

Standard Maintenance Operating Procedure

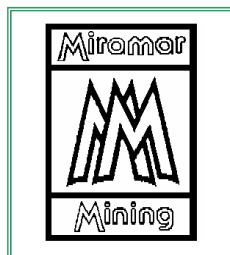
Hydrocarbon Fuel & Gas Dispensing Procedure

MHBLMAIN-FGDP-SMOP-2004



MIRAMAR HOPE BAY LIMITED

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Document # MHBLMAIN-FGDP-SMOP-2004
August 2004

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Document Control Record

The re-issues of this document, listed below, have been reviewed and approved by Quality Assurance and Management and are authorised for use within the Miramar Hope Bay Ltd organisation. The footer "**Control Document**" is in red.

DOCUMENT CONTROL REVISION HISTORY					
Rev No	Page No	Details of Issue	Authorisation		
			Name	Initial	Date
0	All	Original Document	Scott Stringer		Aug 2004
1	All	Original Document	Matthew Kawei	hmk	Aug 2004
		Original Document	Mike Cripps		Aug 2004

Distribution List

Date	Copy #	Name	Department/Location	Type
Original copy	0	Scott Stringer	Human Resources, Con Mine	Electronic, pfd & doc
			Boston Camp	
			Windy Lake Camp	
			Patch Lake (Major)	
			Doris North	
			Goose Lake	

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1 Introduction

1.1 General

This document describes the petroleum products handling procedures to be used by Miramar Hope Bay Limited personnel. These procedures have been developed from legislative requirements, guidelines and updated work procedures intended to promote good practices and continual improvement in fuel handling at all our properties along the Hope Bay belt. This document will be review regularly with the intent to continually improve safety and environmental performances.

1.2 The dangers

Petroleum products are flammable and combustible liquids which can give off flammable vapour, even at very low temperatures. This means there is always a risk of fire or explosion if a source of ignition is present. It floats on the surface of water and may travel long distances, eventually causing danger away from the place where it escaped. Vapour does not disperse easily and may also travel long distances. It tends to sink to the lowest possible level and may collect in tanks, cavities, drains, pits, or other enclosed areas, where there is little air movement. Flammable atmospheres may be present in empty storage tanks and containers. There is also a danger if products are spilled on clothing, rags and receiving environment.

1.3 Glossary

AST - means above ground storage tank (capacity greater than 230 litres (L)) which at least 90% above surface grade.

Berm - means an impermeable system for containing leaks and spills. In tank farms containing a single tank, it must be of sufficient size to contain the volume of the tank plus 10%. For a multi-tank farm facility the berm must contain 110% of the largest tank or 100% of the largest tank plus 10% of the aggregate volume of all the tanks within the berm, which is greater. The berm can be constructed of steel, concrete, or soil in combination with a geotextile liner that is compatible with and impermeable to the stored liquid.

Drum - means a barrel having capacity of less than 230 L (50 imperial gallons) but greater than 23 litres (5 imperial gallons).

Flammable liquids, combustible liquids - means liquids with a flash point below 37.8 °C are referred to as flammable liquids, whereas liquids with a flash point at or above 37.8 °C are referred to as combustible liquids.

Flash point - means the lowest temperature at which a liquid or solid (e.g. petroleum product) gives off vapour of sufficient concentration to form an ignitable mixture in air.

Fix location - means any location that is used to store a fuel tank (or container), regardless of the length of time it is being stored.

Fuel cache - means a temporary storage (e.g. seasonal) of drums at a remote location.

Fuel facility - means any location (may include a remote fuel cache) at which flammable liquids or combustible liquids are dispensed from a tank vehicle or fixed storage tank into a fuel tank of a motor vehicle, equipment or watercraft.

Overfill protection - Includes: prevention of tanks from being overfilled by providing continuous supervision of the filling operation by personnel qualified to supervise such an operation; or an overfill protection device conforming to ULC/ORD-C58.15, "Overfill protection Devices for Flammable Liquid Storage Tanks." Examples include float valve shut off devices, audible or visible overfill alarm systems, automatic sensing and shut-off devices and vent restriction devices.

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Risk assessment – means the rating of relative risks which includes: environmental, operational and prevention/preparedness factors that is expected to be made and documented whenever fuel is stored at a new location.

Secondary containment - means structures used for spill control such as:

- A double walled container (or tank within a tank design);
- A steel or concrete container (tank within a box design) capable of containing 110% of the volume being stored (should be manufactured to a ULC specification);
- An earth or clay dyke which is lined with an impermeable geomembrane material and is capable of containing 110% of the volume stored; or
- A site which is graded or sloped to divert a spill into a collection system where it will not impact public health, safety or the environment. The containment should be lined with a geomembrane to prevent contaminating the subsurface soil layer.

Spill control - means site selection and storm water management practices and techniques to prevent spills from entering natural waterways. It may include techniques and structures for diverting or containing spills and preventing them from entering storm water drains and sanitation sewers, and may include grading the site, and using double walled tanks and tank-in-box systems.

Storage tanks - means a vessel for flammable or combustible liquids having a capacity greater than 230 L designed to be installed in a fixed location.

Tank farm - means any facility where bulk petroleum products/hydrocarbons fuels are stored in storage tank (s).

Tank vehicle - means any vehicle, other than railroad tank cars and boats, with a cargo tank having a capacity greater than 454 L, mounted or built as an integral part of the vehicle and used for the transportation of flammable liquids or combustible liquids and including tank trucks, trailers and semi trailers.

Truck-box fuel tank (includes slip tank or Tidy tank) - means a portable container used for transportation of fuels on a truck. The capacity may vary depending on the type of tank.

2 Responsibility

2.1 Site Supervisor

The Site Supervisor is accountable to the Human Resources Superintendent, responsible for the Miramar Hope Bay Limited project. In his/her responsibility relating to fuel management, the site supervisor shall ensure that:-

- As per the legislative requirement, the Site Supervisor has a responsibility towards the operator and the second attendant, both to take all reasonable steps to ensure their safety and to equip them to do their jobs without danger to themselves, others or the receiving environment.
- An assessment of the risks arising from the petroleum products transportation, storage, and dispensing operation at site in areas of responsibility shall be done and to take steps to eliminate or control those risks.
- All maintenance employees responsible for fuel handing are trained and signed off by the Site supervisor. This training shall be done according to the Miramar Hope Bay Limited Fuel Handling Training protocol.
- All training records shall be filed and readily available.
- Dispensing of any petroleum products from the fuel farm shall not take place until: -

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- Site Supervisor unlocks the valve;
- Supervise dispensing and refuelling; and
- Site Supervisor locks the valve after dispensing and refuelling.
- Good housekeeping practices are maintained at all times;
- Keep a record of fuel dips for all storage tanks in his/her area of responsibility. The following conditions apply depending on the frequency of usage.
 - If used monthly – Dips taken weekly;
 - If used weekly – Dips taken daily; and
 - If used daily – Dips taken immediately after each dispensing trip.
- Daily, weekly and monthly fuel storage inspections are carried out and all hazards identified are corrected immediately. All reports shall be documented, filed and readily available.
- Preventive maintenance (PM) on all storage tanks and dispensing systems are done monthly. Any form of maintenance or changes to the dispensing system shall be documented and reported in the monthly report. All WHIMS signs are clearly displayed on each storage facility.
- All Spill kits are stocked with appropriate materials and available at each fuel storage area. The following should be taken into consideration.
 - A sufficient backup supply should be available on site if or when required at short notice.
 - Monthly stock take of the spill kits - location of kits and quantity of materials in each kit.
- All empty fuel storage containers should be collected, counted and sent off site for recycling.
- Provide monthly fuel status report to Human Resource Superintendent.

2.2 Petroleum Product Dispenser/Operator

The dispenser/operator is accountable to the Site Supervisor. In his/her responsibility relating to fuel management, the dispenser/operator (you) shall ensure that:-

- You have a duty to look after your own safety and that of others.
- It is your legal responsibility to inform your employer if you identify any potentially dangerous situations which are not being controlled at the work area. The essential steps to the inspection are:
 - STEP 1 - Look for the hazards;
 - STEP 2 - Decide who or what might be harmed and how;
 - STEP 3 - Evaluate the risks arising from the hazards and decide whether existing controls are adequate or more should be done;
 - STEP 4 - Record the significant findings of the assessment on your 5-point safety card;
 - STEP 5 - If the existing controls are inadequate, inform site supervisor immediately on Radio Channel # 2.

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- Trained in Fuel handling and dispensing procedures.
- A fire extinguisher and a spill kit are available.
- Be seen by the second attendant at all times and that your view is not obstructed.
- Proper procedures are followed throughout the dispensing/filling operation, e.g. dispenser nozzles are correctly inserted, delivery hoses are not stretched or kinked and tripper latches are not wedged open with any other objects.
- Vehicle engines are switched off when at the dispensers.
- No smoking in the vicinity of the dispenser nozzle.
- To fill containers with petroleum products, use only those which are approved.
- Earth wire is grounded.
- ALWAYS check carefully that there is no danger before you start dispenser nozzle and during its operation.
- Use your fingers to squeeze the trigger and stay with the dispenser nozzle until the task is completed.

2.3 Second Petroleum Product Dispenser/Attendant

The second attendant is accountable to the Site Supervisor. In his/her responsibility relating to fuel management, the dispenser/operator (you) shall ensure that:-

- You have a duty to look after your own safety and that of others.
- It is your legal responsibility to inform your employer if you identify any potentially dangerous situations which are not being controlled at the work area. The essential steps to the inspection are:
 - STEP 1 - Look for the hazards;
 - STEP 2 - Decide who or what might be harmed and how;
 - STEP 3 - Evaluate the risks arising from the hazards and decide whether existing controls are adequate or more should be done;
 - STEP 4 - Record the significant findings of the assessment on your 5-point safety card;
 - STEP 5 - If the existing controls are inadequate, inform site supervisor immediately on Radio Channel # 2.
- Trained in Fuel handling and dispensing procedures.
- A fire extinguisher and a spill kit are available.
- Be seen by the dispenser/operator at all times and that your view is not obstructed.
- No smoking when carrying out this task.
- Earth wire is grounded.
- Stay with the open valve until instructed to shut the valve off to closed position.

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3 Dispensing Procedure

Every trained and competent personnel dispensing flammable liquids and combustible liquids shall:

- a. Take precautions to prevent overflow or spillage of the liquid being dispensed;
- b. Not knowingly overfill the fuel system;
- c. In the event of spillage, immediately apply a non-combustible absorbent material to soak up the spillage;
- d. Not dispense gasoline or diesel within 7.5 meters of any ignition source;
- e. Not use any OBJECT or DEVICE that is not an integral part of the hose nozzle valve assembly to maintain flow of fuel; and
- f. Report any spillage or near miss immediately to your supervisor.

3.1 Dispensing of fuel from the fuel farm

Dispensing of any petroleum products from the Fuel Farm ***shall not*** be carried out without the ***supervision*** of the ***Site Supervisor*** and a ***second attendant***.

1. The second attendant dips and records the volume of the storage tank before dispensing takes place.
2. The dispenser/operator uncoils the hose and stretches the hose towards the refilling tanks.
3. Dispenser/operator secures the dispenser nozzle into an empty 205 drum and opens the lid of the tidy tank or an approved container used for transporting fuel. (*Note: if container is attached to a vehicle, ensure that the engine is switched off and the container is securely fastened before any dispensing taking place*).
4. The dispenser/operator inserts the dispensing nozzle into opening and asked the Site Supervisor to unlock the dispensing valve.
5. The second attendant then push the lever to open position and keeps it open until asked to turn it to off position.
6. The dispenser/operator squeezes the trigger with his/her fingers and allows the fuel to drain in to the tank. Checks the tank level regularly.
7. When fuel approaches the 85% level, he/she informs the second attendant to push the lever to close position. This will allow for all the fuel still in the hose to be drained off into the refuelling tank.
8. The second attendant gets the final dip reading.
9. Dispenser/operator lets go the trigger, wraps the nozzle with absorbent pad and secures the nozzle above ground level. Once the nozzle is temporally secured, he/she closes the tidy tank lid.
10. The hose is then recoiled, with dispenser nozzle secured above ground level and ready for next day.
11. Site supervisor locks the dispensing valve.

3.2 Fuelling of the Tidy Tanks

The two fuel handlers assigned for the task at the morning meeting shall ensure that:-

1. The dispenser/operator uncoils the hose and stretches the hose towards the refilling tanks.

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2. Dispenser/operator secures the dispenser nozzle into an empty 205 drum and opens the lid of the tidy tank.
3. Inserts the dispensing nozzle into opening and asked the second attendant to open the dispensing valve.
4. The second attendant opens the valves and keeps it open until asked to turn it to off.
5. The dispenser/operator squeezes the trigger with his/her fingers and allows the fuel to drain in to the tank. Checks the tank level regularly.
6. When fuel approaches the 85% level, he/she informs the second attendant to close the valve. This will allow for all the fuel still in the hose to be drained off into the refuelling tank.
7. The dip reading is tank.
8. Dispenser/operator lets go the trigger, wraps the nozzle with absorbent pad and secures the nozzle above ground level. Once the nozzle is temporally secured, he/she closes the tidy tank lid.
9. The hose is then recoiled, with dispenser nozzle secured and ready for next refilling task.

3.3 Fuelling of 205 Litre drums for Tents and Core Shacks

The two fuel handlers assigned for the task at the morning meeting shall ensure that:-

1. The dispenser/operator uncoils the hose and stretches the hose towards the refilling drum.
2. Dispenser/operator secures the dispenser nozzle into an empty 205 drum and opens the lid of the tidy tank.
3. Inserts the dispensing nozzle into opening and asked the second attendant to open the dispensing valve. *(Note that this storage container (205 L) is laid horizontally and therefore extra care has to be taken during refuelling process).*
4. The second attendant opens the valves and keeps it open until asked to turn it to off.
5. The dispenser/operator squeezes the trigger with his/her fingers and allows the fuel to drain in to the drum. Stop occasionally and visually check for the fuel level.
6. When fuel approaches the 85% level, he/she informs the second attendant to close the valve. This will allow for all the fuel still in the hose to be drained off into the refuelling tank.
7. Dispenser/operator lets go the trigger, wraps the nozzle with absorbent pad and secures the nozzle above ground level. Once the nozzle is temporally secured, he/she closes the drum lid to allow exchange of air. This aids in release of fuel to the stove burner located inside the tent.
8. The hose is then recoiled, with dispenser nozzle secured and ready for next refilling task.
9. If the drip tray has water or the absorbent pad is soaked with fuel, remove the contaminated water and pad and disposed off as per waste management procedures.

3.4 Fuelling of the Float Planes

The refuelling of the chartered float planes is the responsibility chartered company and its pilots. However, since the refuelling activity will be done on our property, the following measures shall be in place in to ensure prevention of any spill during this process.

The Site Supervisor shall ensure that:-

1. The required numbers of 205 L Jet B drums requested by the pilots are delivered to the beach. No drums should be rolled onto the jetty without the permission of the Site Supervisor.

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2. Emergency response equipment (a Spill kit & a Fire extinguisher) shall be made available. Particular importance should be given to bringing in a packet of white booms.
3. Fuelling of the float plane should be done only after all other activities (loading and unloading) are completed.
4. When all clear is given by the pilot to refuel the plane, a drum is rolled on to the jetty and made to stand upright into a secondary containment area. If no such facility is available, sufficient absorbent pads should be placed under the drum to cover at least an area greater than the drum base.
5. Place the electric hand pump into a secondary containment tray before operation.
6. Ensures all hoses are connected properly before proceeding with dispensing of the fuel.
7. A nozzle disperser attendant (pilot-1) stays with the nozzle until the task is completed.
8. The second attendant (pilot-2) operates the pump.
9. Once filled, use absorbent pads to remove any fuel on the nozzle and the siphon dip before storing away the equipment.
10. Ensure drum lid is securely fastened before removing from jetty. Pump, empty drum and used absorbent mats are removed from the jetty and the water front.

3.5 Fuelling the helicopters

The refuelling of the helicopters is the responsibility of the chartered company and its pilot and the engineer. However, since the refuelling activity will be done on our property, the following measures shall be in place to ensure prevention of any spill during this process.

The Site Supervisor shall ensure that:-

1. The required numbers of 205 L Jet B drums requested by the pilots are delivered to the helipad. No drums should be rolled onto the helipad without the knowledge of the Site Supervisor.
2. Emergency response equipment (a Spill kit & a Fire extinguisher) shall be made available at location.
3. Fuelling of the helicopter should only take place when all clear is given by the pilot. A drum is rolled onto the pad and made to stand upright. Due to the nature of the operation, no loose or light material should be allowed near the helicopter.
4. Ensures all hoses are connected properly before proceeding with dispensing of the fuel.
5. A nozzle disperser attendant (pilot-1) stays with the nozzle until the task is completed.
6. The second attendant (engineer) operates the pump.
7. Once filled, use absorbent pads to remove any fuel on the nozzle and the siphon dip before storing away the equipment. **ONLY DO THIS WHEN THE ENGINE IS SWITCHED OFF.**
8. Ensure drum lid is securely fastened before removing from the pad.

4 Training

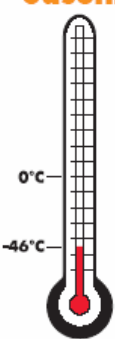
All employees working at Miramar Hope Bay Limited project sites responsible for fuel handling shall receive training on proper procedures. After the training is conducted, the employee must demonstrate they can perform this work safely and competently, eliminating the risk of spills before being permitted to perform this work anywhere within the belt. The supervisor in charge of the employee is responsible to ensure this training is completed. A list of the tasks is provided in Appendix A.

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5 Fuelling Facts

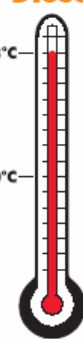
Gasoline and diesel fuel can be extremely dangerous unless properly and safely handled. These are some of the characteristics and hazards of fuel that every employee should know:

Gasoline




-46°C

Diesel



+37.8°C

Warning



Will it Burn?
 Petroleum liquids, whether they are gasoline or diesel, do NOT burn. ONLY THE VAPOURS BURN.

What is important for you to know is what products give off flammable vapours, and when.

Different petroleum liquids give off flammable vapours at different temperatures (this is called flash point). The thermometers above show when gasoline (-46°C) and diesel (+37.8°C) give off flammable vapours.

THESE PRODUCTS ARE HAZARDOUS ABOVE THEIR FLASHPOINTS

Note: A fine spray of these liquids will be as hazardous as the vapours.



Vapour Flow

Heavier than air – hugs ground – displaces air.
 May cause asphyxiation.
 May explode if exposed to a source of ignition.

Note: A fine spray or mist of a flammable liquid is as hazardous as a flammable vapour.



Product Flow

Flows on the ground surface and floats on water.
 Spills can travel through the ground, contaminate drinking water and seep into buildings.

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First Aid

Wash contaminated skin with soap and warm water.
Do not use hot water.
Flush eyes with water.
If an individual is overcome by vapours remove them to fresh air.
Do not induce vomiting.
Obtain medical attention.



Toxicity

Vapours are moderately irritating to the respiratory passages. The liquid when accidentally aspirated into the lungs can cause severe inflammation of the lungs. Excessive exposure to benzene may cause leukemia.
Flammable liquid.
May cause cancer.
Vapours are moderately irritating to the eyes.
Prolonged immersion in liquid may lead to chemical burns.

6 Emergency Preparedness

Spills of chemicals, fuels and other substances may occur as isolated events or they may occur with other emergencies such as fire, explosion, natural causes or accident. The accuracy and urgency in disseminating information to your immediate supervisor and Site Supervisor is crucial to the success of the prevention or recovery process in any accident/incident.

6.1 First Responders

In the event of any leak, spill or system failure, steps taken by employees at the spill site are as follows:

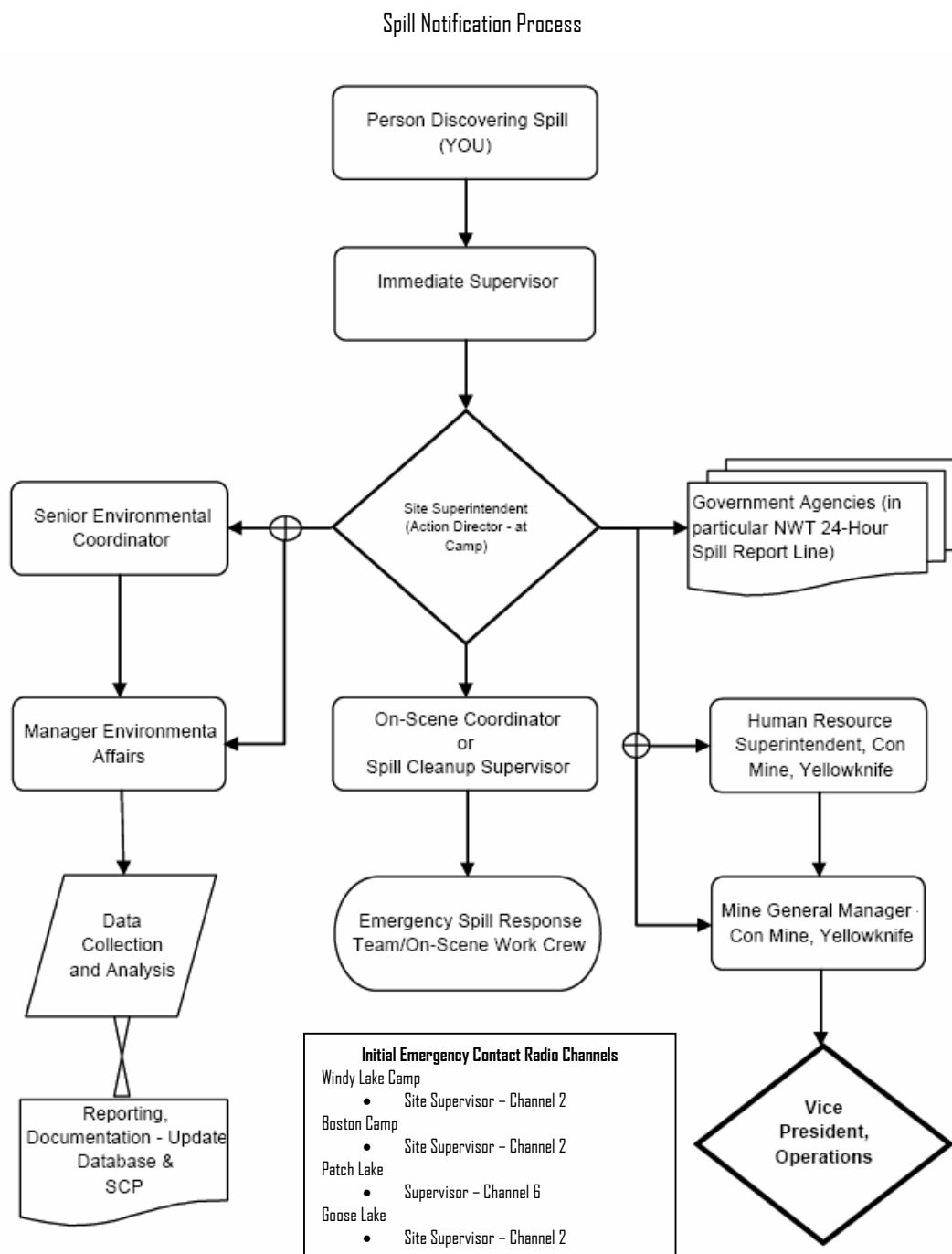
- Be alert, ensure your safety and the safety of others first.
- Assess the hazard to persons in the vicinity of the spill, leak or failure system. If the risk of gas fumes exists or if fire or explosion hazards are perceived, leave the area immediately and warn co-workers to leave also.
- Assess nature and status of the spill, leak or system failure and measures to be taken to bring the situation under control.
- Remove any source of ignition.
- When safe to do so, stop the flow of the spilled material.
- Cleanup spill using absorbent material located on location.
- Notify your Supervisor immediately.
- If First Aid is warranted, notify on-site Medic immediately. The Medic then activates the MediVac Emergency procedure protocol.
- Wait for further instructions from your supervisor.

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- Record all information on the status of the situation. Take photographs of the site (if possible) before the clean up and subsequent to clean up.

6.2 On Scene Spill 24-hours Notification Process

The key personnel involved during a spill occurrence and the reporting responsibilities are illustrated in the following chart below. The responsibilities of each of these positions are discussed in Section 5 of the Spill Contingency Plan document.



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7 Appendix A

Appendix A: Fuel Handling Training



MIRAMAR HOPE BAY LTD.
 #300 – 889 Harbourside Drive, North Vancouver, B.C. Canada V7P 3S1
 Tel: (604) 985-2572 Fax: (604) 980-0731 Toll Free: 1-800-663-8780

Fuel Handling Training

Name		Department	
Date of Training		Location of Training	

All employees responsible for fueling equipment, transferring fuel, and filling tanks of any size must demonstrate that they can perform this work safely, eliminating the risk of spills. The employee must demonstrate that he/she can competently perform each task listed below before being permitted to perform this work anywhere within the belt. The supervisor in charge of the employee is responsible to ensure this training is completed.

INSTRUCTIONS – DESCRIPTION OF TASK

- ◇ The employee understands the impact of spills to the environment and company, including smallest of leaks, drips, and residuals petroleum products.
- ◇ ALL SPILLS MUST BE REPORTED IMMEDIATELY TO THE SUPERVISOR. If can be done safely without harm to the worker, all leaks must be stopped immediately to lessen the impact to the environment.
- ◇ Check pumps, hoses, valves and fittings for sign of leaks.
- ◇ Check fill hatches, inspection covers and other tanks openings for leaks.
- ◇ Check tanks to ensure they are free from rust and in good repair.
- ◇ Identify maximum levels for filling tanks to compensate for fuel expansion. DO NOT FILL GREATER THAN 85%.
- ◇ Ensure that the filling process is always monitored constantly to prevent overfilling and spilling. In all cases, when filling larger tanks, 2 people will be required to perform the job. The dispenser valve has to be opened by the Site Supervisor and locked after use immediately.
- ◇ Any tank accidentally overfilled must be reported to the supervisor immediately.
- ◇ Ensure valves, hoses, and pumps are protected from damaged.
- ◇ Eliminate any chance of accidental siphoning (i.e. keep fuel nozzles stored about the tank connection, turn pumps off when not in use).
- ◇ Ensure filling hoses and nozzles are kept within the containment areas where possible. Do not have them hanging outside the containment area where a spill could occur.
- ◇ Inspect tidy tanks and 45 gallon fuel drums are properly secured to platforms and stands.
- ◇ Inspect all platforms and stands to ensure that they are in good condition.
- ◇ Follow fire safety procedures (no smoking, no open flame within 7.5 meters). Fire extinguishing equipment must be in place at every supply or filling area.
- ◇ Ensure proper absorbent material is placed under valves, tanks, nozzles, and other potential leak areas.
- ◇ Absorbent material is changed often as it reaches its maximum limit for absorbing petroleum products. Oil soaked pads must be properly disposed of. Check with supervisor for proper method.
- ◇ Containment areas are inspected frequently for damages, erosion of fill material, snow falls and leaks.
- ◇ Containment areas including drip trays must be kept clean of debris and water at all times.
- ◇ The supervisor must authorize the pumping of water from any containment area or drip tray. Any contaminated water may have to be properly treated before releasing to the environment.

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- ◇ Spill containment material must be inspected regularly to ensure there is sufficient material to deal with emergencies. Spill kits must be properly marked and kept in designated areas.
- ◇ Any fuel being transported must have lids, caps and valves closed tightly and where necessary locked.
- ◇ Site supervisor is responsible for removing locks removed from valves, covers and other tank openings for the purpose of fueling, filling or maintenance must be re-secured when job is completed.
- ◇ Waste oil stored in drums must be inspected regularly and kept upright to prevent accidental spillage. Bungs must be tightly secured.
- ◇ 45-gallon drums of petroleum product must be stored in a safe area where they will not leak or drain into any water body or come in contact with mobile equipment accidentally.
- ◇ Fuel drums must be stored so that proper inspection for leaks can be made of all sides of the drum.
- ◇ Contents of the product line, tanks, pumps and valves must be clearly identified.
- ◇ Safe access to fuel storage and valves must be clearly identified.
- ◇ Emergency procedures.
- ◇ Emergency equipment location at sites.
- ◇ If in doubt, STOP, check with the supervisor in charge.

Name:		Signature:	
Designation:		Date:	

TRAINER: *This employee has received training as listed above and has demonstrated his/her ability to perform all tasks in a safe and efficient manner.*

Name:		Signature:	
Designation:		Date:	

SUPERVISOR: *I am confident that all training was completed as prescribed above and this employee has demonstrated his competency to the trainer in the handling, and storage of fuel on site.*

Name:		Signature:	
Designation:		Date:	

EMPLOYEE: *I have received training in the handling and storage of fuel on site, and responsible for following all instructions that I have been given.*

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