8.3 Respirators for atmospheres that are not IDLH

The respirators selected shall be adequate to protect the health of the employee and ensure compliance with all other OSHA statutory and regulatory requirements, under routine and reasonably foreseeable emergency situations. The respirator selected shall be appropriate for the chemical state and physical form of the contaminant.

16.8.4 Identification of Filters & Cartridges

All filters and cartridges shall be labelled and colour coded with the NIOSH approval label. Only filters and cartridges on which the label is not removed and remains legible may be used. A change out schedule for filters and canisters has been developed to ensure these elements of the respirators remain effective.

16.9 RESPIRATOR FILTER & CANISTER REPLACEMENT

An important part of the Respiratory Protection Program includes identifying the useful life of canisters and filters used on air-purifying respirators. Each filter and canister shall be equipped with an end-of-service-life indicator (ESLI) certified by NIOSH for the contaminant; or if there is no ESLI appropriate for conditions a change schedule for canisters and cartridges that is based on objective information or data that will ensure that canisters and cartridges are changed before the end of their service life.

16.10 Filter & Cartridge Change Schedule

A stock of spare filters and cartridges shall be maintained to allow immediate change when required or desired by the employee. Cartridges shall be changed based on the most limiting factor below:

- Prior to expiration date;
- Manufactures recommendations for the specific use and environment;
- After each use;
- When requested by employee;
- When contaminate odour is detected; or

- When restriction to air flow has occurred as evidenced by increase effort by user to breathe normally.

Cartridges shall remain in their original sealed packages until needed for immediate use

Filters shall be changed on the most limiting factor below:

- Prior to expiration date;
- Manufactures recommendations for the specific use and environment;
- When requested by employee;
- When contaminate odour is detected;
- When restriction to air flow has occurred as evidenced by increase effort by user to breathe normally; or
- When discolouring of the filter media is evident.

Filters shall remain in their original sealed package until needed for immediate use.

16.11 RESPIRATORY PROTECTION SCHEDULE BY JOB AND WORKING CONDITION

The Health & Safety Officer maintains a Respiratory Protection Schedule by Job and Working Condition. This schedule is provided to each authorized and trained Employee. The Schedule provides the following information:

1. Job/Working Conditions;
2. Work Location;
3. Hazards Present;
4. Type of Respirator or SCBA Required;
5. Type of Filter/Canister Required;
6. Location of Respirator or SCBA; and
7. Filter/Cartridge change out schedule.

The schedule will be reviewed and updated at least annually and whenever any changes are made in the work environments, machinery, equipment, or processes or if different respirator models are introduced, or existing models are removed. Permanent respirator schedule assignments are: each person who engages in welding will have their own dust-mist-fume filter Air Purifying Respirator (APR). This respirator shall be worn during all welding operations.

16.12 PHYSICAL AND MEDICAL QUALIFICATIONS

Records of medical evaluations shall be retained and made available. Using a respirator may place a physiological burden on employees that varies with the type of respirator worn, the job and workplace conditions in which the respirator is used, and the medical status of the employee.

16.12.1 Medical Determination

In determining the employee's ability to use a respirator, Qikiqtaaluk Logistics Inc. may obtain a

written recommendation regarding the employee's ability to use the respirator from a Physician. The recommendation shall provide only the following information:

- Any limitations on respirator use related to the medical condition of the employee, or relating to the workplace conditions in which the respirator will be used, including whether or not the employee is medically able to use the respirator;
- The need, if any, for follow-up medical evaluations; and
- A statement that the Physician has provided the employee with a copy of the Physician's written recommendation.

If the respirator is a negative pressure respirator and the Physician finds a medical condition that may place the employee's health at increased risk if the respirator is used, Qikiqtaaluk Logistics Inc. shall provide a APR if the Physician's medical evaluation finds that the employee can use such a respirator; if a subsequent medical evaluation finds that the employee is medically able to use a negative pressure respirator, then the Corporation is no longer required to provide a APR

16.12.2 Additional Medical Evaluations

Qikiqtaaluk Logistics Inc. may provide additional medical evaluations that comply with the requirements of this section if:

- An employee reports medical signs or symptoms that are related to ability to use a respirator;
- A Physician, supervisor, or the Safety Officer informs the Corporation that an employee needs to be re-evaluated;
- Information from the respiratory protection program, including observations made during fit testing and program evaluation, indicates a need for employee re-evaluation; and
- A change occurs in workplace conditions (e.g., physical work effort, protective clothing, and temperature) that may result in a substantial increase in the physiological burden placed on an employee.

16.13 RESPIRATOR FIT TESTING

Before an employee is required to use any respirator with a negative or positive pressure tight-fitting face piece, the employee must be fit tested with the same make, model, style, and size of respirator that will be used. The Health & Safety Officer shall ensure that an employee using a tight-fitting face piece respirator is fit tested prior to initial use of the respirator, whenever a different respirator face piece (size, style, model or make) is used, and at least annually thereafter. The Health & Safety Officer shall establish a record of the qualitative and quantitative fit tests administered to employees including:

1. The name or identification of the employee tested.
2. Type of fit test performed.
3. Specific make, model, style, and size of respirator tested.
4. Date of test.
5. The pass/fail results for “Qualitative Fitness Tests” (QLFTs) or the fit factor and strip chart recording or other recording of the test results for “Quantitative Fitness Tests”

(QNFTs).

Additional fit tests will be conducted whenever the employee reports, or the supervisor, or Safety Officer makes visual observations of, changes in the employee's physical condition that could affect respirator fit. Such conditions include, but are not limited to, facial scarring, dental changes, cosmetic surgery, or an obvious change in body weight. If after passing a QLFT or QNFT, the employee notifies the Health & Safety Officer that the fit of the respirator is unacceptable; the employee shall be given a reasonable opportunity to select a different respirator face piece and to be retested.

16.13.1 Types of Fit Tests

The fit test shall be administered using an accepted protocols and procedures:

- QLFT may only be used to fit test negative pressure air-purifying respirators that must achieve a fit factor of 100 or less.
- If the fit factor, as determined through an accepted QNFT protocol, is equal to or greater than 100 for tight-fitting half face pieces, or equal to or greater than 500 for tight-fitting full face pieces, the QNFT has been passed with that respirator.
- Fit testing of tight-fitting atmosphere-supplying respirators and tight-fitting powered air-purifying respirators shall be accomplished by performing quantitative or qualitative fit testing in the negative pressure mode, regardless of the mode of operation (negative or positive pressure) that is used for respiratory protection.
    - Qualitative fit testing of these respirators shall be accomplished by temporarily converting the respirator user's actual face piece into a negative pressure respirator with appropriate filters, or by using an identical negative pressure air-purifying respirator face piece with the same sealing surfaces as a surrogate for the atmosphere-supplying or powered air-purifying respirator face piece.
    - Quantitative fit testing of these respirators shall be accomplished by modifying the face piece to allow sampling inside the face piece in the breathing zone of the user, midway between the nose and mouth. This requirement shall be accomplished by installing a permanent sampling probe onto a surrogate face piece, or by using a sampling adapter designed to temporarily provide a means of sampling air from inside the face piece.
    - Any modifications to the respirator face piece for fit testing shall be completely removed, and the face piece restored to NIOSH approved configuration, before that face piece can be used in the workplace.

Fit test records shall be retained for respirator users until the next fit test is administered. Written materials required to be retained shall be made available upon request to affected employees.

16.14 RESPIRATOR OPERATION AND USE

Respirators will only be used following the respiratory protection safety procedures established in this program. The Operations and Use Manuals for each type of respirator will be maintained by the Health & Safety Officer and be available to all qualified users. Surveillance by the direct

supervisor shall be maintained of the work area conditions and the degree of employee exposure or stress. When there is a change in work area conditions or degree of employee exposure or stress that may affect respirator effectiveness, the Health & Safety Officer may re-evaluate the continued effectiveness of the respirator. For continued protection of respirator users, the following general use rules apply:

- Users shall not remove respirators while in a hazardous environment;
- Respirators are to be stored in sealed containers out of harmful atmospheres;
- Store respirators away from heat and moisture;
- Store respirators such that the sealing area does not become distorted or warped; and
- Store respirator such that the face piece is protected.

16.14.1 Face piece seal protection

Qikiqtaaluk Logistics Inc. does not permit respirators with tight-fitting face pieces to be worn by employees who have:

- Facial hair that comes between the sealing surface of the face piece and the face or that interferes with valve function; or
- Any condition that interferes with the face-to-face piece seal or valve function. If an employee wears corrective glasses or goggles or other personal protective equipment, the Safety Officer shall ensure that such equipment is worn in a manner that does not interfere with the seal of the face piece to the face of the user.

16.14.2 Continuing Effectiveness Of Respirators

The Safety Officer shall ensure that employees leave the respirator use area:

- To wash their faces and respirator face pieces as necessary to prevent eye or skin irritation associated with respirator use;
- If they detect vapour or gas breakthrough, changes in breathing resistance, or leakage of the face piece; and
- To replace the respirator or the filter, cartridge, or canister elements.

If the employee detects vapour or gas breakthrough, changes in breathing resistance, or leakage of the face piece, the Safety Officer will replace or repair the respirator before allowing the employee to return to the work area.

16.14.3 Procedures For IDLH Atmospheres

For all IDLH atmospheres, the Company shall ensure that:

- One employee or, when needed, more than one employee is located outside the IDLH atmosphere;
- Visual, voice, or signal line communication is maintained between the employee(s) in the IDLH atmosphere and the employee(s) located outside the IDLH atmosphere;
- The employee(s) located outside the IDLH atmosphere are trained and equipped to provide effective emergency rescue;
- The Site Emergency Medical Technician and Health & Safety Officer are notified before the employee(s) located outside the IDLH atmosphere enter the IDLH atmosphere to provide emergency rescue;
- The Emergency Medical Technician and/or Health & Safety Officer, once notified,

provides necessary assistance appropriate to the situation; and
- Employee(s) located outside the IDLH atmospheres will be equipped with:
    - Pressure demand or other positive pressure SCBAs, or a pressure demand or other positive pressure supplied-air respirator with auxiliary SCBA; and either:
        - Appropriate retrieval equipment for removing the employee(s) who enter(s) these hazardous atmospheres where retrieval equipment would contribute to the rescue of the employee(s) and would not increase the overall risk resulting from entry; or
        - Equivalent means for rescue where retrieval equipment is not required.

16.14.4 Cleaning And Disinfecting

Qikiqtaaluk Logistics Inc. shall provide each respirator user with a respirator that is clean, sanitary, and in good working order. The Safety Officer shall ensure that respirators are cleaned and disinfected using the Standard Operating Procedure SOP: Cleaning and Disinfecting.

The respirators shall be cleaned and disinfected when:
- Respirators issued for the exclusive use of an employee shall be cleaned and disinfected as often as necessary to be maintained in a sanitary condition;
- Respirators issued to more than one employee shall be cleaned and disinfected before being worn by different individuals;
- Respirators maintained for emergency use shall be cleaned and disinfected after each use; and
- Respirators used in fit testing and training shall be cleaned and disinfected after each use.

Cleaning and Storage of respirators assigned to specific employees is the responsibility of that Employee unless notified otherwise.

16.15 RESPIRATOR INSPECTION

All respirators/SCBAs, both available for "General Use" and those on "Permanent Check-out", will be inspected after each use and at least monthly. Should any defects be noted, the respirator/SCBA will be taken to the Health & Safety Officer. Damaged Respirators will be either repaired or replaced. The inspection of respirators loaned on "Permanent Check-out" is the responsibility of that trained Employee. Respirators shall be inspected as follows:
- All respirators used in routine situations shall be inspected before each use and during cleaning;
- All respirators maintained for use in emergency situations shall be inspected at least monthly and in accordance with the manufacturer's recommendations, and shall be checked for proper function before and after each use;
- Emergency escape-only respirators shall be inspected before being carried into the workplace for use; and
- Respirator inspections include the following:
    - A check of respirator function, tightness of connections, and the condition of the

various parts including, but not limited to, the face piece, head straps, valves, connecting tube, and cartridges, canisters or filters;
    - Check of elastomeric parts for pliability and signs of deterioration; and
    - Self-contained breathing apparatus shall be inspected monthly. Air and oxygen cylinders shall be maintained in a fully charged state and shall be recharged when the pressure falls to 90% of the manufacturer's recommended pressure level. Qikiqtaaluk Logistics Inc. shall determine that the regulator and warning devices function properly.
- For Emergency Use Respirators the additional requirements apply:
    - Certify the respirator by documenting the date the inspection was performed, the name (or signature) of the person who made the inspection, the findings, required remedial action, and a serial number or other means of identifying the inspected respirator; and
    - Provide this information on a tag or label that is attached to the storage compartment for the respirator, is kept with the respirator, or is included in inspection reports stored as paper or electronic files. This information shall be maintained until replaced following a subsequent certification.

16.16 RESPIRATOR STORAGE

Respirators are to be stored as follows:

- All respirators shall be stored to protect them from damage, contamination, dust, sunlight, extreme temperatures, excessive moisture, and damaging chemicals, and they shall be packed or stored to prevent deformation of the face piece and exhalation valve.
- Emergency Respirators shall be:
    - Kept accessible to the work area;
    - Stored in compartments or in covers that are clearly marked as containing emergency respirators; and
    - Stored in accordance with any applicable manufacturer instructions.

16.17 REPAIR OF RESPIRATORS

Respirators that fail an inspection or are otherwise found to be defective will be removed from service to be discarded, repaired or adjusted in accordance with the following procedures:

- Repairs or adjustments to respirators are to be made only by persons appropriately trained to perform such operations and shall use only the respirator manufacturer's NIOSH-approved parts designed for the respirator;
- Repairs shall be made according to the manufacturer's recommendations and specifications for the type and extent of repairs to be performed; and
- Reducing and admission valves, regulators, and alarms shall be adjusted or repaired only by the manufacturer or a technician trained by the manufacturer.

16.18 BREATHING AIR QUALITY AND USE

Qikiqtaaluk Logistics Inc. through its Health & Safety Officer shall ensure that compressed air, compressed oxygen, liquid air, and liquid oxygen used for respiration accords with the following specifications:

- Compressed and liquid oxygen shall meet the United States Pharmacopoeia requirements for medical or breathing oxygen; and
- Compressed breathing air shall meet at least the requirements for Grade D breathing air described in ANSI/Compressed Gas Association Commodity Specification for Air, G-7.1-1989, to include:
    - Oxygen content (v/v) of 19.5-23.5%;
    - Hydrocarbon (condensed) content of 5 milligrams per cubic meter of air or less;
    - Carbon monoxide (CO) content of 10 ppm or less;
    - Carbon dioxide content of 1,000 ppm or less; and
    - Lack of noticeable odour.
- Compressed oxygen will not be used in atmosphere-supplying respirators that have previously used compressed air;
- Oxygen concentrations greater than 23.5% are used only in equipment designed for oxygen service or distribution;
- Cylinders used to supply breathing air to respirators must meet the following requirements:
    - Cylinders of purchased breathing air have a certificate of analysis from the supplier that the breathing air meets the requirements for Grade D breathing air
    - Moisture content in breathing air cylinders does not exceed a dew point of -50 ºF (-45.6 ºC) at 1 atmosphere pressure
    - Breathing air couplings are incompatible with outlets for non-respirable worksite air or other gas systems. No asphyxiating substance shall be introduced into breathing air lines.
    - Breathing gas containers shall be marked in accordance with the NIOSH respirator certification standard, 42 CFR part 84.

17 TOOL SAFETY PROGRAM

17.1 PURPOSE

Use of tools makes many tasks easier. However, the same tools that assist us can, if improperly used or maintained, can create significant hazards in our work areas. Employees who use tools must be properly trained to use, adjust, store and maintain tools properly. This program covers hand, electrical, pneumatic, powder driven, and hydraulic tool safety.

17.2 RESPONSIBILITY

17.2.1 Management

- Provide correct tools for assigned tasks;
- Ensure tools are maintained and stored safely;
- Provide employee training; and
- Provide for equipment repair.

17.2.2 Employees

- Follow proper tool safety guidelines;
- Report tool deficiencies and malfunctions; and
- Properly store tools when work is completed.

17.3 HAZARD CONTROL

This section presents the controls available to reduce the chance of injury.

17.3.1 Engineering Controls

- Properly designed tools; and
- Guards & safety devices.

17.3.2 Administrative Controls

- Tool sharpening program;
- Use of PPE;
- Control of tool issue;
- Employee Training; and
- Controlled access to equipment and tool areas.

17.4 GENERAL SAFETY PRECAUTIONS

Employees who use hand and power tools and who are exposed to the hazards of falling, flying, abrasive and splashing objects, or exposed to harmful dusts, fumes, mists, vapours, or gases must be provided with the particular personal equipment necessary to protect them from the hazard. All hazards involved in the use of tools can be prevented by following five basic safety

rules:

1. Keep all tools in good condition with regular maintenance;
2. Use the right tool for the job;
3. Examine each tool for damage before use;
4. Operate according to the manufacturer's instructions; and
5. Provide and use the proper protective equipment.

17.5 HAND TOOL PRECAUTIONS

Hand tools are non-powered. They include anything from axes to wrenches. The greatest hazards posed by hand tools result from misuse and improper maintenance. Some examples are:

- Using a screwdriver as a chisel may cause the tip of the screwdriver to break and fly, hitting the user or other employees;
- If a wooden handle on a tool such as a hammer or an axe is loose, splintered, or cracked, the head of the tool may fly off and strike the user or another worker;
- A wrench must not be used if its jaws are sprung, because it might slip; and
- Impact tools such as chisels, wedges, or drift pins are unsafe if they have mushroomed heads. The heads might shatter on impact, sending sharp fragments flying.

Appropriate personal protective equipment, e.g., safety goggles, gloves, etc., should be worn due to hazards that may be encountered while using portable power tools and hand tools. Floors shall be kept as clean and dry as possible to prevent accidental slips with or around dangerous hand tools. Around flammable substances, sparks produced by iron and steel hand tools can be a dangerous ignition source. Where this hazard exists, spark-resistant tools made from brass, plastic, aluminum, or wood will provide for safety.

17.6 POWER TOOL PRECAUTIONS

Power tools can be hazardous when improperly used. There are several types of power tools, based on the power source they use: electric, pneumatic, liquid fuel, hydraulic, and powder-actuated. The following general precautions should be observed by power tool users:

- Never carry a tool by the cord or hose;
- Never yank the cord or the hose to disconnect it from the receptacle;
- Keep cords and hoses away from heat, oil, and sharp edges;
- Disconnect tools when not in use, before servicing, and when changing accessories such as blades, bits and cutters;
- All observers should be kept at a safe distance away from the work area;
- Secure work with clamps or a vice, freeing both hands to operate the tool;
- Avoid accidental starting. The worker should not hold a finger on the switch button while carrying a plugged-in tool;
- Tools should be maintained with care. They should be kept sharp and clean for the best performance. Follow instructions in the user's manual for lubricating and changing accessories;
- Be sure to keep good footing and maintain good balance;

- The proper apparel should be worn. Loose clothing, ties, or jewellery can become caught in moving parts; and
- All portable electric tools that are damaged shall be removed from use and tagged "Do Not Use".

Do	Don't
☑ Check the nameplate to ensure that the power source is correct for the tool.	☒ Work where floor is wet or damp without extreme precautions.
☑ Test tools before starting work.	☒ Carry tools up a ladder.
☑ Make sure the tool is in safe condition –cleaned, repaired, oiled.	☒ Operate grinding wheels at speeds beyond their rating.
☑ Make sure the ground pin is in place and that there are no cuts in the cord.	☒ Use the cord to pull out plugs or lift tools.
☑ Test the ground connection on 3 wire system or check that tool is double insulated.	☒ Use tools where flammable gases or vapours may be present.
☑ Make sure switch is operating freely. Keep finger off switch when carrying a tool.	☒ Make improvised repairs.
☑ Ensure that guards (e.g., on saws, etc.) are in place and that they are functioning properly.	☒ Work on makeshift platforms.
☑ If brushes are sparking excessively, obtain a replacement tool.	☒ Use tools with defective guards.
☑ Wear suitable eye and foot protection.	☒ Hang cord over sharp edges, through water, where they can be run over by vehicles or tripped over.
☑ Avoid accidental starting.	☒ Tape cords to repair them.
☑ Remove adjusting keys/wrenches before turning tool on or plugging it in.	☒ Wear loose clothing or gloves.
☑ Pull out power plug before adjusting or making changes, or when the tool is not in use.	
☑ Always hold the tool firmly.	
☑ Hoist tools up a ladder instead of carrying them.	
☑ Store tool where it won't be damaged.	

17.7 GUARDS

Hazardous moving parts of a power tool need to be safeguarded. For example, belts, gears, shafts, pulleys, sprockets, spindles, drums, fly wheels, chains, or other reciprocating, rotating, or moving parts of equipment must be guarded. Guards, as necessary, should be provided to protect the operator and others from the following:

- point of operation;
- in-running nip points;
- rotating parts; and
- flying chips and sparks.

Safety guards must never be removed when a tool is being used. For example, portable circular saws must be equipped with guards. An upper guard must cover the entire blade of the saw. A retractable lower guard must cover the teeth of the saw, except when it makes contact with the work material. The lower guard must automatically return to the covering position when the tool is withdrawn from the work.

17.8 SAFETY SWITCHES

The following hand-held powered tools are to be equipped with a momentary contact "on-off" control switch: drills, tappers, fastener drivers, horizontal, vertical and angle grinders with wheels larger than 2 inches in diameter, disc and belt sanders, reciprocating saws, sabre saws, and other similar tools. These tools also may be equipped with a lock-on control provided that turnoff can be accomplished by a single motion of the same finger or fingers that turn it on. The following hand-held powered tools may be equipped with only a positive "on-off" control switch: platen sanders, disc sanders with discs 2 inches or less in diameter; grinders with wheels 2 inches or less in diameter; routers, planers, laminate trimmers, nibblers, shears, scroll saws and jigsaws with blade shanks ¼-inch wide or less.

Other hand-held powered tools such as circular saws having a blade diameter greater than 2 inches, chain saws, and percussion tools without positive accessory holding means must be equipped with a constant pressure switch that will shut off the power when the pressure is released.

17.9 ELECTRICAL SAFETY

Among the chief hazards of electric-powered tools are burns and slight shocks which can lead to injuries or even heart failure. Under certain conditions, even a small amount of current can result in severe injury and eventual death. A shock also can cause the user to fall off a ladder or other elevated work surface. To protect the user from shock, tools must either have a three-wire cord with ground and be grounded, be double insulated, or be powered by a low-voltage isolation transformer. Three-wire cords contain two current-carrying conductors and a grounding conductor. One end of the grounding conductor connects to the tool's metal housing. The other end is grounded through a prong on the plug. Anytime an adapter is used to accommodate a two-hole receptacle, the adapter wire must be attached to a known ground. The third prong

should never be removed from the plug. Double insulation is more convenient. The user and the tools are protected in two ways: by normal insulation on the wires inside, and by a housing that cannot conduct electricity to the operator in the event of a malfunction.

17.9.1 Electric Power Tool General Safety Practices:

- Electric tools should be operated within their design limitations;
- Gloves and safety footwear are recommended during use of electric tools;
- When not in use, tools should be stored in a dry place;
- Electric tools should not be used in damp or wet locations; and
- Work areas should be well lighted.

17.10 POWERED ABRASIVE WHEEL TOOLS

Powered abrasive grinding, cutting, polishing, and wire buffing wheels create special safety problems because they may throw off flying fragments. Before an abrasive wheel is mounted, it should be inspected closely and sound- or ring-tested to be sure that it is free from cracks or defects. To test, wheels should be tapped gently with a light non-metallic instrument. If they sound cracked or dead, they could fly apart in operation and so must not be used. A sound and undamaged wheel will give a clear metallic tone or "ring." To prevent the wheel from cracking, the user should be sure it fits freely on the spindle. The spindle nut must be tightened enough to hold the wheel in place, without distorting the flange. Follow the manufacturer's recommendations. Care must be taken to assure that the spindle wheel will not exceed the abrasive wheel specifications. Due to the possibility of a wheel disintegrating (exploding) during start-up, the employee should never stand directly in front of the wheel as it accelerates to full operating speed.

Portable grinding tools need to be equipped with safety guards to protect workers not only from the moving wheel surface, but also from flying fragments in case of breakage.

17.10.1 Powered Grinder Safety Precautions

- Always use eye protection;
- Turn off the power when not in use; and
- Never clamp a hand-held grinder in a vice.

17.11 PNEUMATIC TOOLS

Pneumatic tools are powered by compressed air and include chippers, drills, hammers, and sanders. There are several dangers encountered in the use of pneumatic tools. The main one is the danger of getting hit by one of the tool's attachments or by some kind of fastener the worker is using with the tool. Eye protection is required and face protection is recommended for employees working with pneumatic tools. Working with noisy tools such as jackhammers requires proper, effective use of hearing protection.

When using pneumatic tools, employees are to check to see that they are fastened securely to the hose to prevent them from becoming disconnected. A short wire or positive locking device

attaching the air hose to the tool will serve as an added safeguard. A safety clip or retainer must be installed to prevent attachments, such as chisels on a chipping hammer, from being unintentionally shot from the barrel. Screens must be set up to protect nearby workers from being struck by flying fragments around chippers, riveting guns, staplers, or air drills. Compressed air guns should never be pointed toward anyone. Users should never "dead-end" it against themselves or anyone else.

17.12 POWDER-ACTUATED TOOLS

Powder-actuated tools operate like a loaded gun and should be treated with the same respect and precautions. In fact, they are so dangerous that they must be operated only by specially trained employees.

17.12.1 Powder-Actuated Tool Safety

The following rules must be followed when using powder-actuated tools:

- These tools should not be used in an explosive or flammable atmosphere;
- Before using the tool, the worker should inspect it to determine that it is clean, that all moving parts operate freely, and that the barrel is free from obstructions;
- The tool should never be pointed at anybody;
- The tool should not be loaded unless it is to be used immediately. A loaded tool should not be left unattended, especially where it would be available to unauthorized persons; and
- Hands should be kept clear of the barrel end. To prevent the tool from firing accidentally, two separate motions are required for firing: one to bring the tool into position, and another to pull the trigger. The tools must not be able to operate until they are pressed against the work surface with a force of at least 5 pounds greater than the total weight of the tool. If a powder-actuated tool misfires, the employee should wait at least 30 seconds, and then try firing it again. If it still will not fire, the user should wait another 30 seconds so that the faulty cartridge is less likely to explode, than carefully remove the load. The bad cartridge should be put in water. Suitable eye and face protection are essential when using a powder-actuated tool. The muzzle end of the tool must have a protective shield or guard centered perpendicularly on the barrel to confine any flying fragments or particles that might otherwise create a hazard when the tool is fired. The tool must be designed so that it will not fire unless it has this kind of safety device. All powder-actuated tools must be designed for varying powder charges so that the user can select a powder level necessary to do the work without excessive force. If the tool develops a defect during use it should be tagged and taken out of service immediately until it is properly repaired.

17.12.2 Powder-Actuated Tool Fasteners

When using powder-actuated tools to apply fasteners, there are some precautions to consider. Fasteners must not be fired into material that would let them pass through to the other side. The fastener must not be driven into materials like brick or concrete any closer than 3 inches to an edge or corner. In steel, the fastener must not come any closer than one-half inch from a corner or edge. Fasteners must not be driven into very hard or brittle materials which might chip or

splatter, or make the fastener ricochet. An alignment guide must be used when shooting a fastener into an existing hole. A fastener must not be driven into a spalled area caused by an unsatisfactory fastening.

17.13 HYDRAULIC POWER TOOLS

The fluid used in hydraulic power tools must be an approved fire-resistant fluid and must retain its operating characteristics at the most extreme temperatures to which it will be exposed. The manufacturer's recommended safe operating pressure for hoses, valves, pipes, filters, and other fittings must not be exceeded.

17.13.1 Jacks

All jacks - lever and ratchet jacks, screw jacks, and hydraulic jacks - must have a device that stops them from jacking up too high. Also, the manufacturer's load limit must be permanently marked in a prominent place on the jack and should not be exceeded. A jack should never be used to support a lifted load. Once the load has been lifted, it must immediately be blocked up. Use wooden blocking under the base if necessary to make the jack level and secure. If the lift surface is metal, place a 1-inch-thick hardwood block or equivalent between it and the metal jack head to reduce the danger of slippage. To set up a jack, make certain of the following:

- the base rests on a firm level surface;
- the jack is correctly centered;
- the jack head bears against a level surface; and
- the lift force is applied evenly.

Proper maintenance of jacks is essential for safety. All jacks must be inspected before each use and lubricated regularly. If a jack is subjected to an abnormal load or shock, it should be thoroughly examined to make sure it has not been damaged. Hydraulic jacks exposed to freezing temperatures must be filled with an adequate level of antifreeze liquid.

17.14 MAINTENANCE

Review manufacturer’s instructions before establishing maintenance procedures. A planned program of maintenance will include the following:

- Regular inspection, cleaning and oiling of tools
- Check of grounding protection or double installation
- Inspection of extension cords and plugs
- Check for damage to frame, motor or parts
- Motor inspection and parts replacement
- Verification of guards. Movable guards that operate freely (e.g., on saws, etc.) will be part of the check
- Checking with operators if any unusual situation is suspected
- Inspection of switches
- Test for short circuits
- After inspecting and reassembling the tool, test it for “ground” before releasing it
- Adjustments as recommended by manufacturers

- Re-sharpen blades, bits, etc., in accordance with manufacturer's instructions
- Check chucks, collets, etc.
- A final visual check
- Tag and record

17.15 INSPECTION REPORT

The following is the inspection report to be completed prior to using any power tools:

Inspection Report

The checklist below is to be used as a pre-shift check.

Tool No: Type:	Dates of Inspection										
Location:											
☑ Acceptable ☒ Unacceptable											
Grounding/double insulation OK											
Plug and cord free from defects											
Switch operates freely											
Guard in good repair & operates correctly											
No wobble in shaft											
Adjusting key available											
Brushes not sparking excessively											
No burrs on casing											
Attachments suitable (re speed, size)											
Flexible shaft in good condition											
Proper storage available											
Tool shaft turns freely											
No grease, metallic dust on tool											
Ventilating slots are clean											
Certification:											
INITIALS OF PERSON MAKING INSPECTION											

Notes/Comments:

18 SPILL CONTINGENCY PLAN

18.1 GENERAL

The spill emergency plan was developed to assist Qikiqtaaluk Logistics Inc. in implementing measures to protect the environment and minimize impacts from spill events. It provides precise instructions that all personnel shall be familiarized with during emergency situations. This plan outlines procedures for responding to spills in a way to minimize potential health and safety hazards, environmental damage, and clean up costs.

The spill emergency plan insures that Qikiqtaaluk Logistics Inc (QL) will respect all applicable laws, regulations and requirements of federal and/or territorial authorities. QL holds all required permits, approvals and authorizations required for the project. QL will comply with those permits and approvals. QL will work in close collaboration with all regulatory authorities to ensure full compliance according to applicable federal or territorial laws, regulations and/or guidelines. The following documents shall be used as guidelines for spill containment:

- The Canadian Environmental Protection Act controls hazardous substances from their production and/or import, their consumption, storage and/or disposal. Furthermore, this act also includes procedures to handle specified levels of PCB contaminated materials, and requirements for PCB storage facilities.

- The Fisheries Act protects fish and their habitat from pollution, disturbance, or fish movement disturbances. Fisheries and Oceans Canada is responsible to review permit applications or restoration plans submitted by other agencies.

- The Transportation of Dangerous Goods Act and Regulations describe safety measures in the transportation of dangerous goods. The act applies to all handling of dangerous goods by any means of transport whether or not the goods originate from or are destined for any place(s) in Canada.

- The Territorial Land Use Regulations define regulatory measures to maintain appropriate environmental practices for any land use activities on territorial lands. These regulations require that land use permits be issued for such operations as the clean up work to be conducted at Clyde River and Cape Christian (use of heavy machinery, camp operation, use of explosives, construction of access roads, etc.).

- The Guidelines for Preparation of Hazardous Material Spill Contingency Plans describe parameters that should be considered in the development of hazardous material spill emergency plans. It also defines the information that should be incorporated into a comprehensive contingency plan.

- The Code of Practice for Used Oil Management defines appropriate environmental options for handling, storage, collection, recycling, transportation, reuse and/or disposal

of used oils in Canada. It gives standard procedures to handle used oil generators. It also helps regulatory authorities to formulate provincial and/or regional strategies for used oil management.

- The NWT Environmental Protection Act governs the protection of the environment from contaminants. The act defines offenses and penalties as well as the powers of environmental inspectors.

- The Code of Practice for Used Oil Management defines appropriate environmental options for handling, storage, collection, recycling, transportation, reuse and/or disposal of used oils in Canada. It gives standard procedures to handle used oil generators. It also helps regulatory authorities to formulate provincial and/or regional strategies for used oil management.

- The NWT Environmental Protection Act governs the protection of the environment from contaminants. The act defines offenses and penalties as well as the powers of environmental inspectors.

- The NWT Spill Contingency Planning and Reporting Regulations describe requirements for spill reporting and emergency planning.

- The Field Guide for Oil Spill Response in Arctic Waters developed by the Emergency Prevention Preparedness and Response, a program of the Arctic Council, describes response methods and strategies for operations and provides technical support documentation.

18.2 HAZARDOUS LIQUIDS FOUND ON SITE AND STORAGE CAPACITY

A variety of fuels and oils will be used during the Cape Christian project. The greatest volumes involved consist of Jet-B fuel. Other substances such as lubricating oils, hydraulic fluids, antifreeze, fuel additives, gasoline, and engine coolants, are used but their volumes are much less than the volume of Jet-B fuel on site. All these products are to be considered as potential environmental and safety hazards. The other large volume of liquid that could potentially have an impact on the environment is sewage waste from the camp which is stored in the on site sewage lagoon.

The following table summarizes the quantities stored on site.

Table 5: Quantities of Hazardous Liquids Stored on Site

Liquids to be used	Maximum Storage Capacity (Litres)
Sewage Waste	1,200,000
Jet-B fuel	20,500
Gen set A (exterior tank) - Jet-B fuel	4683
Gen set A (interior tank) - Jet-B fuel	1470
Gen set B (interior tank) - Jet-B fuel	1470
Tank for the Incinerator - Jet-B fuel	672
Grey tank (beside garage) - Jet-B fuel	870
Fuel Truck - Jet-B fuel	11.000
Engine oil	40
Transmission oil	10
Differential oil	5
Hydraulic oil	10

The MSDS's of all these products (except sewage waste) are found in the MSDS binder located at the site outside the door of the main office. Diesel and gasoline products were delivered to the site by marine shipment in 205-Litre drums strapped on pallets. The contents of these drums were used and the empty drums are checked to make sure they are sound. They are then used to transport fuel from the Hamlet of Clyde River (where they are refilled with gasoline and Jet-B fuel) to the Site. There are approximately 60 drums that are used for this purpose.

Once they no longer serve a purpose, all these drums will be either sent back south by marine shipping during site demobilization to the supplier to recover the deposit, or be cleaned, crushed and land filled at the Cape Christian site, if damaged.

The majority of the Jet B fuel on site is transferred from the 205 litre drums into a fuel truck on site. The truck's reservoir has a capacity of 11,000 Litres. This reservoir is used to fill up the main camp generators, the intermediate tanks installed on the back of the pickup trucks and any equipment and pickups that can easily access the truck.

The following intermediate fuel tanks will also be used on site to supply the different heavy equipment on the field:

- Two 1,140 litres (250 gal) installed in the back of Ford F250 pick up trucks.
    - These fuel tanks are filled from the fuel truck. A 12-Volt fuel pump is used to transfer the fuel from the intermediate tanks into the equipment reservoirs.

For all petroleum products stored in drums, the following storage facility is to be used:

- The drum storage will be installed at Cape Christian, at a minimum distance of 30 m from any bodies of water and, whenever practical, in a natural depression, preferably in an area of low permeability. Drum storage will also be located at distance from traffic to comply with all conditions of permits. Small berms will be constructed around the storage

area (to contain spills from accidents), spill kits (see below) will be installed in the vicinity and restricted area/no smoking area placards will be posted. The area will be graded to have a smooth gravel pad prior to placement of pallets in the storage area.

All fuel storage containers will be situated in a manner that allows easy access and removal of containers in the event of leaks or spills. Large fuel caches in excess of 20 drums will be inspected daily.

12 Volt fuel pumps (and hand pumps) are to be used for fuel transfer operations with drums of gasoline, oils and lubricants.

For all other chemicals stored at Cape Christian, the following rule will prevail:

- Chemicals will be stored in a safe and chemically-compatible manner, at a minimum of 90 feet from all bodies of water.

Sewage waste from the camp is evacuated to a sewage lagoon by gravity using plastic pipes. The sewage lagoon is an unlined bermed area constructed using soils from the surrounding area. There are some losses of the liquid waste into the soil due to percolation, and other losses due to evaporation. There are also additions to the liquid level from precipitation (rain and snow). For sanitary reasons the lagoon is located 100 metres from the camp. To minimise the impact of a leak from the landfill the sewage lagoon is also located 100 m from any water body or water course. The sewage lagoon and associated piping will be inspected daily for any signs of failure.

18.3 DUTIES AND RESPONSIBILITIES

As part of the spill emergency response, the Contractor is responsible of implementing, through its site superintendent or its authorized representative, the following procedures:

18.3.1 POL or Other Chemical Spill

- To communicate immediately the spill event to the GN official (immediately shall mean upon discovery).
- To authorize the use of personnel and applicable equipment to contain the spill using the most reliable method.
- To eliminate all fire hazards and potential ignition sources near the spill area.
- To implement all required safety and security procedures at the site of the spill.
- To eliminate the source of the spill or reduce the rate of discharge, if such procedures can be implemented with respect to health and safety requirements.
- To contain the spill using the most appropriate methods for the situation (dykes, ditches, sorbent materials, containment booms and other barriers).
- To evaluate the possibilities of recovering spilled chemicals.
- To mobilize all available personnel, equipment and tools, as required.
- To obtain assistance from GN (through its official), from the Hamlet and/or from

Environment Canada, if required. To consult and, if required, request assistance from the Canadian Coast Guard and/or and Fisheries and Oceans Canada if the spill affects water.
- To obtain additional assistance by hiring northern residents from local communities and/or specialized spill response firms, if required.
- To comply with all applicable guidelines and regulations.
- To assess on a preliminary basis, environmental impacts on marine, freshwater and terrestrial wildlife and on the general ecosystem and then to communicate with relevant authorities.
- To provide documentation for all events and actions.
- To report the event to the GN Spill Report Line and to prepare and submit a written spill report using the appropriate form (see below for the list of information required for such submittals).

18.3.2 Sewage Spill

- To communicate immediately the spill event to the GN official (immediately shall mean upon discovery).
- To authorize the use of personnel and applicable equipment to contain the spill using the most reliable method.
- To implement all required safety and security procedures at the site of the spill.
- To eliminate the source of the spill or reduce the rate of discharge, if such procedures can be implemented with respect to health and safety requirements.
- To contain the spill using the most appropriate methods for the situation (dykes, ditches, and other barriers).
- To evaluate the possibilities of recovering spilled sewage.
- To mobilize all available personnel, equipment and tools, as required.
- To obtain assistance from GN (through its official), from the Hamlet and/or from Environment Canada, if required. To consult and, if required, request assistance from the Canadian Coast Guard and/or and Fisheries and Oceans Canada if the spill affects water.
- To obtain additional assistance by hiring northern residents from local communities and/or specialized spill response firms, if required.
- To comply with all applicable guidelines and regulations.
- To assess on a preliminary basis, environmental impacts on marine, freshwater and terrestrial wildlife and on the general ecosystem and then to communicate with relevant authorities.
- To provide documentation for all events and actions.
- To report the event to the GN Spill Report Line and to prepare and submit a written spill report using the appropriate form (see below for the list of information required for such submittals).

18.3.3 Other Duties and Responsibilities

As part of the spill emergency response, the Site Superintendent is responsible for the

implementation of the following procedures:

- To ensure that appropriate resources required to respond and clean up the spill are made available;
- To supervise containment, clean up and restoration operations;
- To provide documentation for all events and actions, using the Spill Report Form found at the end of this section; and
- To notify relevant government authorities.

The site superintendent, acting as the incident commander, will have authority over the following department/unit, each having a specific role for the spill response operations:

Table 6: Roles of Key personnel under the site superintendent for spill response

Department/Unit	Responsibility
Fire Chief	Ensure existing conditions do not present a fire/explosion hazard
Health & Safety Officer	Ensure spill response workers are not exposed to health and safety risks
Contractor's Site Technical Advisor	Coordinate spill response methods and procedures
Medical / Rescue Unit	Provide assistance to victims (if required)
Spill Response Team Leader	Implement the containment and clean up activities
Containment Unit	Perform spill response
Clean up Unit	Conduct remediation

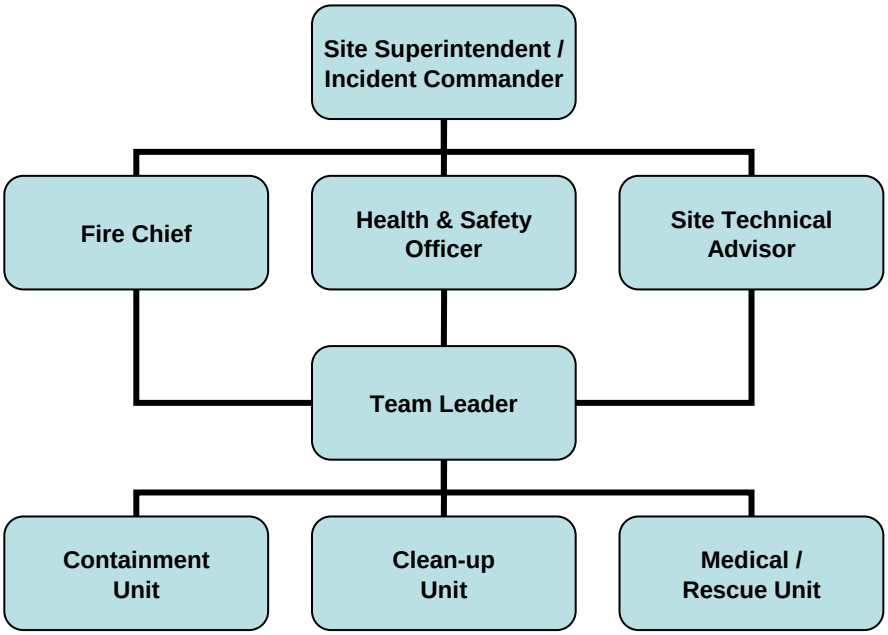
Once a spill event is reported, the site superintendent, fire chief, health & safety officer and site Technical Advisor shall meet to establish a specific strategy for containing and controlling the spill and to initiate the clean up activities. They shall delegate a person - the Spill Response Team Leader - to oversee the implementation of the strategy. Members of the Cape Christian Fire / Rescue Team, under the direction of the Spill Response Team Leader shall then coordinate the activities of the Containment and Clean up Units. Figure-2 shows a graphic representation of the emergency team and chain of command.

Otherwise, the Contractor will ensure that any selected shipment company have prepared the contingency plans (emergency response plans {ERP}) required to face spill events, and that they can comply with all applicable regulations. The shipment company will be responsible to register their ERP, if required, with the Director General of the Transport of Dangerous Goods Directorate if materials identified for transport are exceeding volumes listed on schedule XII of the TDG regulations. The ERP shall contain information on the nature of risks from dangerous goods and contact names and numbers for emergency assistance.

If during transport, a spill of hazardous materials exceeds the volumes listed in Part 9, Table I of the TDG regulations, the shipment company authorities will have to immediately notify the relevant authorities using the contact lists defined in Table II of the same regulations. The

shipment authority will also have to inform his/her employer, the owner of the transport vehicle, and the dangerous goods owner. The shipment authority's employer will then be required to submit a written report to the TDG Director General within 30 days following the spill event.

Figure 2: Emergency Response Team for a Spill Emergency – Cape Christian Project



The Contractor will ensure that the selected shipment company reports the spill events, if those occur, using the appropriate spill response line. Quantities of substances which represent "a spill" are listed in schedule B of the NWT Spill Contingency and Reporting Regulation.

If a spill occurs on water during shipment of material, the shipment company will be responsible to deploy containment booms and recover as much fuel as possible with required and available equipment.

18.4 TRAINING AND DRILLS

All personnel on site shall be informed that any spill of fuel and/or hazardous liquids or solids, whatever the extent, has to be reported immediately to the site superintendent or his authorized representative.

The site superintendent and the health and safety officer shall select a group of 4 to 6 on-site workers to be assigned to spill containment in case of emergency. These persons shall be aware of available spill containment equipment, protective clothing and containers and shall be responsible to implement procedures and coordinate other workers if required. These persons shall also be aware that defensive actions and techniques employed will depend on a variety of factors. These include, but are not limited to:

- type of pollutant;
- degree of loss;
- topography of the nearby area; and
- proximity to water.

Also, they should know that the most common pollution incident potentially occurring for this project will probably be caused by fuel, oil or other hazardous fluid spills onto land or water resulting from:

- human error during transfer operations of fuel from storage drums to day tanks;
- rupture of lines, tanks or valves from accidental damage, deterioration or equipment failure; and
- leaks from fittings or valves.

Finally, the spill containment team shall be aware that, if a spill occurs, the protection of human health and safety shall be a priority. Even if emergency procedures are attempted to rapidly clean, contain and dispose of released contaminants to minimize further environmental impact, human exposure during spill event is to be considered as a real concern and be prevented.

The Contractor site superintendent shall organize a drill with each rotating spill containment team near the beginning of each season. These drills shall mainly be used to determine the time required to mobilize equipment at the drum storage area.

18.5 MATERIAL AND EQUIPMENT

In order to prevent spills and provide an appropriate response in case of spill events, the Contractor maintains on-site appropriate equipment and material required. A list of spill prevention and spill containment equipment including protective clothing is presented below. Spill kits have a capacity of 630 litres (see www.quatrex.ca - item Spill kit Q Ultra 75)

18.5.1 Spill Prevention

The materials and equipment used for spill prevention are essentially related to waste oil incineration, temporary fuel tank inspection, and temporary containment basin construction:

Quantity	Description
1	Roll of HDPE geomembrane for lining bermed areas and fuel transfer areas; and
2	Westland waste oil burner (will be at Cape Christian)

18.5.2 Spill Containment

The material and equipment available on site to be used for spill containment and emergency response including protective clothing are:

Quantity	Description
5	Containerized spill kits having 10 sorbent booms, 2 safety glasses. 2 Nitrile gloves, bails of 100 sorbent sheets
10	38" x 144' Rolls of sorbent sheets
5	100 metre long / 8 inch diameter oil sorbent booms
1	Vacuum suction hose/tank installed on a trailer
2	1 ½" x 25 ft oil hose c/w cam lock fittings
2	2" x 25 ft oil hose c/w cam lock fittings
10	Emergency eye wash station c/w saline solution
10	NWT #? First aid kit
2	Caterpillar bulldozer (D6)
2	Caterpillar excavators (320CL)
1	Caterpillar excavator (322BL)
1	Caterpillar integrated tool carrier (IT38G) c/w snow/gravel bucket, 4 ft adjustable forks, material handling arm
1	Caterpillar Wheeled Loader (950G) c/w snow/gravel bucket, 4 ft fixed forks
1	Caterpillar rock truck (D250)
2	Caterpillar rock trucks (725E)
1	Bobcat 763 skid loader
25	Fire extinguishers – need type
4	Fire extinguishers, class ABC, 20 lbs dry chemical
4	SCBA (Draeger) – Check Type
8	spade nose shovels
1	Electric fuel pump - stationary 115 V, approx. 15 USGAL/min, explosion proof switch, water sediment filter – is it still on site?
200	Leather work gloves
100	Rubber gloves
20	Nitrile gloves
15	Cartridge half mask respirator
1	Cartridge full face respirator
40	Organic vapour cartridges
120	Pre-filters and filter clips
500	Disposable dust masks
40	Rubber boots c/w steel toe and shank
40	Safety goggles

Quantity	Description
2	Case of disposable coveralls (50 per case) – need to specify sizes
100	Saranek & Tyvek suits – what's the difference between this and one above?

18.6 SPILL RESPONSE PROCEDURES

Following a spill event, specific procedures shall be implemented by the person who first noticed the emergency situation. These procedures are as follows:

- Immediately warn other personnel working near the spill area.
- Evacuate the area if health and safety are judged to be threatened.
- If not, take appropriate measures to stop, contain and identify the nature of the spill.
- Report to the Contractor's site superintendent all relevant information concerning the spill event such as the type and volume of contaminant, the location and approximate size of the spill, the actions already taken to stop and contain the spill and all other observations including the presence of wildlife and meteorological conditions.
- Notify the Nunavut Spill Reporting line using the spill report form found in section 18.9.

The spill clean up approaches shall be discussed with the GN. GN will communicate with Environment Canada. The selected methods shall be based on criteria where the impacts on human health and safety, wildlife, land, water and other environmental parameters are minimized.

To manage a spill incident, some emergency clean up guidelines shall be followed by the Contractor when applicable. These incorporate some of the material previously described and include:

- Sorbent materials will be used to contain POL spills and/or to minimize its movement.
- Appropriate protective clothing and other safety devices will be used to handle spilled materials.
- When the spill occurs on land, dykes may be constructed to limit the spill movement providing granular material is sufficiently available. Snow dikes covered with an impermeable liner may also be used if snow still remains. Otherwise, containment booms will be installed in front of the plume and secured to make sure these sorbent barriers do not get saturated.
- Any free product settled in ditches, trenches or any other ground cavities will be removed using equipment such as pumps, buckets or skimmers. Recovered fluids will be temporarily stored in appropriate containers.
- Any spill areas will be cleaned up to an extent where land, water and other disturbed environmental systems are restored and the site is left as close as possible to its original state.

18.7 POTENTIAL SPILL ANALYSIS

As part of the analysis of potential spills, their fates and effects, two potential sources of spills have been identified for the Cape Christian project. The first is the drum storage area located at

the Cape Christian site. The second consists of the fuel delivery using fuel tanks on pick-up trucks. Each of these two sources are analysed in detail in the following pages.

18.7.1 Scenario #1: Drum Storage Area

The drum storage area will consist of a levelled pad where pallets of Petroleum/Oil/Lubricant (POL) drums will be staged / stockpiled. All pallets of drums will be somewhat independent and, therefore the spillage of one drum should not affect the others.

Two potential situations could occur that would cause a spill:

1. The accidental spillage of fuel during transfer into intermediate storage tanks; or
2. The rupture of drums, possibly from a violent impact caused by the collision of a vehicle or piece of heavy equipment.

In the first case, the spilled volume would be, at worst, 45 gallons (205 litres), which represents the entire volume of one drum. In the other case, we can assume that the impact would occur at mid-height on two stacked pallets and, at worst, sixteen drums would be affected. Therefore the spilled volume should not exceed a total volume of 720 gallons (3,273 Litres).

In either case the spillage flow rate would be moderate to high and we can assume that the entire volume would be spilled within 15 to 20 minutes.

The general direction of migration would be along the natural drainage pathway. The high water mark is to be located minimum 100 metres down-gradient from the drum storage area. It is unlikely that the spilled fuel would reach any water body because the porous soil surrounding the storage area would soak up part of fuel, and also because the low slope will not allow for rapid flow of fuel, thereby providing enough time for the spill response procedures to take effect.

The spill would be communicated by the witness of the scene to the site superintendent, or in his absence, the assistant site superintendent. The latter would then go down the chain of command and advise the appropriate persons of the immediate actions to be taken. Radio communication is to be used at all times on the site and key team members will carry a radio with them at all times.

The personnel responsibilities are outlined in previous sections of this document. The witness of the spill would be advised to try to stop the source of the spill, while waiting for backup help to arrive; his actions would be immediate. The Contractor site Technical Advisor would coordinate the spill response activities carried out by the containment unit. Members of this unit would be mobilized to the spill site. The drum storage area can be reached from any other area of the site within a maximum of 25 minutes.

Mobilization of containment equipment to the spill site can be carried out rapidly. A bulldozer and bucket loader will be present in close proximity and can reach the site of the spill within a matter of minutes. A sand and gravel pit is also located in the vicinity, if required for berm construction. Spill response kits containing sorbent material will be kept next to the drum storage location. Containment would be carried out by the construction of soil berms and the

installation of sorbent booms. After containment, clean up equipment can be mobilized to the site. A list of equipment is presented in previous sections of this document.

Safety hazards associated with the spill event includes the risk of fire. This can be minimized by preventing personnel from smoking near the spill scene. Risks to personnel (from inhalation and dermal contact) can be prevented by the proper use of personnel protective equipment.

Measures and procedures to prevent such events from occurring include regular inspection of the drum storage area and containment system, and safety rules concerning the use of vehicles and heavy equipment on site, especially in close proximity of this area (e.g., speed limits, training of heavy equipment operators, restricted area posting, safety orientation of workers, etc.).

18.7.2 Scenario #2: Fuel Delivery

The fuel delivery operations (small tanks, 250 – 350 gal (1,137 – 1,591 Litres) installed on pick-up trucks) to supply fuel to heavy equipment and to carry fuel from the fuel truck to the site operating areas have some risk of spillage.

Any accident involving the fuel delivery pick-up trucks could result in the loss of its entire volume of fuel. Such an accident could occur almost anywhere on site, any place the pick-up trucks have access to.

Heavy equipment works at least 30 metres away from any body of water. Therefore the fuel delivery should not ever get closer than 30 metres from bodies of water. Any fuel spill at that distance would not rapidly reach the receptor.

Any spills would be communicated by the witness of the scene to the site superintendent, or in his absence, the assistant site superintendent. The latter would then go down the chain of command and advise the appropriate persons of the immediate actions to be taken. Radio communication will be used at all times on the site and key team members will carry a radio with them at all times.

The personnel responsibilities are outlined in previous sections of this document. The witness of the spill would be advised to try to stop the source of the spill, while waiting for backup help to arrive; his actions would be immediate. The Contractor site Technical Advisor would coordinate the spill response activities carried out by the containment unit. Members of this unit would be mobilized to the spill area. All areas at between Clyde River and Cape Christian can be reached from any other area of the site within a maximum of 25 – 45 minutes (once roads are repaired / maintained).

Mobilization of containment equipment to the spill site can be carried out rapidly. Sorbent booms may be required to contain the oil slick and prevent further spreading or migration to any discharge stream. If the construction of an oil-water separator in the discharge stream is necessary, the following equipment and materials would be required: heavy equipment (loader or excavator), sand and gravel, piping, and tarp/geomembrane. All these equipment and

materials could be mobilized within 20 to 30 minutes. If the fuel reaches the discharge stream, spill response measures may have to be implemented further down stream. After containment, clean up equipment will be mobilized to the area. A list of equipment is presented in previous sections of this document. However, due to the size of temporary fuel tanks used for delivery/supply, potential impacts from spills are likely to be rapidly contained.

Safety hazards associated with the spill event includes the risk of fire. This can be minimized by preventing personnel from smoking near the spill scene. Risks to personnel (from inhalation and dermal contact) can be prevented by the proper use of personnel protective equipment.

Measures and procedures to prevent such events from occurring include regular safety rules concerning the use of vehicles site, especially in close proximity to sensitive areas (e.g., speed limits, training of truck drivers, etc.).

18.8 REPORTING REQUIREMENTS

Spills will be immediately reported using the 24 Hour Spill Report Line (867) 920-8130 (NWT). Immediately shall mean upon discovery. Failure to report can lead to fines. A written spill report will then be prepared by the Contractor with the assistance of the Engineer and submitted to the GN and the Spill Report Line supervisor (see end of this section). This report will include:

- date and time of the incident;
- location or map coordinates and direction of spill movement if not at steady-state;
- party responsible for the spill;
- type and estimated quantities of spilled contaminant(s);
- specific cause of the incident;
- status of the spill indicating if spilled materials are still moving or now at steady-state;
- approximate surface of contaminated area;
- factors affecting spill or recovery such as temperature, wind, etc.;
- status on containment actions indicating whether
    - naturally;
    - booms, dykes or other, or
    - no containment has been implemented;
- corrective action taken or proposed to clean, contain or dispose spilled material;
- whether assistance is required and in what form;
- whether the spill poses a hazard to persons or property (i.e., fire, drinking water);
- comments and recommendations;
- name, position and employer of the person reporting the spill; and
- name, position department of the person to whom the spill is reported.

Apart from reporting requirements, the Contractor, through its site superintendent, may require special assistance. These could be implemented for the following reasons:

1. If assistance and coordination are required for spill response, Environment Canada (Nunavut Office) and the Department of Environment of the Government of Nunavut can be contacted at:
    a. Environment Canada (867) 975-4644

b. Environment Canada (24-hour emergencies) (867) 920-5131
c. INAC Water Resources Inspector (867) 975-4289
d. GN Department of Environment (867) 975-7700
e. GN DOE, Manager of Pollution Control (867) 975-7748

2. If medical assistance and coordination are required when injuries occurred during spill incident/spill response and/or critical incident stress is observed after an event, the Baffin Regional Hospital (general enquiries) shall be contacted at:
   a. Baffin Regional Hospital (867) 979-7300

3. Qikiqtaaluk Logistics Inc's site superintendent and/or project managers can be reached at:
   - Harry Flaherty (President QL) 867-979-8400
     867-222-1380 (24 hr)
   - Philippe Simon (project manager & Site Superintendent) 514-940-3332
     514-779-3332 (24-hr)
   - Greg Johnson(project manager & Site Superintendent) 514-940-3332
     514-717-7604 (24 hr)

18.9 SPILL REPORT FORM

The Nunavut spill report form is found on the following two pages

NT-NU SPILL REPORT

OIL, GASOLINE, CHEMICALS AND OTHER HAZARDOUS MATERIALS

NT-NU 24-HOUR SPILL REPORT LINE
TEL: (867) 920-8130
FAX: (867) 873-6924
EMAIL: spills@gov.nt.ca

REPORT LINE USE ONLY

A	REPORT DATE: MONTH – DAY – YEAR	REPORT TIME	☐ ORIGINAL SPILL REPORT, OR ☐ UPDATE #	REPORT NUMBER -
B	OCCURRENCE DATE: MONTH – DAY – YEAR	OCCURRENCE TIME		

C	LAND USE PERMIT NUMBER (IF APPLICABLE)	WATER LICENCE NUMBER (IF APPLICABLE)
D	GEOGRAPHIC PLACE NAME OR DISTANCE AND DIRECTION FROM THE NAMED LOCATION	REGION ☐ NWT ☐ NUNAVUT ☐ ADJACENT JURISDICTION OR OCEAN
E	LATITUDE DEGREES MINUTES SECONDS	LONGITUDE DEGREES MINUTES SECONDS

F	RESPONSIBLE PARTY OR VESSEL NAME	RESPONSIBLE PARTY ADDRESS OR OFFICE LOCATION		
G	ANY CONTRACTOR INVOLVED	CONTRACTOR ADDRESS OR OFFICE LOCATION		
H	PRODUCT SPILLED	QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES	U.N. NUMBER	
	SECOND PRODUCT SPILLED (IF APPLICABLE)	QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES	U.N. NUMBER	
I	SPILL SOURCE	SPILL CAUSE	AREA OF CONTAMINATION IN SQUARE METRES	
J	FACTORS AFFECTING SPILL OR RECOVERY	DESCRIBE ANY ASSISTANCE REQUIRED	HAZARDS TO PERSONS, PROPERTY OR ENVIRONMENT	
K	ADDITIONAL INFORMATION, COMMENTS, ACTIONS PROPOSED OR TAKEN TO CONTAIN, RECOVER OR DISPOSE OF SPILLED PRODUCT AND CONTAMINATED MATERIALS			

L	REPORTED TO SPILL LINE BY	POSITION	EMPLOYER	LOCATION CALLING FROM	TELEPHONE
M	ANY ALTERNATE CONTACT	POSITION	EMPLOYER	ALTERNATE CONTACT LOCATION	ALTERNATE TELEPHONE

REPORT LINE USE ONLY

N	RECEIVED AT SPILL LINE BY	POSITION Station operator	EMPLOYER	LOCATION CALLED Yellowknife, NT	REPORT LINE NUMBER (867) 920-8130

LEAD AGENCY ☐ EC ☐ CCG ☐ GNWT ☐ GN ☐ ILA ☐ INAC ☐ NEB ☐ TC	SIGNIFICANCE ☐ MINOR ☐ MAJOR ☐ UNKNOWN	FILE STATUS ☐ OPEN ☐ CLOSED

AGENCY	CONTACT NAME	CONTACT TIME	REMARKS
LEAD AGENCY			
FIRST SUPPORT AGENCY			
SECOND SUPPORT AGENCY			
THIRD SUPPORT AGENCY			

19 CONTAMINATED SITE PROCEDURES

19.1 HAZARDOUS WORK AREAS

General procedures apply to working within areas that are known or suspected to be contaminated with PCBs, heavy metals or other hazardous wastes, include:

Hazardous Work Areas: (also known as exclusion zones). These include:

- Landfill and dump-site areas
- Demolition areas
- Waste incineration areas
- Waste hydrocarbon incineration areas
- Excavations/trenches
- Buildings or structures representing significant contamination or other hazards
- PCB contaminated structures
- Areas containing friable, or exposed asbestos
- Sewage treatment facility
- Areas that contain high levels of contaminants
- Any other work area suspected to represent a hazard or where special safety protocols or procedures are established.

In these areas, established protocols are to be followed when working within or in proximity to these zones. Personnel are requested to follow such procedures provided by the Site Superintendent and/or the Site Safety Officer. These procedures include, but are not limited to:

- Safety clothing and equipment to be worn in these areas
- Limited access or entry to a site
- Site exit procedures, including the removal and storage of contaminated clothing
- Cleaning and washing procedures applicable to vehicle or equipment decontamination

Contaminated sites safety procedures refer to the following hazardous work area and/or activities:

- Barrel and petroleum product handling procedures
- Excavation of dumps
- PCB contaminated soils, building materials and electrical equipment
- Heavy metal contaminated soils
- PAH and hydrocarbon contaminated soils

Other areas not necessarily considered as containing hazardous substances, but targeted as operating areas with a significant source of risk include:

- Kitchen and waste incinerator
- Sewage treatment facility

Safety requirements for each of these areas are summarized below.

19.2 MANAGEMENT OF WASTE FLUIDS

As part of camp services and cleanup activities, some waste fluids will be produced and need to be managed with respect to environment, health and safety. The procedures described below will be implemented:

1. Waste oil and lubricant: will be temporarily containerized in a sound empty drum, labelled appropriately, and will be incinerated on site using a force-air incinerator when the volume justifies.
2. Waste coolant: will be securely containerized on site in sound empty drums, labelled appropriately, and temporary stored at the hazardous waste temporary storage pad before offsite shipment to an authorized disposal facility. Never leave coolant (glycol) in open containers as it attracts wildlife.
3. Sewage water from the camp is contained in a lagoon and will be discharged at the end of the season.

19.3 BARREL AND PETROLEUM PRODUCT HANDLING PROCEDURES

As part of cleanup activities at Cape Christian, Petroleum, Oil and Lubricant (POL) products left in old barrels, pipes and tanks will be processed. POL products will either be incinerated or consolidated and packaged for shipment to a Southern disposal facility. Appendix V (i.e. Barrel Processing) presents the work methodology plan (procedures and protocols) to handle POL products. The main risks associated with such activities are:

1. Hazardous contaminant exposure (inhalation, dermal and ingestion pathways)
2. Explosion
3. Fire
4. Accidents from material handling and heavy equipment traffic

Risk can be minimized and accident prevented by using appropriate procedures. POL products shall only be handled (tested, pumped, consolidated, relocated) when proper personal protection equipment (PPE) are used. In addition to PPE (safety boots, safety glasses, no coveralls susceptible to heat or flame), respirators with organic vapour cartridges, Saranex-coated disposable coveralls and nitrile or neoprene gloves shall be used when POL product to be handled is undefined (not characterized yet).

19.4 EXCAVATION OF DUMPS

Existing landfills have to be excavated to locate and remove contaminant sources leaching into the environment. Appendix V (i.e. Contaminated Soil Excavation, Debris removal) presents the work methodology plan (procedures and protocols) for dump excavation. The main risks related to this activity are:

1. Hazardous contaminant exposure (inhalation, dermal and ingestion pathways).
2. Accidents from material handling and heavy equipment traffic.

Dump excavation and debris sorting shall only be conducted when appropriate PPE are used. Appropriate PPE to be used are hard hat, safety boots (green patch) or rubber safety boots (green patch), safety glasses with side shields. Should asbestos be encountered during operations, safety procedures and PPE described in section 028211 (sub-section 1.5.2) of the Project Specifications shall be implemented. Finally, safety procedures related to workers and equipment decontamination are given below.

19.5 EXIT PROCEDURES AND DECONTAMINATION

Upon exiting any contaminated hazardous work area (e.g. for breaks, end-of-day, etc.), the following procedures shall be followed:

- disposable protective clothing will be removed and:
    - if intended for reuse, then stored in the transition area, (bulk contamination should be cleaned off prior to doffing and storage)
    - if heavily contaminated, then disposed in waste receptacles
    - at the end of each day, disposed in waste receptacles
- Other protective equipment that is intended for reuse, will be cleaned and stored or worn, as appropriate, and
- Personnel will wash exposed skin surfaces (hands and faces) as appropriate with soap and water.

All other equipment shall be decontaminated prior to removal from contaminated work areas. Soap and water may be used for most decontamination procedures.

If clothing other than the disposable PPE becomes significantly contaminated, then it shall be bagged and laundered at the earliest available opportunity. If an outside party is involved with the laundering, then they will be apprised of the nature of hazardous contamination to preclude over-exposure of their personnel.

Safety footwear worn outdoors will not be worn inside the camp living space but will be left in the mudroom. Also, personnel will shower at the earliest opportunity following the day's activities or sooner if noticeably contaminated.

19.6 PCB CONTAMINATED SOILS, BUILDING MATERIALS AND ELECTRICAL EQUIPMENT

The remediation of contaminated soils, and building materials contaminated with PCBs is an important activity of the Cape Christian Project. Contaminated soils are mainly found near the main station. Building materials contaminated with PCB paint are located at the main station. Although most contaminated material was already located, residual electrical equipment (transformers, capacitors, etc) potentially containing PCBs could still be found within dump sites. Appendix V (i.e. Demolition; Barrel Processing and Hazardous Waste Material; Contaminated Soil Excavation) presents the work methodology plan (procedures and protocols) for the remediation of PCB contaminated soils and materials. The main risks associated with such activities are:

1. Hazardous contaminant exposure (inhalation, dermal and ingestion pathways).

2. Accidents from material handling and heavy equipment traffic.

PCB contaminated soils and materials remediation shall only be conducted when appropriate PPE is used. Appropriate PPE is defined below.

19.7 PAH, PETROLEUM HYDROCARBONS (PHC) AND HEAVY METAL CONTAMINATED SOILS

According to the specifications for the cleanup activities at Cape Christian, some areas contaminated with heavy metals and hydrocarbons will be remediated. Appendix V (i.e. Demolition; Barrel Processing and Hazardous Waste Material; Contaminated Soil Excavation) presents the work methodology plan for heavy metal contaminated soil excavation. The main risks related to this activity are:

1. Hazardous contaminant exposure (inhalation, dermal and ingestion pathways).
2. Accidents from material handling and heavy equipment traffic.

Petroleum hydrocarbons (PHC) and heavy metal contaminated soils remediation shall only be conducted when appropriate PPE is used. Appropriate PPE use is defined below.

19.8 KITCHEN AND WASTE INCINERATOR

Kitchen garbage and other non-hazardous waste generated by camp operations will be incinerated on a daily basis. Waste will be temporarily stored in covered metal bins located outside the camp. Garbage will be regularly transported from the camp to the two-stage incinerator area. Refuse will be placed manually into the incineration chamber. The main risks associated with this area are:

- Burns from hot surfaces
- Hazard from explosions

The following safety procedures shall be respected at all time:

1. One 80-BC rated portable fire extinguisher or two 40-BC units shall be provided in the close vicinity of the incinerator. A fire blanket and an eye wash station shall also be available
2. Only trained and qualified persons shall conduct incineration activities
3. A warning sign identifying hot surfaces shall be posted
4. The operator shall always wear a hard hat, safety boots, full face shield and heat resistant apron and gloves during incineration operations
5. The operator shall be responsible to maintain a security perimeter of 2 meters around the incinerator
6. Spray cans and other explosive materials shall not be incinerated

19.9 SEWAGE TREATMENT FACILITY

Camp wastewater is to be discharged into sewage treatment facility. The wastewater collection and treatment processes do not require any human assistance. However, the area could represent a significant risk of accidents that can be prevented with the following precautions:

- A warning sign indicating that the area is prohibited shall be posted in the vicinity
- No one shall go near the facility unless authorized by the Site Superintendent
- Any activities within 2 meters of the facility shall be avoided

19.10 DECONTAMINATION PROCEDURES FOR WORKERS

19.10.1 General

The function of the decontamination procedure for workers is to minimize both the exposure of site workers to contaminants and the spread of contaminants to clean areas of the site. Before any work is commenced within the contaminated area, the following must occur:

- A decontamination zone must be established and clearly marked. It must be outside the contaminated area.
- All necessary decontamination equipment must be placed in appropriate areas.
- Personnel who will be working in a contaminated area must be briefed on contaminant hazards including protective clothing required and on the decontamination procedures.
- Equipment leaving a contaminated zone must also pass through a decontamination procedure (see below)

The contaminated area must be accessed only via the decontamination zone. Smoking and eating are strictly forbidden in the contaminated area. The decontamination procedure must be carried out before any smoke or coffee breaks. The decontamination zone should be kept as clean and as tidy as possible to ensure exposure is minimized.

19.11 DECONTAMINATION PROCEDURES FOR PCB CONTAMINATION >50 PPM (CEPA)

The decontamination procedure described below is for PCB contaminated areas; this exact decontamination procedure may not be appropriate for all contaminated areas on site. Modifications, which still allow for the basic steps outlined below, should be made for each area as appropriate. It is important to note that in all cases any medical emergencies or immediate hazards (e.g. polar bears or other imminent physical danger) take precedence over decontamination procedures.

19.11.1 Required Protective Clothing

Any personnel entering the 50 ppm PCB area (i.e. PCB amended paint) must wear:

- Rubber safety boots
- Safety glasses
- Hard hats

Personnel working in heavy equipment with cabs must wear:

- Rubber safety boots or safety boots with rubber over boots
- Safety glasses

When the operator is in a fully enclosed cab the safety glasses are not required. However any time the operator is outside the cab or opens the cab window the safety glasses are required.

Personnel who will have any significant contact with dry demolition material/particles and/or soil (if any found) must wear:

- Rubber safety boots
- Safety glasses with side shields
- Saranex-coated disposable suit
- Leather palm work gloves (with cotton backing)
- Disposable dust masks

Personnel who will have any significant contact with wet demolition material/particles and/or soil (if any found) must wear:

- Rubber safety boots
- Safety glasses with side shields
- Saranex-coated disposable suit
- Nitrile gloves or latex gloves inside of leather palm work gloves

19.11.2 Decontamination Procedures:

- Area 1 – Tool Drop
    - This area should be located just inside contaminated area
    - Deposit any tools such as shovels in the designed areas or in barrels.

- Area 2 – Boot Wash
    - This area should be located just outside the contaminated area.
    - Step onto metal or wooden grid or mats and loosen and scrap off as much as possible any excess mud from boots. A tarp must be placed underneath to collect any contaminated soil.
    - Stand in first container which is filled with soapy water (boot wash) and if necessary use the scrub brushes provided to remove remaining mud on boots.
    - Move to second container which is filled with water (boot rinse).
    - Step out off container and if necessary use sprayer (filled with water) to perform final cleaning of boots.
    - If nitrile gloves are being used these can also be rinsed at this time.
    - Stay on grids or mats and shake off excess water from boots.

- Area 3 – Glove and Suit Removal (Decon designated area)
    - Carefully remove gloves and suits without contaminating skin or inner layers of clothing. If this is difficult then ask for assistance from a co-worker.
    - If outer work gloves are very soiled then remove and deposit in the bin (waste wrangler) provided.
    - If a respirator was worn hang it on the hooks provided. Respirators must be cleaned before reuse by another person.
    - If a dust mask was used discard in bin provided unless it can be reused.
    - If suit is soiled or ripped deposit in bin (waste wrangler) provided.
    - Remove boots. If the suit can be reused, it may be easier to leave boots attached to suit and simply step out.
    - Boots, suits, gloves and any protective gear used in the contaminated area

should remain in this area.
    - Inner latex gloves, if worn, can be discarded in the bin provided.
    - If you have any visible soil on you, wash it off in the sink or bucket of soapy water provided.
    - If you believe you have been directly exposed to the contaminated soil you should have a shower. Proceed to camp and have a shower immediately.

- Area 4 – final cleanup
    - Wash hands.
    - Put on clean footwear.

Retrieve any personal items.

19.11.3 Equipment Required

The following items will be required in the respective areas.

- Area 1
    - A receptacle or designated area to leave contaminated tools.

- Area 2
    - A metal grid or mat to shake off excess dirt (optional)
    - One or two containers for boot wash/boot rinse
    - Various brushes to clean boots
    - A second grid or mat (i.e. wood pallet) to walk on with clean boots.
    - Tarps

- Area 3
    - A barrel or waste wrangler for disposal of soiled gloves and suits
    - Storage for reusable protective gear
    - A raised mat to walk along into clean area

- Area 4
    - Sinks or buckets of soapy water to wash hands
    - Shelves or benches for clean footwear and personal items
    - Towels
    - First aid supplies

19.11.4 Personal Protective Equipment Required

- Saranex coated or equivalent suits
- Rubber boots with steel toe and shank
- Boot covers
- Half face respirators
- Organic vapour cartridges
- Filters
- Filter clips
- Alcohol wipes for cleaning respirators
- Single use dust respirators

- Work gloves
- Latex gloves
- Nitrile gloves
- Safety goggles
- Duct tape

19.12 DECONTAMINATION PROCEDURES FOR EQUIPMENT

19.12.1 General

The function of the decontamination procedure for equipment is to minimize both the spread of contaminants to clean areas of the site and the contaminant exposure of site workers. Decontamination procedures apply to heavy equipment/vehicles and to tools/small equipment and shall always be implemented within the contaminated area before any equipment is to be removed from that area.

19.12.2 Procedures for Heavy Equipment / Vehicles

For heavy equipment/vehicles operating inside contaminated area, decontamination procedures shall be as follows:

- Remove excessive soil/mud from heavy equipment/vehicles using shovels and or other appropriate hand tools on parts in contacts with the contaminated soil (i.e. for most if not all areas, it is anticipated that excavator's tracks and dump truck tires will stay on clean ground).
- Use scrub brushes and soapy water to clean parts that were in contact with contaminated soils.

These procedures shall be conducted on a transition area to be located between the contaminated area and the clean area. Soil and water collected shall then be disposed in accordance with Contaminated Materials Management provisions (see Appendix V). Workers involved in equipment decontamination shall always wear proper personal protective equipment (see above)

For heavy equipment/vehicles operating inside Tier I contaminated soil area, decontamination procedures are not required.

19.12.3 Procedures for Tools / Small Equipment

Should tools and/or small equipment be only in contact with contaminated soils (not with contaminated oil), the same procedures described for heavy equipment/vehicles shall be applied.

When tools/small equipment are contaminated with oils, these should be cleaned using diesel fuel. For internal parts (ex.: pumps, hoses), clean diesel fuel shall be pumped and in a close loop repetitively (at least three passes). The oil contaminated cleaning fuel shall be collected/containerized in sound barrels for testing/disposal. For surface contamination (ex.: shovels used in oil saturated zones), sorbent sheets on which clean diesel be added shall be used for hand washing. Used sorbent sheets shall be disposed in the waste wrangler providing

PCBs are not present in the contamination. Otherwise, sorbent sheets shall be containerized separately for further testing and disposal.

20 EMERGENCY RESPONSE PROCEDURES

General protocols that shall apply to emergency response procedures at Cape Christian shall include:

1. Emergency response procedures will be planned and rehearsed in advance of the work activities. Methods and routes of evacuation, as well as liaisons with off-site medical and rescue personnel will be pre-established.

2. In the event of an emergency, the following procedures will be implemented:
   a. An alarm will be sounded. Different alarms shall be used:
      i. Bear-in/around-camp: one long horn signal
      ii. Fire, significant spill or other danger or worker in distress (three short horn signals)
      iii. In addition to the alarm, call will be made on radios. The alarm signals will be made using a portable horn of 30 Watt with a range of 900 meter equivalent to the Anchor LBH-30 megaphone
   b. Work in the affected area shall be stopped
   c. In the case of a bear alarm, the bear monitors will respond. All other personnel will act in a manner consistent with bear avoidance tactics, including moving to a safe location if this can be accomplished without aggravating the situation.
   d. In the case of other alarms, the emergency response / treatment personnel and he nearest supervisor will converge on the area, and other personnel will move to a predetermined safe zone. The predetermined zone (muster point) for emergencies near the camp location will be the Weatherhaven tent located next to the camp.
   e. Emergency response / treatment personnel will evaluate the incident and implement the necessary action.
   f. A predetermined person (i.e. Site Superintendent or Health and Safety Officer) will coordinate site control which may include:
      i. moving non-essential personnel to a safe location
      ii. head-count and enforcement of the buddy system
      iii. preparing for extrication and or evacuation, contacting off-site resources.
   g. Fires that can be easily controlled will be extinguished immediately by the nearest trained person(s). Spills will be similarly controlled by the nearest trained person(s), if feasible.
   h. Where the fire (or other emergency) produces a serious and imminent danger (where there is a risk of explosion), everyone will be evacuated to a safe location, if appropriate. Off-site personnel will be contacted.

Following an emergency and prior to the commencement of work, there shall be:
1. Notification of regulatory authorities as required;
2. An incident investigation including documentation of the event;
3. A review of work procedures for the purpose of preventing similar events;

4. A review of emergency response plans for the purpose of improvement; and
5. A replacement of emergency equipment and supplies where necessary.

Off-site emergency resources can be found by contacting the following phone numbers:

Table 1: Emergency Numbers

Name	Phone Number
Clyde River Health Center	(867) 924-6377
Clyde River RCMP	(867) 924-1111
Clyde River RCMP	(867) 924-6478
Iqaluit Hospital (medivac and emergency)	(867) 979-7350
Iqaluit Hospital (main office)	(867) 979-7300
Iqaluit RCMP	(867) 979-1111
Iqaluit Fire Department & Ambulance	(867) 979-4422
Iqaluit Airport Fire Department	(867) 979-6608
Iqaluit Public Health Department	(867) 979-5306
Emergency Search and Rescue	(867) 979-5650
Ottawa General Hospital	(613) 737-7777
Marine and Air Search and Rescue	(800) 267-7270
WCB Iqaluit	(867) 979-8500
Spill Report Line	(867) 920-8130
Canutec Canada	(613) 996-6666
Qikiqtaaluk Corporation Iqaluit Office	(867) 979-8400

21 COMMUNICATION SYSTEMS

A multi channel radio communication system will be established on the site. The site will also be equipped with satellite phone and facsimile services. Communications shall be directed toward the following priorities and concerns:

1. The bear monitors are informed of the whereabouts of site personnel at all times.
2. Site personnel are to communicate on a regular basis regarding their whereabouts and to post immediate warnings regarding any imminent or potential danger.
3. To alert site personnel with respect to emergency situations
4. To communicate with remote parties with respect to emergency situations.
5. To communicate with or monitor aircrafts traveling to and from the site.

Available communication systems should also be used for administrative matters, but should never be used for this purpose when an emergency situation is occurring. Communication systems can also be used, after hours, for personal reasons.

22 PREVENTIVE VEHICLE MAINTENANCE PROGRAM

22.1 PURPOSE

A preventive maintenance program for vehicles and equipment is developed to help keep the equipment in the best operating condition possible to help prevent any major breakdowns and to ensure the safety of the operators. This involves elements such as scheduling oil sampling, inspections, training, work scheduling, and recordkeeping.

To meet the requirements, principles of the Caterpillar Maintenance Control System (MCS) and Preventive Maintenance Planner (PMP) will be applied to the project.

MCS – helps monitor and manage maintenance activities by recording the maintenance procedures and materials needed, planning the intervals between maintenance, identifying maintenance due and recording the completion of the activities.

PMP – formalizes the activities required for periodic preventive maintenance, and provides a means to record the needed filters, fluids or other materials. Prototype checklists are available and can be printed each time maintenance is performed.

The system will perform and provide reports on the following:

- Calculate due dates for Preventive Maintenance (PM) and scheduled repairs.
- Track backlogged activities.
- Track machine components.
- Report timeliness of completed PMS and scheduled repairs.
- Track checklist and time/materials list
- Maintain PM, inspection, and repair history
- Calculate and trend cost-per-hour and availability.

The system will print the following:

- Master Listing
    - Equipment Master Listing
    - Scheduling
    - Maintenance Due Report
    - Maintenance Timeliness Report
    - Cost & Availability Summary

- Operational
    - Components Code Ranking Report
    - PM – Repairs History Report
    - Labour & Materials Report
    - Consumable Trends Report

- Planning
    - Maintenance Planning Report
    - Component Planning Report
    - Component Tracking
    - Component List Report
    - Component Installation Report
    - Component Life Cycle Report

22.2 RESPONSIBILITIES

Site Foremen, Management and Project Coordinator are responsible for the following, to ensure successful preventive maintenance program is provided for the project.

- Data collection, input, and report generation
- MCS information retrieval
- MCS information backup
- Acquisition, installation, and setup of the computer, printer, and operating system
- Definition and Maintenance of system
- Development of the system backup procedures
- Understanding of the system data requirements, data flow, and reports
- Identification of setup tables, equipment information, and maintenance activities entered at system setup
- Development and implementation of required data collection procedures
- Utilization of the system information to monitor equipment performance and maintenance effectiveness

22.3 TRAINING

Training is important to the successful use of the system and ensures preventive maintenance program is implemented. Personal who uses the system, will be required to have the basic skills but not limited to:

- Windows XP basics
- Data input, display, and report
- Backup procedures
- Input form completion and report interpretation
- Backup procedures (frequency, methods)

22.4 MAINTENANCE INTERVAL SCHEDULE

The Maintenance Interval Schedule is used to identify when equipment is due for PM. There are two ways of identifying services; one is through hour meter that tracks the number of hours the equipment has been operating or conducting monthly service.

There are also different types of PM service levels, depending on equipment, example, all the

heavy equipment have, up to five (5) different level of PM services and each PM checklist is different, light equipment have only two different PM services but have only one PM checklist.

Those preventive maintenance services apply to all the vehicles and equipment classes but some adjustments may be required due to the seasonal type of workload, the weather and the wide variety of equipment type. It is essential that manufacturer's recommendations be used as supplementary guides where special work conditions and environments are encountered.

Before each consecutive interval is performed, all of the maintenance requirements from the previous interval must also be performed.

PM Tasks – Both the operator and the mechanic are responsible for carrying out the preventive maintenance on a piece of equipment.

Field Inspection – inspection report has to be conducted before or at the end of project season.

Activity Description – a breakdown of each activity where work is identified through the PM Checklist and is a guide to perform the repair or replace and adjust a component.

Appendix VI presents various supporting documents to the Vehicle Preventive Maintenance Program. Separated in sub-sections, these are:

- Appendix VI - section 1
    - Heavy Equipment – PM Checklist
    - PM 1 – 250 hours or Monthly
    - PM 2 – 500 hours or Every 3 Months
    - PM 3 – 1000 hours or Every 6 Months
    - PM 4 - 2000 hours or 1 year
    - PM 5 - 3000 hours or 2 years

- Appendix VI - section 2
    - Light Equipment – PM Checklist
    - PM 1 – Every 200 hours
    - PM 2 - Every 1200 hours

- Appendix VI - section 3
    - All Terrain Vehicles
    - PM 1 – Every 6 Months
    - PM 2 – Every 1 year
    - PM 3 – Every 2 years

- Appendix VI - section 4
    - Power Unit Daily Inspection
    - PM 1 – Every 250 hours
    - PM 2 – Every 500 hours

  - PM 3 – Every 750 hours

- Appendix VI - section 5
  - Field Inspection Sheet

- Appendix VI - section 6
  - Activity Description – Repairs, adjustments or replacements

23 ATV SAFETY

ATVs will be used for work at Cape Christian. With ATVs, reported cases of serious injury and death have increased along with their increased use. Most of these injuries and deaths can be attributed to improper use of ATVs. Make ATV safety a priority on work at Cape Christian.

Environmental Health and Safety makes the following recommendations for the safe operation of ATVs. Detailed information is provided in subsequent sections.

- Read the owner's manual carefully and follow the operating procedures described. Pay special attention to the warnings contained in the manual and all labels on the machine.
- Do not operate an ATV without proper instruction. Take a training course.
- Always wear an approved motorcycle helmet when using an ATV. Also wear eye-protection, boots with ankle supports, gloves, long pants and a long sleeved shirt or jacket as conditions warrant.
- Do not allow anyone under 18 years old to operate an ATV.
- Never carry a passenger on an ATV. Carrying a passenger may upset the balance of the ATV and may cause you to lose control.
- Never operate an ATV on pavement. The vehicle is not designed to be used on paved surfaces and may be difficult to control.
- Do not consume alcohol or drugs before or while operating an ATV. Of course, this is also against Camp policy.
- Do not operate an ATV at excessive speeds. Go at a speed that is proper for the terrain, visibility conditions, and your experience.
- Never attempt to do wheelies, jumps or other stunts.
- Be cautious when operating an ATV, especially when approaching hills, turns, and obstacles and when operating on unfamiliar or rough terrain.
- Do not lend your ATV to anyone who has not taken a safety-training course, who is an inexperienced driver, or who is under 18 years old.

23.1 SPECIFIC SAFE DRIVING TIPS

23.1.1 Make Sure the ATV is Ready For Operation

You can ride further in one hour on an ATV than you can walk in a day, so a pre-ride inspection will reduce your chance of being stranded. Check the following items on your vehicle before operation:

- Wheels and tires - make sure air pressure in tires is at recommended levels. A one-pound difference in air pressure can cause control problems. To accurately measure ATV tires, you will need a low-pressure gauge; regular tire gauges will not be accurate enough. Also, check tires for cuts, gouges, inadequate tread or excessive wear. Tighten axle nuts and secure by cotter pin.
- Controls and cables - check location and make sure all work. Throttle should move smoothly when handlebar is in different positions. Brakes should be properly adjusted and foot shift firmly fastened.

- Fuel and oil - check oil and fuel levels.
- Lights and electrical system - ignition switch should stop engine when in the "off" position. When in the "on" position, headlights and taillights should work.
- Chain and/or drive shaft chassis - inspect, adjust and lubricate chain and/or drive-shaft chassis. Check for nuts and bolts loosened by vibration.

23.1.2 Wear Appropriate PPE

- A helmet can prevent serious head injuries by resisting penetration and absorbing shock. Look inside the helmet for a sticker from one or more of these agencies: Department of Transportation (DOT), Snell Memorial Foundation, or American National Standards Institute (ANSI). Helmets must be able to resist a blow from a sharp object, stay in place, and provide a minimum amount of peripheral vision. Helmets used for bicycling, skateboarding and rollerblading may not be used.
- Eye Protection, such as goggles or a face shield, can prevent you from getting hit in the eyes and being blinded. A face shield may be attached to your helmet. If not, wear an ANSI-approved pair of goggles or glasses with hard-coated polycarbonate lenses.
- Off-road style gloves offer your hands more comfort and can keep them from getting sore or cold. Gloves protect hands from scrapes and scratches, improve grip on the controls, and reduce soreness from the pressure of holding onto the handlebars.
- Boots should be low-heeled to prevent your feet from slipping off the footrests. Over the calf boots provide even more protection. Boots protect feet from trail debris and keep feet properly placed on the footrest, which is important in maintaining balance and control of the ATV.
- Long sleeved shirts and long pants can protect your skin from scratches while riding an ATV. A sturdy, long-sleeved shirt or jacket and long pants will protect the arms and legs from cuts or scrapes caused by trail debris and branches. Proper clothing also protects the operator from problems caused by weather conditions, including sunburn and frostbite.

23.1.3 Start the ATV Properly

- Brakes - always engage the parking brake.
- Neutral - the transmission always must be in the neutral position.
- Engine - the engine stop switch should be in the "run" or "start" position.
- Choke - if the engine is cold, put the choke in the "on" position and start the engine according to the manual.

23.1.4 Operate Your ATV in a Safe Manner

- ATVs are designed to be used off-road only. Many accidents occur because of collisions with other vehicles due to riding or crossing a road illegally or improperly. Make sure you use extra caution near roads and yield the right of way to oncoming traffic.
- ATVs are only designed for one rider - the operator. A passenger can impair the driver's ability to shift weight to steer and control the ATV.
- Braking - begin to slow down early. Look straight ahead when you are stopping in a straight line. Look around the turn as you slow in a curve. Shift to a lower gear as you decelerate.

- Turning - you must be able to coordinate speed and body position to maintain balance while turning. Slow before the turn and gently increase the throttle as you exit the turn. Support your weight on the outer foot peg and lean your upper body into the turn.
- Hill climbing - some hills are too steep for your ATV, regardless of your abilities. Shift your weight forward by sliding up on the seat as you go uphill.
- Hill descending - to go downhill, shift your weight back; use the brake(s) to slow down as you descend the hill. Always descend in gear and never descend in neutral. Front brakes are very helpful in downhill braking.
- Use lights, reflectors, and/or flags to make the ATV highly visible.
- A unique feature of the ATV is that operator position on the seat can significantly change the center of gravity. Moving forward will reduce the risk of rear overturns.
- Two general rules are to not carry more than one-third the vehicle's weight on the rear carryall. Divide weight evenly between the front and the rear. Finally, never tow a load heavier than the weight of the ATV plus the operator's weight.

Inform the site mechanic of any problems encountered. Do not use ATVs that have been found with mechanical problems during inspection.

24 WILDLIFE MANAGEMENT PLAN

24.1 HUNTING, FISHING AND FIREARM POLICY

At Cape Christian, hunting and fishing is prohibited for all employees, contractors and subcontractors staffs who are not Nunavut Beneficiaries.

QL will enter into an agreement with the Clyde River HTO – Nattivak ((867) 924-6202) - regarding defence kills.

All firearms are to be stored inside a proper locked cabinet. The lock will be under the site superintendent's responsibility.

24.2 WILDLIFE INTERACTION

In order to minimize disturbance to wildlife and enhance site health and safety, all site personnel will adhere to the following directives:

- All man-bear interactions shall be immediately reported to the site superintendent and the safety officer. All interactions shall be then reported by the site superintendent to the nearest Wildlife Office or by phone at (867) 975-5908.
- Dedicated bear monitors must be on site for the duration of the project. They shall escort working crews at all time, especially when vehicle and heavy machinery are not used and when work is done in remote areas of the site.
- Kitchen waste and other refuse shall always be managed so they are not accessible to bears and other scavengers.
- Harassment to any wildlife is prohibited. All personnel shall ensure that there is minimal disturbance to any nesting birds and wildlife in the area.
- Feeding wildlife is prohibited
- To supply the camp with fresh water, the water intake hose will be equipped with a 8 mesh wire cloth (e.g. 2.54 mm opening) with an effective screen area of 1.45 ft^2 to ensure there is no entrapment of fish. Water will be withdrawn at a rate of 150 GPM using a 2" hose. The end of the hose will be equipped with a cylindrical screen sufficient to meet the effective screen area requirement and therefore comply with Fisheries and Oceans' Fresh Water Intake End-of-Pipe Fish Screen Guideline (ISBN 0-662-23168-6).
- No one shall disturb or destroy the nests or eggs of migratory birds. Areas with nests containing eggs or young should be avoided until nesting is complete and the young have left the nest.
- Known environmentally sensitive areas (denning, nesting, etc) shall be avoided by a minimum distance of 250 metres.
- All work shall be ceased when critical wildlife cycles are observed (e.g. Caribou migration, calving, fish spawning or raptor nesting). Report immediately these observations to the site superintendent who will notify the owner's representative.
- All wildlife encounters shall be reported to the site superintendent. A log of wildlife

encounters including date, location, type of wildlife and actions/mitigation measures taken shall be prepared and reported to the owner's representative after each site activity seasons

25. Cold Stress Monitoring Program

(Sources National Institute for Occupational Safety and Health & Canadian Centre for Occupational Health and Safety)

Workers who are exposed to extreme cold or work in cold environments may be at risk of cold stress. A dangerous situation can arise from exposure to extreme cold weather resulting in health emergencies in susceptible people, such as those without shelter, outdoor workers, and those who work in an area that is poorly insulated or without heat. Cold stress and its effects can vary depending on your location and the amount of cold conditions that you are normally exposed to. In regions relatively unaccustomed to winter weather, near freezing temperatures are considered factors for "cold stress." When temperatures fall well below normal and the wind speed begins to increase, heat can more rapidly leave your body. These weather-related conditions may lead to serious health problems.

25.1 WHAT FACTORS MODIFY OUR RESPONSE TO COLD?

A cold environment challenges the worker in three ways: by air temperature, air movement (wind speed), and humidity (wetness). In order to work safely, these challenges have to be counterbalanced by proper insulation (layered protective clothing), by physical activity and by controlled exposure to cold (work/rest schedule).

Air Temperature: Air temperature is measured by an ordinary thermometer in degrees Celsius (°C) or degrees Fahrenheit (°F).

Wind Speed: Different types of commercially-available anemometers are used to measure wind speed or air movement. These are calibrated in meters per second (m/s), kilometers per hour (km/h) or miles per hour (mph). Air movement is usually measured in m/s while wind speed is usually measured in km/h or mph. The following is a suggested guide for estimating wind speed if accurate information is not available:

- 8 km/h (5 mph): light flag moves,
- 16 km/h (10 mph): light flag fully extended,
- 24 km/h (15 mph): raises newspaper sheet,
- 32 km/h (20 mph): causes blowing and drifting snow.

Humidity (Wetness): Water conducts heat away from the body 25 x faster then dry air.

Physical Activity: The production of body heat by physical activity (metabolic rate) is difficult to measure. However, tables are available in literature showing metabolic rates for a variety of activities. Metabolic heat production is measured in kilo calories (kcal) per hour. One kilocalorie is the amount of heat needed to raise the temperature of one kilogram of water by 1°C.

Work/Rest Schedule: Check Table 2 in this document, the "work warm-up schedule," as developed by the Saskatchewan Department of Labour. This work schedule has been adopted by the American Conference of Governmental Industrial Hygienists (ACGIH) as Threshold Limit

Values (TLVs) for cold stress.

Protective Clothing: Check section on "What should I know about personal protective equipment (PPE) for working in the cold?"

25.2 WHAT IS THE WIND-CHILL TEMPERATURE?

At any temperature, you feel colder as the wind speed increases. The combined effect of cold air and wind speed is expressed as "equivalent chill temperature" (ECT) or simply "wind chill" temperature in degrees Celsius or Fahrenheit. It is essentially the air temperature that would feel the same on exposed human flesh as the given combination of air temperature and wind speed. It can be used as a general guideline for deciding clothing requirements and the possible health effects of cold.

In some parts of Canada the term "wind chill factor" is used. This is a measurement of a heat loss rate caused by exposure to wind and it is expressed as the rate of energy loss per unit area of exposed skin per second (e.g., joules/[second-metre^2] or watts/metre^2, W/m^2).

WIND CHILL CHART

		Ambient Temperature (∞C)								
		4	-1	-7	-12	-18	-23	-29	-34	-40
Wind km/h	Velocity mph	Equivalent Chill Temperature (∞C)								
Calm										
0	0	4	-1	-7	-12	-18	-23	-29	-34	-40
8	5	3	-3	-9	-14	-21	-26	-32	-38	-44
16	10	-2	-9	-16	-23	-30	-35	-43	-50	-57
24	15	-6	-13	-20	-28	-36	-43	-50	-58	-65
32	20	-8	-16	-23	-32	-39	-47	-55	-63	-71
40	25	-9	-18	-26	-34	-42	-51	-59	-67	-76
48	30	-16	-19	-22	-36	-44	-53	-62	-70	-78
56	35	-11	-20	-29	-37	-46	-55	-63	-72	-81
64	40	-12	-21	-29	-38	-47	-56	-65	-73	-82

Adapted from: Threshold Limit Values (TLV™) and Biological Exposure Indeces (BEI™) booklet; published by ACGIH, Cincinnati, Ohio

Little danger in less than one hour exposure of dry skin

Maximum danger of false sense of security

DANGER – Exposed flesh freezes within one minute

GREAT DANGER – Flesh may freeze within 30 seconds

25.3 REGULATED EXPOSURE LIMITS FOR WORKING IN COLD ENVIRONMENTS?

In Canada, there are no maximum exposure limits for cold working environments. The "work warm-up schedule" developed by the Saskatchewan Department of Labour has been adopted by the American Conference of Governmental Industrial Hygienists (ACGIH) as Threshold Limit Values (TLVs) for cold stress.

THRESHOLD LIMIT VALUES WORK/WARM-UP SCHEDULE FOR FOUR-HOUR SHIFT*

Air Temperature Sunny Sky		No Noticeable Wind		5 mph Wind		10 mph Wind		15 mph Wind		20 mph Wind	
°C (approx)	°F (approx)	Max. Work Period	No. of Breaks	Max. Work Period	No. of Breaks	Max. Work Period	No. of Breaks	Max. Work Period	No. of Breaks	Max. Work Period	No. of Breaks
-26° to -28°	-15° to -19°	(Norm breaks) 1		(Norm breaks) 1		75 min.	2	55 min.	3	40 min.	4
-29° to -31°	-20° to -24°	(Norm breaks) 1		75 min.	2	55 min.	3	40 min.	4	30 min.	5
-32° to -34°	-25° to -29°	75 min.	2	55 min.	3	40 min.	4	30 min.	5	Non-emergency work should cease	
-35° to -37°	-30° to -34°	55 min.	3	40 min.	4	30 min.	5	Non-emergency work should cease			
-38° to -39°	-35° to -39°	40 min.	4	30 min.	5	Non-emergency work should cease					
-40° to -42°	-40° to -44°	30 min.	5	Non-emergency work should cease							
-43° to below	-45° & below	Non-emergency work should cease									

*Source: Adapted from Threshold Limit Values (TLV) and Biological Exposure Indices (BEI) booklet: published by ACGIH, Cincinnati, Ohio, 2008.

25.4 WHAT CAN BE DONE TO HELP PREVENT THE ADVERSE EFFECTS OF COLD?

For continuous work in temperatures below the freezing point, heated warming shelters such as tents, cabins or rest rooms should be available. The work should be paced to avoid excessive sweating. If such work is necessary, proper rest periods in a warm area should be allowed and employees should change into dry clothes. New employees should be given enough time to get acclimatized to cold and protective clothing before assuming a full work load.

The risk of cold injury can be minimized by proper equipment design, safe work practices and appropriate clothing. The following is a summary of actions including some from recommendations from the ACGIH (American Conference of Governmental Industrial Hygienists).

25.4.1 Equipment Design

For work below the freezing point, metal handles and bars should be covered by thermal insulating material. Also, machines and tools should be designed so that they can be operated without having to remove mittens or gloves.

25.4.2 Surveillance and Monitoring

Every workplace where the temperature may fall below 16°C should be equipped with a suitable thermometer to monitor any further temperature changes. For colder workplaces with temperatures below the freezing point, the temperature should be monitored at least every 4 hours. For indoor workplaces, whenever the rate of air movement exceeds 2 meters per second (5 miles per hour) it should be recorded every 4 hours. In outdoor workplaces with air temperature below the freezing point, both air temperature and wind speed should be recorded.

25.4.3 Emergency Procedures

Procedures for providing first aid and obtaining medical care should be clearly outlined. For each shift, at least one trained person should be assigned the responsibility of attending to emergencies.

25.4.4 Education

Workers and supervisors involved with work in cold environments should be informed about symptoms of adverse effect exposure to cold, proper clothing habits, safe work practices, physical fitness requirements for work in cold, and emergency procedures in case of cold injury. While working in cold, a buddy system should be used. Look out for one another and be alert for the symptoms of hypothermia.

25.5 WHAT SHOULD I KNOW ABOUT PERSONAL PROTECTIVE EQUIPMENT (PPE) FOR WORKING IN THE COLD?

25.5.1 Clothing

Protective clothing is needed for work at or below 4°C. Clothing should be selected to suit the temperature, weather conditions (e.g., wind speed, rain), the level and duration of activity, and job design. These factors are important to consider so that you can regulate the amount of heat and perspiration you generate while working. If the work pace is too fast or if the type and amount of clothing are not properly selected, excessive sweating may occur. The clothing next to body will become wet and the insulation value of the clothing will decrease dramatically. This increases the risk for cold injuries.

- Clothing should be worn in multiple layers which provide better protection than a single thick garment. The air between layers of clothing provides better insulation than the clothing itself. Having several layers also gives you the option to open or remove a layer before you get too warm and start sweating or to add a layer when you take a break. It also allows you to accommodate changing temperatures and weather conditions. Successive outer layers should be larger than the inner layer, otherwise the outermost layer will compress the inner layers and will decrease the insulation properties of the clothing.
- The inner layer should provide insulation and be able to "wick" moisture away from the

skin to help keep it dry. Thermal underwear made from polyesters or polypropylene is suitable for this purpose. "Fishnet" underwear made from polypropylene wicks perspiration away from the skin and is significantly thicker than regular underwear. It also keeps the second layer away from the skin. The open mesh pattern enables the moisture to evaporate and be captured on the next layer away from the skin. The second layer covers the "holes" in the fishnet underwear which contributes to the insulation properties of the clothing.

- The additional layers of clothing should provide adequate insulation for the weather conditions under which the work being done. They should also be easy to open or remove before you get too warm to prevent excessive sweating during strenuous activity. Outer jackets should have the means for closing off and opening the waist, neck and wrists to help control how much heat is retained or given off. Some jackets have netted pockets and vents around the trunk and under the arm pits (with zippers or Velcro fasteners) for added ventilation possibilities.
- For work in wet conditions, the outer layer of clothing should be waterproof. If the work area cannot be shielded against wind, an easily removable windbreak garment should be used. Under extremely cold conditions, heated protective clothing should be made available if the work cannot be done on a warmer day.
- Almost 50 percent of body heat is lost through the head. A wool knit cap or a liner under a hard hat can reduce excessive heat loss.
- Clothing should be kept clean since dirt fills air cells in fibres of clothing and destroys its insulating ability.
- Clothing must be dry. Moisture should be kept off clothes by removing snow prior to entering heated shelters. While the worker is resting in a heated area, perspiration should be allowed to escape by opening the neck, waist, sleeves and ankle fasteners or by removing outerwear. If the rest area is warm enough it is preferable to take off the outer layer(s) so that the perspiration can evaporate from the clothing.
- If fine manual dexterity is not required, gloves should be used below 4°C for light work and below -7°C for moderate work. For work below -17°C, mittens should be used.
- Cotton is not recommended. It tends to get damp or wet quickly, and loses its insulating properties. Wool and synthetic fibres, on the other hand, do retain heat when wet.

25.5.2 Footwear

Felt-lined, rubber bottomed, leather-topped boots with removable felt insoles are best suited for heavy work in cold since leather is porous, allowing the boots to "breathe" and let perspiration evaporate. Leather boots can be "waterproofed" with some products that do not block the pores in the leather. However, if work involves standing in water or slush (e.g., fire fighting, farming), the waterproof boots must be worn. While these protect the feet from getting wet from cold water in the work environment, they also prevent the perspiration to escape. The insulating materials and socks will become wet more quickly than when wearing leather boots and increase the risk for frostbite.

Foot Comfort and Safety at Work has some general information how to select footwear. (Also, when trying on boots before purchase, wear the same type of sock that you would wear at work

to ensure a proper fit.)

25.5.3 Socks

You may prefer to wear one pair of thick, bulky socks or two pairs - one inner sock of silk, nylon, or thin wool and a slightly larger, thick outer sock. Liner socks made from polypropylene will help keep feet dry and warmer by wicking sweat away from the skin. However, as the outer sock becomes damper, its insulation properties decrease. If work conditions permit, have extra socks available so you can dry your feet and change socks during the day. If two pairs of socks are worn, the outer sock should be a larger size so that the inner sock is not compressed.

Always wear the right thickness of socks for your boots. If they are too thick, the boots will be "tight," and the socks will loose much of their insulating properties when they are compressed inside the boot. The foot would also be "squeezed" which would slow the blood flow to the feet and increase the risk for cold injuries. If the socks are too thin, the boots will fit loosely and may lead to blisters.

25.5.4 Face and Eye Protection

In extremely cold conditions, where face protection is used, eye protection must be separated from the nose and mouth to prevent exhaled moisture from fogging and frosting eye shields or glasses. Select protective eye wear that is appropriate for the work you are doing, and for protection against ultraviolet light from the sun, glare from the snow, blowing snow/ice crystals, and high winds at cold temperatures.

25.6 SOME ADDITIONAL PREVENTION TIPS?

To prevent excessive sweating while working, remove clothing in the following order:

- mittens or gloves (unless you need protection from snow or ice),
- headgear and scarf,
- then open the jacket at the waist and wrists, and
- remove layers of clothing.

As you cool down, follow the reverse order of the above steps.

Prevent contact of bare skin with cold surfaces (especially metallic) below -7°C as well as avoiding skin contact when handling evaporative liquids (gasoline, alcohol, cleaning fluids) below 4°C. Sitting or standing still for prolonged periods should also be avoided.

Balanced meals and adequate liquid intake are essential to maintain body heat and prevent dehydration. Eat properly and frequently. Working in the cold requires more energy than in warm weather because the body is working to keep the body warm. It requires more effort to work when wearing bulky clothing and winter boots especially when walking through snow.

Drink fluids often especially when doing strenuous work. For warming purposes, hot non-alcoholic beverages or soup are suggested. Caffeinated drinks such as coffee should be limited

because it increases urine production and contributes to dehydration. Caffeine also increases the blood flow at the skin surface which can increase the loss of body heat.

Alcohol should not be consumed as it causes expansion of blood vessels in the skin (cutaneous vasodilation) and impairs the body's ability to regulate temperature (it affects shivering that can increase your body temperature) . These effects cause the body to lose heat and thus increase the risk of hypothermia.

In refrigerated rooms, the air speed should not exceed 1 meter per second. If workers are simultaneously exposed to vibration and/or toxic substances, reduced limits for cold exposure may be necessary.

25.7 TYPES OF COLD STRESS

25.7.1 Hypothermia

When exposed to cold temperatures, your body begins to lose heat faster than it can be produced. Prolonged exposure to cold will eventually use up your body's stored energy. The result is hypothermia, or abnormally low body temperature. A body temperature that is too low affects the brain, making the victim unable to think clearly or move well. This makes hypothermia particularly dangerous because a person may not know it is happening and will not be able to do anything about it.

Symptoms

Symptoms of hypothermia can vary depending on how long you have been exposed to the cold temperatures.

Early Symptoms:

- Shivering
- Fatigue
- Loss of coordination
- Confusion and disorientation
- Late Symptoms
- No shivering
- Blue skin
- Dilated pupils
- Slowed pulse and breathing
- Loss of consciousness

First Aid
Take the following steps to treat a worker with hypothermia:

- Alert the supervisor and request medical assistance.
- Move the victim into a warm room or shelter.
- Remove their wet clothing.
- Warm the center of their body first-chest, neck, head, and groin-using an electric blanket, if available; or use skin-to-skin contact under loose, dry layers of blankets, clothing, towels, or sheets.
- Warm beverages may help increase the body temperature, but do not give alcoholic beverages. Do not try to give beverages to an unconscious person.
- After their body temperature has increased, keep the victim dry and wrapped in a warm blanket, including the head and neck.
- If victim has no pulse, begin cardiopulmonary resuscitation (CPR).

25.7.2 Frostbite

Frostbite is an injury to the body that is caused by freezing. Frostbite causes a loss of feeling and color in the affected areas. It most often affects the nose, ears, cheeks, chin, fingers, or toes. Frostbite can permanently damage body tissues, and severe cases can lead to amputation. In extremely cold temperatures, the risk of frostbite is increased in workers with reduced blood circulation and among workers who are not dressed properly.

Symptoms of frostbite include:

- Reduced blood flow to hands and feet (fingers or toes can freeze)
- Numbness
- Tingling or stinging
- Aching
- Bluish or pail, waxy skin

First Aid
Workers suffering from frostbite should:

- Get into a warm room as soon as possible.
- Unless absolutely necessary, do not walk on frostbitten feet or toes-this increases the damage.
- Immerse the affected area in warm-not hot-water (the temperature should be comfortable to the touch for unaffected parts of the body).
- Warm the affected area using body heat; for example, the heat of an armpit can be used to warm frostbitten fingers.
- Do not rub or massage the frostbitten area; doing so may cause more damage.
- Do not use a heating pad, heat lamp, or the heat of a stove, fireplace, or radiator for warming. Affected areas are numb and can be easily burned.

25.7.3 Trench Foot

Trench foot, also known as immersion foot, is an injury of the feet resulting from prolonged exposure to wet and cold conditions. Trench foot can occur at temperatures as high as 60 degrees F if the feet are constantly wet. Injury occurs because wet feet lose heat 25-times

faster than dry feet. Therefore, to prevent heat loss, the body constricts blood vessels to shut down circulation in the feet. Skin tissue begins to die because of lack of oxygen and nutrients and due to the build-up of toxic products.

Symptoms of trench foot include:

- Reddening of the skin
- Numbness
- Leg cramps
- Swelling
- Tingling pain
- Blisters or ulcers
- Bleeding under the skin
- Gangrene (the foot may turn dark purple, blue, or gray)

First Aid

Workers suffering from trench foot should:

- Remove shoes/boots and wet socks.
- Dry their feet.
- Avoid walking on feet, as this may cause tissue damage.

25.7.4 Chilblains

Chilblains are caused by the repeated exposure of skin to temperatures just above freezing to as high as 60 degrees F. The cold exposure causes damage to the capillary beds (groups of small blood vessels) in the skin. This damage is permanent and the redness and itching will return with additional exposure. The redness and itching typically occurs on cheeks, ears, fingers, and toes.

Symptoms of chilblains include:

- Redness
- Itching
- Possible blistering
- Inflammation
- Possible ulceration in severe cases

First Aid

Workers suffering from chilblains should:

- Avoid scratching
- Slowly warm the skin
- Use corticosteroid creams to relieve itching and swelling
- Keep blisters and ulcers clean and covered

25.6 MITIGATION OF COLD STRESS

The following steps should be followed to protect workers from cold stress:

- Schedule maintenance and repair jobs in cold areas for warmer months.
- Schedule cold jobs for the warmer part of the day.

- Reduce the physical demands of workers.
- Use relief workers or assign extra workers for long, demanding jobs.
- Provide warm liquids to workers.
- Provide warm areas for use during break periods.
- Monitor workers who are at risk of cold stress.
- Provide cold stress training that includes information about:
    - Worker risk
    - Prevention
    - Symptoms
    - The importance of monitoring yourself and coworkers for symptoms
    - Treatment
    - Personal protective equipment
    - Recommendations for Workers

Workers should avoid exposure to extremely cold temperatures when possible. When cold environments or temperatures can not be avoided, workers should follow these recommendations to protect themselves from cold stress:

- Wear appropriate clothing.
- Wear several layers of loose clothing. Layering provides better insulation.
- Tight clothing reduces blood circulation. Warm blood needs to be circulated to the extremities.
- When choosing clothing, be aware that some clothing may restrict movement resulting in a hazardous situation.
- Make sure to protect the ears, face, hands and feet in extremely cold weather.
- Boots should be waterproof and insulated.
- Wear a hat; it will keep your whole body warmer. (Hats reduce the amount of body heat that escapes from your head.)
- Move into warm locations during work breaks; limit the amount of time outside on extremely cold days.
- Carry cold weather gear, such as extra socks, gloves, hats, jacket, blankets, a change of clothes and a thermos of hot liquid.
- Include a thermometer and chemical hot packs in your first aid kit.
- Avoid touching cold metal surfaces with bare skin.
- Monitor your physical condition and that of your coworkers.

Appendix I
Employee Report of Accident, Injury or Illness

Appendix II
Daily and Weekly Safety Inspection Forms for the Camp and the Work Site

Main Camp Weekly Health and Safety Check List .

Hallway and Mud Room	Notes
☐ Exit marked and clear ☐ Fire extinguishers charged and unobstructed ☐ Alarms clear and functional ☐ Emergency lighting ☐ Eye wash station in place and full ☐ House keeping clean and unobstructed	

Kitchen and Dinning Room	Notes
☐ Fire extinguishers charged and unobstructed ☐ Alarms clear and functional ☐ Alarm panel on ☐ House keeping clean and unobstructed	

Bedrooms	Notes
☐ Smoke alarm functional ☐ Housekeeping clean and unobstructed	

Laundry Rooms and Showers	Notes
☐ Hot water heater clear ☐ Housekeeping clean and unobstructed ☐ Emergency lighting	

Washrooms	Notes
☐ Housekeeping clean and unobstructed ☐ Emergency lighting	

Housekeeping storage & mini rec. room	Notes
☐ Housekeeping clean and unobstructed ☐ Smoke alarm, battery type.	

Maintenance Shop	Notes
☐ Exit marked and clear ☐ Machines and equipment in good repair ☐ Housekeeping clean and unobstructed ☐ Fire extinguishers charged and unobstructed	

Recreation Room	Notes
☐ Fire extinguishers charged and unobstructed ☐ Smoke alarm ☐ First aid kit in place ☐ Eye wash station in place and full ☐ House keeping clean and unobstructed	

Checked by :	Date

Kitchen Weekly Health and Safety Check

Food Preparation Area (Bakery)	Notes
☐ Floors, walls and counters cleaned daily ☐ Shelves cleaned weekly ☐ Food covered or properly stored ☐ Mixer cleaned after every use ☐ Spice shelf cleaned weekly including bottles ☐ Baking table scrubbed weekly ☐ Pots and pans stored clean, dry and covered ☐ No dirty dishes remaining ☐ Cleaned weekly	
Freezers	Notes
☐ Temperature at 0°F/-18°C ☐ Doors seal properly ☐ No major ice built ☐ Clean ☐ All open food is covered or wrapped ☐ Lights work ☐ Outside door is closed and latched	
Dry Storage Room	Notes
☐ Area dry ☐ Food off floor ☐ No perishables ☐ No open food ☐ Box and bags closed, lids on all containers ☐ Lights work ☐ Door latch and seal properly ☐ Floor cleaned as needed ☐ Walls & shelves cleaned as needed ☐ Exit not blocked by boxes	
7 Refrigerators (Mud Room, 3 Kitchen, Dry Storage, Maintenance Room)	Notes
☐ Temperature at or below 1-4°C ☐ Food off floor (minimum 6”) ☐ Floors cleaned as needed ☐ Walls & shelves cleaned weekly or as needed ☐ Doors latch ☐ Light works ☐ No ice build up on walls or con cooling unit ☐ No open tin cans ☐ All food is covered or wrapped ☐ Food is properly stored	

Grill and Oven	Notes
☐ Cleaned after each use ☐ Grease trap emptied ☐ Hoods cleaned weekly ☐ Filters soaked & run through dishwasher weekly ☐ Oven cleaned monthly or as needed ☐ Trays under top elements cleaned weekly ☐ Deep fryer covered when not in use	
Sink	Notes
☐ Scrub and clean daily ☐ Empty when not in use ☐ Plugs function properly ☐ All used dish clothes & towels sent to be washed ☐ Steel wool put into plastic storage container ☐ Dishes & cutlery drying in perforated trays	.
Garbage	Notes
☐ Emptied every night ☐ Garbage cans cleaned monthly or as needed	
Rear Storage (Behind Bakery)	Notes
☐ Shelves clean and dry ☐ Light works ☐ Walls & shelves cleaned monthly or as needed ☐ Floor washed weekly or as needed	
Vents	Notes
☐ Properly cleared ☐ Clean	
Steam Table	Notes
☐ Should be able to boil water ☐ Minimum water temperature 190^{o}F/88^{o}C ☐ Water emptied every night ☐ Table covered every night ☐ Covers and trays stored underneath, dry & clean ☐ Shelving underneath clean and dry	
Dishes and Cutlery	Notes
☐ Dishes stacked, dry and clean ☐ Cutlery dry and clean ☐ Cutlery stored in proper containers	

☐ Cutlery covered between meals	
Coffee and Drinks Tables	Notes
☐ Cleaned daily or as needed ☐ Deep clean monthly or as needed	
Dining Room	Notes
☐ Tables cleaned after each meal ☐ Floors mopped once per day or as needed ☐ Floors swept after lunch and supper ☐ High traffic area mopped after lunch	
Rec. Room	Notes
☐ Dirty dishes removed or in dirty dishes box ☐ Food covered ☐ Table cleaned	

Checked by:	Date:

Cape Christian Site Weekly H&S Safety Check

Garage mechanical repair shop	Notes
☐ Exit sign marked and unobstructed	
☐ Fire extinguishers charged and unobstructed	
☐ Face shield in place	
☐ Emergency lighting in place and functional	
☐ Eye wash station & first aid kit in place and full	
☐ Tools in order with their safety guard	
☐ Fire extinguishers charged and unobstructed	
☐ Bedding list in place at the gathering sign	
☐ Yellow spill kit box in place and full	

Flammable Materials Storage	Notes
☐ Are all containers closed	
☐ Are all containers properly labelled	

Hazmat garage Jimi Arey Storm Shelter	Notes
☐ Fire extinguishers charged and unobstructed	
☐ Eco Blast alarm in place	
☐ Eye wash station in place and full	
☐ First aid kit in place	
☐ Tools in order with their safety guard	

Crusher barrel beach site	Notes
☐ Fire extinguishers charged	
☐ First aid kit & Eye wash station in place and full	
☐ Eco Blast alarm in place	
☐ Yellow spill kit box in place and full	

Sewage Lagoon	Notes
☐ Is there any signs of leakage	
☐ Are the berms failing	
☐ Are all of the warning signs in place	

Fuel & gasoline storage & filling station	Notes
☐ Yellow spill kit box in place and full	
☐ Extinguisher & Eye wash station in place and full	
☐ Electrical pumps properly grounded	
☐ Are the berms intact	
☐ Is any part of the liner exposed	
☐ Does the exposed liner have a hole in it	
☐ Are all containers properly labelled	

E.B.A. laboratory	Notes
☐ Housekeeping clean and unobstructed	
☐ Emergency lighting & smoke alarm functional	
☐ First aid kit & Eye wash station in place and full	
☐ Fire extinguishers charged and unobstructed	

Site signage	Notes
☐ Drinking water , waste storage facility . ☐ Non hazardous waste land field , sewage lagoon. ☐ Diesel & gasoline station , eye wash station. ☐ No smoking ☐ ☐ ☐	

Check By:	Date:

Site Daily H&S Safety Check

White Crew Cab F-350 Pickup Truck	Notes
☐ Is there any signs of leakage ☐ Is the spill kit in place	

Burgundy F-250 Pickup Truck	Notes
☐ Is there any signs of leakage ☐ Is the spill kit in place	

White Reservoir	Notes
☐ Is there any signs of leakage ☐ Is there any water in the dyke	

Fuel Truck	Notes
☐ Is there signs of leakage ☐ Is the spill kit in place	

Garage Furnace Oil Tank	Notes
☐ Is there signs of leakage ☐ Is there any water in the dyke	

Flammable Materials Storage Container	Notes
☐ Is there any signs of leakage or spillage ☐ Is the membrane on the floor intact	

Fuel Storage Berm	Notes
☐ Is there any sign of a fuel leak ☐ Is the signage in place ☐ Is the spill kit complete	

Garbage Incinerator Tank	Notes
☐ Is there signs of leakage ☐ Are the safety equipment in place	

Work Site Inspection – Location:	Notes
☐ All necessary safety equipment is in place ☐ All workers are wearing their PPE ☐ Everyone is working in a safe and secure manner	

Work Site Inspection – Location:	Notes
☐ All necessary safety equipment is in place ☐ All workers are wearing their PPE ☐ Everyone is working in a safe and secure manner	

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Work Site Inspection – Location:	Notes
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Checked by :	Date

Appendix III
Cape Christian Camp Rules / New Employee Site Safety Orientation Checklists

CAPE CHRISTIAN PROJECT 2010
SAFETY RULES
&
SITE SAFETY ORIENTATION CHECKLIST

Name: _____

Job/Dept Assigned: _____

Immediate Supervisor: _____

MISSION STATEMENT

Qikiqtaaluk Logistics mission is to undertake the remediation of the Cape Christian site, in accordance with or exceeding applicable regulations and best management practices, in the best interest of Project stakeholders, and to the maximum benefit to the people of Nunavut and Canada as a whole.

STAKEHOLDERS

The Cape Christian site is owned by the federal government of Canada, through Indian and Northern Affairs Canada (INAC). As such, INAC is the generator of solid and hazardous waste materials at the site. INAC is also responsible for and has liability for conditions and risks existing at the site.

Qikiqtaaluk Logisitics (QL) through partnership with INAC, assumes the task of remediation of the site, according to the methodology that is approved by INAC, QL is required to execute site work according to relevant government regulations and work requirements.

The people of Nunavut and Canada have an interest in ensuring that the site is remediated to a level that diminishes significant risks to the environment and the public health. Project roles, responsibilities, expectations, payments and requirements were defined through the Contribution Agreement between INAC and QL.

OCCUPATIONAL HEALTH AND THE ENVIRONMENT

All project work is to be carried out in a fashion that minimises occupational health and safety and environment risks.

SAFETY TOPICS PRESENTED DURING GENERAL SITE ORIENTATION

1. General Safety Rules and Policies
2. Emergency Plans: Routes and Assembly Locations
3. Procedures for safety violations

GENERAL SITE SAFETY RULES

1. Hard hats, safety glasses, steel toed boots and a safety vest shall be worn at all times. Exceptions are: inside cabs of vehicles, and inside camp when not working and outside of camp after work hours.
2. Report all work injuries and illnesses immediately to your supervisor or the camp Health and Safety Officer.
3. Report all Unsafe Acts or Unsafe Conditions to your Supervisor.
4. Smoking is permitted only in the designated “Smoking Areas”.
5. The use of ATVs requires the permission of your supervisor. The use of a helmet with ATVs is mandatory. An inspection check list must be completed prior to operating the ATV.
6. Speed limits are 5 km/hr in camp, and 30 km/hr on the roads for all equipment, vehicles and ATVs.
7. The use of seat belts is mandatory in vehicles when they are in motion.
8. Smoking is not permitted in vehicles.
9. Unauthorised personnel shall not enter contaminated zones.
10. Use, possession, sale or being under the influence of illegal drugs, misuse of prescription drugs and/or alcohol us not permitted on site, at any time. Offenders will be immediately terminated and removed from the site.
11. All workers are to stop work if they are unsure about proper procedures to follow and check with their supervisors.
12. Only authorized and trained Employees may repair or adjust machinery and equipment. Lock and Tag-Out Procedures must be followed before removing any machine guards or working on powered machinery and equipment. Replace all guards when the job is completed.
13. Only qualified and certified Employed may work on or near Exposed Energized Electrical Parts or Electrical Equipment. Follow Electrical Safety Rules when working with electrically powered machinery and equipment.
14. Only authorized and trained Employees may dispense or use chemicals. All employees that handle chemicals must have completed the site “Workplace Hazardous Material Information System” (WHIMIS) course.
15. Keep work areas clean and aisles clear. Do not block emergency exits and equipment.
16. Wear and use the prescribed Personal Protective Safety Equipment. This includes foot protection, head protection, gloves, etc.
17. No loud noise in camp after 10:30 pm and all personnel should be in their rooms after 11:00 pm
18. Be bear aware! Use the buddy system. ATV excursions require a bear monitor and hourly radio checks and permission from the site superintendent
19. You are obligated to meet for a morning meeting in the recreation room at 7:00 am sharp.
20. You should know the location of the first aid room and health and safety office.

21. Gathering point in case of an emergency or fire alarm is the GARAGE. Be visible for personnel counts and follow orders from the site superintendent or camp supervisor.

SPECIFY SAFETY RULES

1. I am aware that safety programs are in place for the following tasks and topics – Such programs shall be reviewed and verified by the site Safety Officer, or designate prior to working in such an area or on such a task:
    a. Hazardous Water Operations
    b. Polar Bears and Firearms
    c. Vehicle Safety
    d. Demolition Activities
    e. Excavation/Construction Requirements
    f. Tool Safety
    g. Lock and Tag-out Procedures
    h. Fall Prevention
    i. Personal Protection Equipment
    j. Respiratory Protection
    k. Hazard Communication & Chemical Safety
    l. Flammable Liquid
    m. Housekeeping & Material Storage
    n. Welding Safety
    o. Forklift Safety
    p. Electrical Safety
    q. Waste Hydrocarbon Incineration
2. I am aware that copies of the Health and Safety Plan where all Safety programs are described are available on site.
3. I am aware that the Health and Safety Officer is responsible for the overall conduct of the Safety programs on site.
4. I am aware that I shall comply with all camp rules and safety requirements
5. I understand that failure to follow the above rules may cause serious injury and/or illness. Disciplinary Action, up to and including Termination, will be used to assure rule enforcement.

Please use common sense and think before you act. If you are not sure how to complete a job or task safely or have any questions, ask your supervisor.

Employee's Signature _____

Trainer Signature _____

Date: _____

Appendix IV
Work Methodology Plans

Appendix V
Vehicle Preventive Maintenance

Appendix VI
Emergency Evacuation Plan

Appendix VII
Occupational Exposure Limits