

FINAL

SITE SPECIFIC HEALTH AND SAFETY PLAN

For the

Lower Grasse River Ice Breaking Demonstration Project

At

Alcoa Operations  
Massena, New York

Prepared for



Prepared by

McKeil Marine LTEE



December 2006

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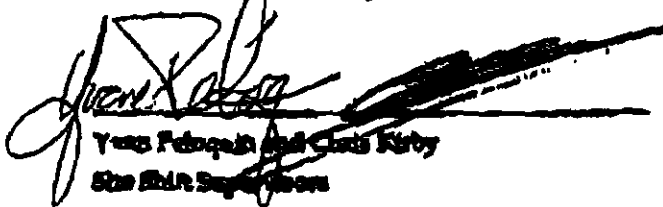
By their signatures, the undersigned hereby certify that this Site Specific Health and Safety Plan has been reviewed and approved for use at the Alcoa Minerals Operations for the ice washing demonstration project on the lower Credit River.



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Project Manager / Site Superintendent

11-12-2006

Date



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Site Shift Supervisors

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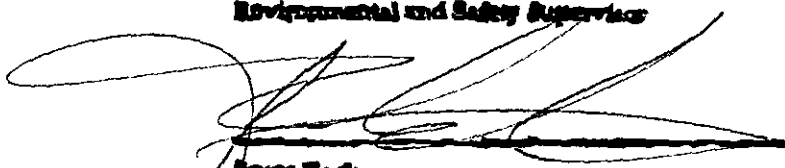
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Date

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# Section 1

## Introduction

### 1.1 Purpose

This Health and Safety Plan (HASP) addresses the health and safety practices that will be employed by all site workers participating in site activities at the Alcoa Massena Operations during the planned ice breaking demonstration project to be conducted in the lower Grasse River in spring 2007. The HASP takes into account the hazards inherent to the planned construction/marine activities. The ice breaking activities are being conducted at the direction of the United States Environmental Protection Agency (USEPA). This HASP also presents procedures to be followed by McKeil Marine LTÉE (McKeil), its subcontractors, and all other on-site personnel in order to avoid and, if necessary, protect against health and/or safety hazards. This document is to be used in conjunction with the Alcoa Massena Site Conditions Document, which can be found in Appendix A.

Activities performed under this HASP will comply with applicable parts of Occupational Safety and Health Administration (OSHA) Regulations, primarily 29 CFR Parts 1910 and 1926, and McKeil Environmental Health and Safety (EHS) Program, found in Appendix G. Many programs from the EHS Program are referenced in this HASP and are included in the appendices. Modifications to the HASP may be made with the approval of the Project Environmental and Safety Supervisor (PESS) and the Alcoa Responsible Person (ARP) for this project using the Field Change Request Form found in Appendix B.

This document is to be used in conjunction with the Site Management / Site Conditions document for the Alcoa Massena Operations, as well as the associated Oil Pollution Emergency Plan (found in Appendix G) and Emergency Response Plans. Copies of these plans will be kept at the site with this document at all times.

### 1.2 Site Background and Description

The Grasse River is located along the northern boundary of New York State in the town of Massena. The lower Grasse River is defined as the portion of the river extending from the confluence with the Power Canal to the confluence with the St. Lawrence River. Ice breaking activities will be conducted in an approximate 7-mile reach of the lower river, extending from about 500 feet downstream of the Alcoa Bridge to the first open water encountered downstream of the confluence with the St. Lawrence Seaway (Figure 1-1).

Routine monitoring of the river during and after the spring ice breakup in 2003 indicated that an ice jam had formed in the lower Grasse River and disturbed the polychlorinated biphenyl (PCB)-containing sediments. An intensive follow-up investigation in 2003 and 2004 indicated that the 2003 ice jam-related scour did not cause any system-wide changes to PCB levels in the sediments, water column and fish; however, some local effects were observed. This investigation also provided evidence that ice-jam related scour events occur at a frequency of approximately 1 every 10 years (Alcoa, April 2004) and occur in the upper two miles of the lower river.



As a result, Alcoa and USEPA identified the need to evaluate ice control measures to mitigate the potential for ice jam-related scour events.

To this end, a pier type ice control structure (ICS) in the river upstream of Massena was evaluated for inclusion as a component of the 2005 Remedial Options Pilot Study (ROPS) as an interim and possible longer-term measure to prevent future ice jams in the lower Grasse River. However, based on community concerns related to the proposed location of the structure, installation of an ICS at this location was not pursued.

An additional component of the 2005 ROPS that was anticipated to limit the potential impact of future ice jam events was the targeted dredging of PCB-containing sediments from the ice jam (and resulting sediment scour) prone section of the river. While PCB-containing sediments were removed, a lower than anticipated removal volume was achieved due to a number of difficulties encountered during the conduct of the work (i.e., difficult site conditions, persistent PCB residuals in removal areas, containment system maintenance issues, and several high flow events).

In response to these events, possible interim measures for preventing future ice jam events were evaluated. Results of this work identified that ice breaking in the lower river prior to the natural breakup of ice in the upstream reaches of the river is the only potentially feasible non-structural interim measure.

Available methods of ice breaking, especially in relation to the Grasse River, were evaluated at the direction of USEPA through a review of previous research conducted by the United States Army Corps of Engineers (USACE) Cold Regions Research Engineering Laboratory (CRREL), interviews with equipment and service providers, phone inquiries with the United States Coast Guard (USCG) and other agencies, and a site visit and interview with the Canadian Coast Guard. The analysis to date indicates that ice breaking could be feasible as an interim means of mitigating ice jams in the lower Grasse River and that a demonstration study for ice breaking is necessary to further evaluate the likelihood of success. Consequently, USEPA directed Alcoa to move forward with the ice breaking project.

The objectives of the Grasse River ice breaking demonstration project are as follows:

- evaluate the feasibility of ice breaking as an interim measure for mitigating ice jam related scour in the lower Grasse River; and
- develop information to support an understanding of the impact of site conditions (e.g., ice thickness, river flow, weather conditions) on the schedule and associated cost of ice breaking services.

Additional information regarding the ice breaking activities is provided in the *Lower Grasse River Ice Breaking Demonstration Project - Work Plan* (Alcoa, October 2006). The *Lower Grasse River Ice Breaking Demonstration Project - Draft Community Health and Safety Plan* (Alcoa, November 2006) provides measures to minimize potential safety

issues associated with winter recreational use of the river during the period of the year when an ice cover exists on the lower river.

### 1.3 Scope

The present project consists of the mechanical breaking and clearing of the intact ice cover in the approximate 7-mile reach of the lower Grasse River prior to the natural breakup of ice in the upstream reaches of the river (i.e., upstream of Massena). These activities are expected to provide the increased conveyance capacity needed to allow the ice floes entering from upstream to be transported through the lower Grasse River without causing a significant ice jam capable of disturbing the bottom sediments in this reach of river.

The portion of the Grasse River that is targeted for ice breaking is from about 500 feet downstream of the Alcoa Bridge to the first open water encountered downstream of the confluence of the Grasse River with the St. Lawrence Seaway (see Figure 1-1). The first open water on the downstream extent of the study area is typically at the confluence of the St. Lawrence Seaway with the St. Lawrence River, but can extend up to the mouth of the Grasse River in years during which ice breaking on the Seaway is conducted prior to ice out of the Grasse River. This reach of the lower Grasse River ranges from about 300 to 600 feet in width and can generally be characterized as having a relatively narrow shelf of shallow water (i.e., less than 5 feet deep) proximate to the northern and southern shorelines and a deeper main channel section ranging between approximately 7 and 25 feet in water depth. A significant portion of the river channel is deeper than 7 feet; however, bottom features (e.g., rock/boulder outcroppings) that project closer than 7 feet from the water surface exist in some areas of the river. River velocities are typically low in this reach of the river due to the presence of the oversized channel that resulted from the historic deepening of the river channel in the early 1900s to accommodate the flow from the Massena Power Canal, which was operational until 1958.

River ice conditions (e.g., extent of cover, thickness, etc.) will be monitored throughout the winter consistent with similar activities conducted in the winter of 2005/2006. Ice breaking will be initiated during the second week of March unless a determination is made prior to that date that ice breaking is unnecessary due to a relatively thin ice cover on the river. This timeframe was selected based on an analysis of historical breakup dates (Alcoa, 2004b) coupled with the intent to break the ice as late in the year as possible to take advantage of any natural melting/thinning that may occur, higher spring flows to flush the ice from the river, and to limit impacts on recreational use of the river.

Ice breaking will be conducted by McKeil of Hamilton, Ontario and its subsidiary Remorqueurs et Barges Montreal LTÉE, which operates in Sorel, Quebec. McKeil is a respected firm with a 50-year history of ice breaking and marine service in the St. Lawrence region. Relevant project experience includes: 1) routine ice breaking and emergency ice jam clearing in the Riviere-des-Prairies in Montreal and Laval, Quebec; and 2) on-call ice breaking services for the Port of Montreal, Hydropower Quebec,

and the St. Lawrence Seaway. McKeil owns and operates specialized vessels that are well-suited for use in smaller rivers such as the Grasse River.

Ice breaking will be accomplished using two excavators operating from a flat deck barge that is maneuvered by a shallow draft tug. The barge is 80 feet long by 24 feet wide. The tug and barge will be docked at the Alcoa Massena East Plant over the winter since the presence of an intact ice cover on the St. Lawrence River will prevent the transport of equipment by barge to the Grasse River in early March. Starting at the downstream extent of the intact ice cover, the two excavators will mechanically break and clear the ice from an approximate 250- foot wide channel of the river.

Ice breaking will proceed upstream to allow broken ice to move downstream into open water, and will continue until the approximate 7-mile channel between the confluence with the St. Lawrence River and just downstream of the Alcoa Bridge has been cleared of ice. Ice breaking activities will be conducted in a manner so as to limit the potential for resuspension of river sediments. It is expected that operations will be conducted on a continual basis (i.e., 24 hours per day) for three days. The actual duration of the ice breaking activities will be dependent on the thickness of the ice to be broken and weather conditions.

## 1.4 Application

The HASP applies to all personnel involved in site tasks who wish to gain access to active work areas, including but not limited to:

- Client representatives.
- Federal, state or local representatives.
- McKeil employees.

## 1.5 Summary of Major Risks

- Injury from working with, or around heavy equipment and power tools.
- Work on/and around water/ice and associated potential for immersion in cold water.
- Slips/trips/falls.
- Temperature extremes (cold stress).

## 1.6 Health and Safety and Environmental Policy

The management of McKeil recognizes that its primary duties are:

- To conduct its activities in a manner commensurate with the safety and health of those involved in all its business operations; and
- To preserve the environment in which it operates.

McKeil, through its commitment to this policy:

- Requires all levels of management to practice the principles of risk management. These principles involve developing and following systems designed to eliminate or reduce risks to people, equipment, materials or the environment;
- Recognizes that employees at all levels are responsible and accountable, in matters of safety, health and the environment;
- Shall comply with all existing legislation and participate in industry and government initiatives that promote safety, health and environmental protection;
- Shall ensure compliance with set standards and procedures conducive to prevention of personal injuries, property damage, fire and health hazards;
- Is committed to providing resources for training, inspections, investigations and task analysis to ensure its risk management standards are maintained; and
- Requires that all contractors servicing its facilities comply with established government and company rules and regulations.

Active support and participation of all will ensure that our standards are maintained and our objectives are met.

## **1.7 Schedule for Ice Demonstration Project**

The preliminary schedule for implementation of the ice demonstration project is as follows:

- December 2006: Mobilization of a tugboat and barge to a docking facility at the Alcoa Massena East Plant for over-winter storage;
- December 2006-February 2007: Monitor river ice conditions to determine necessity of ice breaking activities;
- January 2007-March 2007: Distribution of community related information;
- March 2007: Determine necessity of ice breaking activities, and if necessary, provide the public notification and complete ice breaking activities; and
- July 2007: Projected timeframe for submittal of report documenting ice breaking activities.

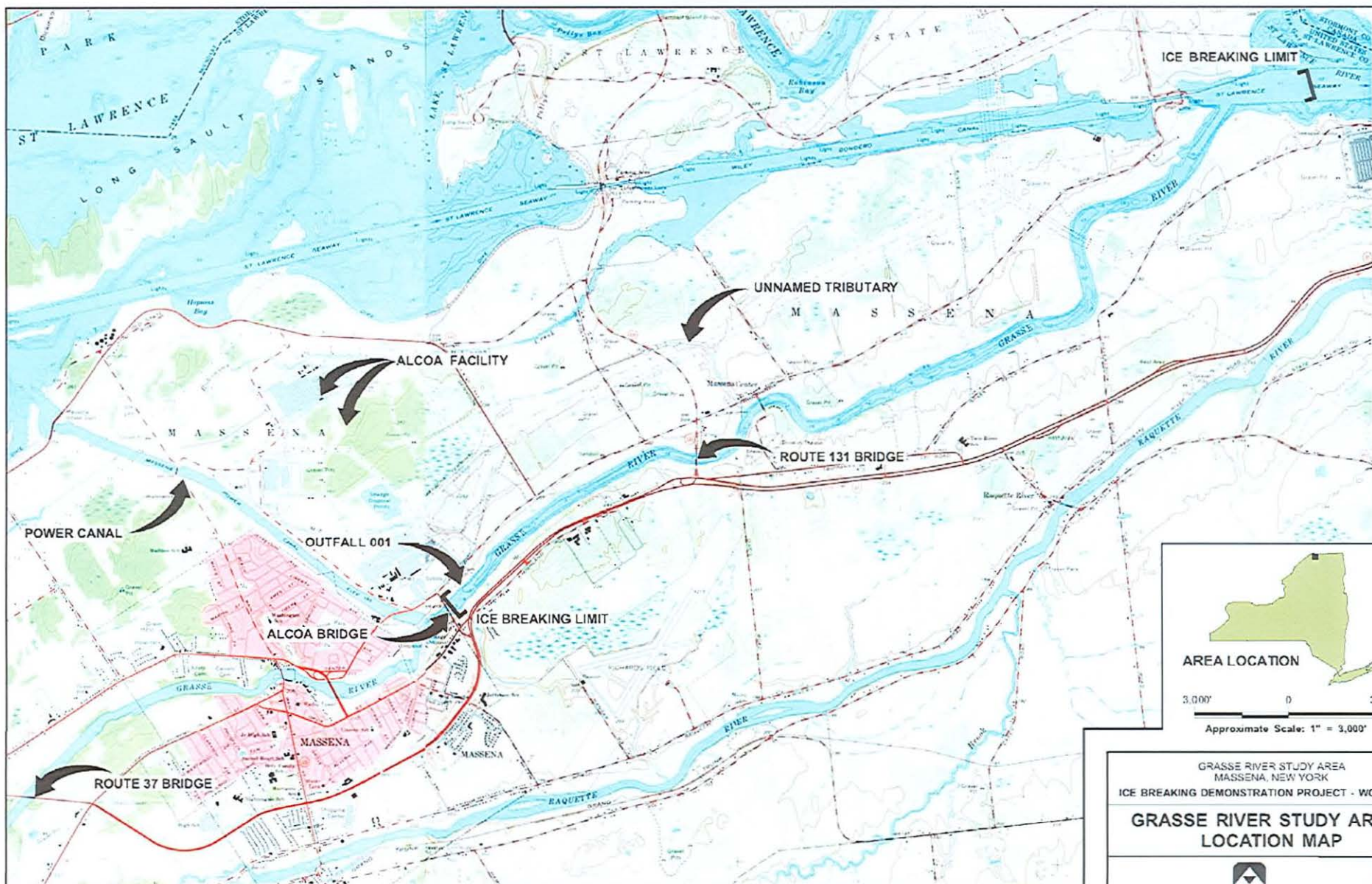
## **1.8 Crew Access/Egress**

Personnel shift changes can take place the Alcoa Massena East west docking location, when refueling takes place.

Upon completion of shift during ice breaking activities, areas have been identified for crew access/egress for shift changes along the Grasse River. Shown in Figure 1-3 are points of access/egress.

For shift changes, the following will apply:

- The tug and barge will be taken to one of the areas that have been identified for crew access/egress for shift changes.
- The tug and barge will come as close as possible to the shore, making sure that the ice is at least 3 inches thick (following the tables for Ice Thickness versus Ice Strength, located in Section 24 of McKeil's Health and Safety Manual).
- The shift supervisor will always attend the crew change (or any other time when someone has to access/egress, to check the ice condition).
- The people will walk on the ice "in single file" keeping at least 10 feet apart. They will always wear their personal floatation device (PFD) from the time they leave firm ground until the time that they are back on firm ground, at the end of their shift.
- At all times a captain will be at the maneuver of the tug/barge, assisted by the engineer-seaman.
- The crew that will start the shift will embark first, one by one, keeping at least 10 feet apart.
- When all four (captain, engineer-seaman and two excavator operators) are on board, the captain and engineer-seaman that "start" the new shift will proceed to the tug wheelhouse to relieve the "outgoing" captain and engineer-seaman.
- The two "outgoing" excavator operators will disembark, one by one, when their relief personnel are on board.
- The "outgoing" captain and engineer-seaman that "finish" their shift will leave the tug wheelhouse only when the "incoming" captain and the engineer-seaman are now at the maneuver of the tug/barge. They will disembark, one by one, keeping at least 10 feet between each of them.
- A safety line will always be available, between the barge and the shore, when crews access/egress.



10/12/08 SWR Dwg Full  
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REFERENCE: MASSENA, NEW YORK-ONTARIO USGS QUAD, 1964 RAQUETTE RIVER, NEW YORK-ONTARIO USGS QUAD, 1964

GRASSE RIVER STUDY AREA  
 MASSENA, NEW YORK  
 ICE BREAKING DEMONSTRATION PROJECT - WORK PLAN  
**GRASSE RIVER STUDY AREA -  
 LOCATION MAP**



FIGURE  
**1-1**



Figure 1-2. Photographs of the Proposed Tug/Barge Setup

L:\1902-Alcoa\33553 - Ice Monitoring & Break up 2006\dwg\ FIG 1-3 12/11/06 11:46 koskar XBEES: F11X17, 405889-83ft



St. Lawrence River

Alcoa Bridge

Route 131 Bridge



Legend

● Crew Access/Egress Locations

NOTE:

1. THIS DRAWING PRESENTS GENERAL LOCATIONS OF RIVER ACCESS/EGRESS POINTS AND MAY CHANGE PRIOR TO MOBILIZATION. ACCESS AGREEMENTS WILL BE OBTAINED FROM PROPERTY OWNERS PRIOR TO USE.



NOT TO SCALE

Alcoa Inc. (West Plant) - Massena, New York  
**ACCESS/EGRESS LOCATIONS  
FOR CREW SHIFT CHANGES**

FIGURE 1-3



## Section 2

# Project Organization and Responsibilities

This section outlines the McKeil Project Organization and responsibilities for the site activities.

### 2.1 Alcoa Responsible Person

Mr. Bill Moon is the Alcoa Responsible Person and EHS point of contact for the Site, and represents Alcoa's interests with regard to EHS issues and compliance with Alcoa Standards 33.051 and 33.052.

### 2.2 Project Manager/Site Superintendent

The Project Manager and the Site Superintendent for McKeil is Mr. Benoit Champoux. It is the responsibility of the Project Manager to:

- Provide the major point of control to ensure that the program's technical, financial and scheduling objectives are achieved.
- Ensure that the program meets Alcoa's objectives and McKeil quality standards.
- Coordinate problem resolution/corrective action implementation.
- Ensure implementation of this program through coordination with the responsible PESS.
- Conduct periodic inspections.
- Participate in all incident investigations.
- Ensure the HASP has all of the required approvals before any site work is conducted.
- Ensure that the PESS is informed of project changes which require modification of the HASP.
- Have overall project responsibility for Project Health and Safety.

### 2.3 Construction Site Supervisor (CSS)

The Site Supervisors are Mr. Yvan Peloquin and Mr. Chris Kirby. It is the responsibility of the Construction Site Supervisor(s) to:

- Lead the day-to-day activities at the site, including team management, field operations, and report development.
- Ensure that the HASP is implemented in conjunction with the designated PESS.
- Ensure that field work is scheduled with adequate personnel and equipment resources to complete the job safely.

- Ensure that adequate communication between field crews and emergency response personnel is maintained.
- Ensure that field site personnel are adequately trained and qualified to work at the site.
- Enforce site health and safety rules.
- Investigates all incidents.
- Assist in conducting and documenting daily safety briefings.
- Conduct weekly site inspections.
- Act as Emergency Coordinator.

#### **2.4 Captain/Project Environmental and Safety Supervisor (PESS)**

The PESS are senior Health & Safety staff members with experience in non-hazardous waste site investigations, mitigation, and construction activities. The PESS for this project are Captain Mr. Jean Lalancette and Captain Mr. Martin Laplante. Responsibilities include the following:

- Provide for the development and approval of the HASP.
- Work as a member of the project team to ensure implementation of the HASP and the Engineering Standards developed by Alcoa that pertain to this project.
- Ensure that all health and safety activities identified in the HASP are conducted and/or implemented.
- Identify operational changes which require modifications to health and safety procedures and the site safety plan, and ensure that the procedure modifications are implemented and documented through changes to the HASP.
- Direct and coordinate health and safety monitoring activities.
- Ensure that proper personal protective equipment (PPE) is utilized by field teams.
- Assist in conducting and documenting daily safety briefings.
- Monitor compliance with this HASP.
- Coordinate with the Project Manager in any incident investigation.
- Maintain Incident Report Forms.
- Determine upgrades or downgrades of PPE based on site conditions and coordinate changes in PPE with the field personnel.

- Report to Alcoa and provide summaries of field operations and progress.
- Maintain health and safety field log books.
- Serve as the primary contact to review health and safety matters that may arise.
- Approve revised or new safety protocols for field operations.
- Coordinate revisions of this HASP with field personnel.
- Assist in the investigation of all accidents.

## 2.5 Site Personnel

In general, the site of the ice breaking demonstration project is the limits of ice breaking activities in the lower Grasse River, including the winter-over dock at Gate 28 at the Alcoa Massena East Plant. Site personnel include all other persons entering the site for the purpose of assisting in the completion of the project. This includes, but is not limited to, client representatives, subcontractors, regulatory personnel, and site workers. It is the responsibility of all site personnel to:

- Receive the appropriate safety training from the ARP and sign an acknowledgement of the receipt of such training prior to entering the site.
- Report any unsafe or potentially hazardous conditions to the PESS and/or CSS.
- Maintain knowledge of the information, instructions and emergency response actions contained in the HASP.
- Comply with rules, regulations and procedures as set forth in this HASP and any revisions.
- Prevent admittance to work sites by unauthorized personnel.
- Inspect all tools and equipment daily, including PPE, prior to use.

Only the ARP and McKeil employees will be allowed on the tugboat and barge during ice breaking activities. All other site personnel will require an escort to access operations on the river.

# Section 3

## Potential Hazards and Responsibilities

This section presents an assessment of the chemical, biological, and physical hazards that may be encountered during the site activities at the Grasse River project.

### 3.1 Chemical Hazards

#### 3.1.1 Onsite Chemicals

Activities will be performed on and around the Grasse River whose sediments are known to contain PCBs. Due to the nature of the activities proposed at Grasse River, site worker exposure to PCB contaminated sediments is anticipated to be none.

Mechanical equipment will be used to break up the ice into manageable pieces to float downstream without disrupting the sediments.

#### 3.1.2 Fuel

Any fuel stored onsite must meet Alcoa's EHS Standard for fuel storage as well as McKeil Procedure for Hazardous Material Storage and Transportation. Only Underwriters Laboratory (UL) approved metal cans will be used at the project site. All fuel storage containers will be labeled properly (i.e., Flammable and Diesel/Gasoline). These containers will be stored in secondary containment that meets 110 percent of the largest container. Material Safety Data Sheets (MSDSs) for onsite fuels will be made available to all site personnel. When refueling, personnel will place a drip pan or spill pads underneath the pump to prevent releases during refueling.

#### 3.1.3 Refueling

Currently, refueling is anticipated to take place at the Alcoa Massena East west dock. This will occur at the end of each shift. The fuel vendor will enter Massena East Gate 28 and drive to docking area. This area will be kept free of ice and snow, and will have security surveillance and proper maneuverability for the fuel vendor to safely deliver fuel.

If refueling of equipment is necessary from a location along the Grasse River, McKeil will utilize a local fuel vendor which will access the river at a predetermined location along the river. At this location the fuel vendor and McKeil personnel will utilize the crew access/egress procedure found in Section 1.8. Prior to any refueling, the shoreline area will be assessed for any hazards (i.e., slips, trips, and falls) and spill kits will be available. Absorbent pads will be placed under fill spot during refueling.

### 3.2 Biological Hazards

#### 3.2.1 Wild Animals

Wild animals (e.g. raccoons, coyotes, beaver, and muskrats) present hazards to site personnel due to their potential to carry diseases (e.g. rabies) and inflict physical injuries. The following rules shall be followed when animals are present:

- Sighted animals will not be approached.

- When an animal is sighted, it should be avoided. A minimal level of disturbance should be employed.
- If the animal appears to behave strangely or aggressively, personnel will leave the area.
- At no time will personnel attempt to feed indigenous wildlife.

Workers shall use discretion and avoid all contact with wild animals. If these animals present a problem, the PESS will be notified and will develop a plan to alleviate the problem.

### 3.2.2 Bloodborne Pathogens

Bloodborne pathogens enter the human body and blood circulation system through punctures, cuts or abrasions of the skin or mucous membranes. They are not transmitted through ingestion (swallowing), through the lungs (breathing), or by contact with whole, healthy skin. However, under the principle of universal precautions, all blood should be considered infectious and all skin and mucous membranes should be considered to have possible points of entry for pathogens. Potential bloodborne pathogen exposure includes:

- Medical emergency response operations such as administering First Aid or cardiopulmonary resuscitation (CPR).
- Contact with human wastes such as domestic sewage.

Two primary bloodborne pathogens include Hepatitis B and Acquired Immune Deficiency Syndrome (AIDS).

To reduce the risk of contracting a bloodborne pathogen, take the following precautions:

- Avoid contact with blood and other bodily fluids.
- Use protective equipment when giving First Aid/CPR, such as disposable gloves and breathing barriers.
- Thoroughly wash your hands with soap and water immediately after giving care.

When cleaning up blood or other bodily fluids:

- Clean up the spill immediately or as soon as possible after the spill occurs.
- Use disposable gloves and other PPE when cleaning spills.
- Wipe up the spill with paper towels or other absorbent materials.

- After the area has been wiped up, flood the area with a solution of ¼ cup of liquid chlorine bleach to 1 gallon of fresh water and allow it to stand for at least 20 minutes.
- Dispose of the contaminated material used to clean up the spill in a labeled biohazard container.

The PESS should be notified of any potential contact with blood or bodily fluids resulting from first aid or CPR administered on the job.

### 3.3 Physical Hazards

Most safety hazards are discussed in the Activity Hazard Analyses (AHA) in Appendix D. In addition to the AHAs, general work rules and other safety procedures are as follows:

#### 3.3.1 Heavy Equipment Operations and Traffic Control Activities

The work activities planned for this project presents physical hazards that are inherent to working around heavy equipment (e.g., potential for “struck by,” “caught between,” noise). Heavy equipment will be utilized during work conducted at the site. Working with and near heavy equipment poses many potential hazards that can result in serious physical harm.

The following precautions will be taken to help prevent injuries and accidents.

- Prior to the start of on-site equipment operations, all personnel will be briefed on the potential hazards posed by these operations.
- Brakes, hydraulic lines, light signals, fire extinguishers, fluid levels, steering, tires, horn, backup alarms, and other safety devices will be checked and maintained in good working order throughout the duration of field activities. Heavy Equipment Inspection Forms are provided in Appendix E.
- While equipment is in operation, all personnel not directly required to be in the area will keep out of the swing radius. Personnel needing to enter the heavy equipment swing radius zone will get the attention of the operator by making eye contact and signal their intentions. The operator will secure the equipment (e.g., bucket grounded) and motion to personnel desiring entrance. At that point, entrance is authorized.
- Personnel directly involved in the activity will avoid moving in the path of operating equipment. Areas blinded from the operator’s vision will be avoided. Spotters will be used when personnel may be in areas where the operator’s view is obstructed.
- Additional riders will not be allowed on equipment unless it is specifically designed for that purpose and has seats with seat belts.

- Construction and heavy equipment will be provided with the necessary safety equipment including seat belts, overhead protection, backup warning lights, and audible alarms.
- Blades and buckets will be lowered to the ground and parking brakes will be set before shutting off any heavy equipment or vehicle.
- The heavy equipment operator will perform checks and document inspections at the beginning of each shift to assure that parts, equipment, and accessories are in safe operating condition and free of apparent damage that could cause failure while in use.
- A safety review that includes the PESS, CSS and ARP will be conducted prior to implementation of modifications to planned project operations.
- Field support vehicles will be equipped with a first-aid kit and appropriate fire extinguisher.
- Heavy equipment operators must be trained and qualified in the operation of the equipment.

If any unauthorized individual does enter the construction area, work shall cease until the person has been escorted out of the area.

#### 3.3.1.1 Cranes

Any crane brought on-site for a specific purpose will have a qualified operator who meets all Alcoa OSHA requirements per documents contained in McKeil's Contract. Specifically, all crane operators are required to have Alcoa's high voltage training and have all appropriate OSHA certifications. The following start-up inspection will be conducted:

- All control mechanisms for maladjustment that could interfere with proper operation.
- All control mechanisms for excessive wear of components by lubricants or other foreign matter.
- All operator aids, motion and load limiting devices, and other safety devices for malfunction and inaccuracy of settings.
- All chords and lacing.
- All hydraulic and pneumatic systems – with particular emphasis given to those which flex in normal operation of the crane.
- Hooks and lattices for deformation, damage, cracks and wear.

- Rope for proper spooling onto the drum(s) and sheave(s) and rope reeving for compliance with crane manufacturer's specifications.
- Electrical apparatus for malfunctioning, signs of excessive deterioration, dirt, and moisture accumulation.
- Hydraulic system for proper oil level.
- Tires for recommended inflation pressure (mobile cranes).
- Wedges and supports for looseness or dislocation (climbing tower cranes).
- Braces and guys supporting crane masts.
- Anchor bolt base connections for looseness or loss of reload (tower cranes and derricks).
- Derrick mast fittings and connections for compliance with manufacturer's recommendations.

Prior to use of a crane at the site a Critical Lift Plan will be prepared, if required. This plan will specify the exact size and weight of the load to be lifted and all crane and rigging components that add to the weight. The manufacturer's maximum load limits for the entire range of the lift, as listed in the load charts, will also be specified. The plan will specify the lift geometry and procedures, including the crane position, height of the lift, the load radius, and the boom length and angle for the entire lift range. The crane operator, lift supervisor, and rigger will be designated in the plan and their qualifications stated.

The Critical Lift Plan will include a rigging plan that shows the lift points and describes rigging procedures and hardware requirements. The plan will describe the ground conditions, outrigger or crawler track requirements and, if necessary, the design of mats to achieve a level, stable foundation of sufficient bearing capacity for the lift. For lifting cranes or derricks, the plan will describe the operating base (platform) condition. Environmental conditions under which lift operations will be stopped will be listed in the plan. Coordination and communication requirements for the lift operations will also be specified. For tandem or tailing crane lifts, the plan will specify the make and model of the cranes, the line, boom, and swing speeds as well as requirements for an equalizer beam.

### **3.3.2 Work on or around Water/Ice**

The majority of the work on this project will be conducted on or around water (ice). This presents hazards unique to this environment, and will be thoroughly addressed in all AHAs that apply. In preparing the AHAs, consideration will be given to the elements of McKeil Environmental, Health and Safety Program, USACE Safety and Health Requirements Manual EM 385-1-1, Section 19, and any applicable USCG



regulations. For more extensive information on working on or around water (ice), refer to the Activity Hazard Analysis (AHAs) in Appendix D of this HASP.

### 3.3.3 Cold Stress

Exposure to low temperatures presents a risk to employee safety and health through the direct effect of the low temperature on the body and collateral effects such as slipping on ice, decreased dexterity, and reduced dependability of equipment. Work conducted in the winter months can become a hazard for field personnel due to cold exposure. All personnel must exercise increased care when working in cold environments to prevent accidents that may result from the cold. The effects of cold exposure include frostbite and hypothermia. Wind increases the impact of cold on a person's body. Systemic cold exposure is referred to as hypothermia. Local cold exposure is generally labeled frostbite. Recognition of the symptoms of cold-related illnesses will be discussed during the health and safety briefing conducted prior to the onset of site activities.

Hypothermia is a life-threatening condition in which the core body temperature falls below 95°F. Hypothermia can occur at temperatures above freezing particularly when the skin or clothing becomes wet. During exposure to cold, maximum shivering occurs when the core temperature falls to 95°F. As hypothermia progresses, depression of the central nervous system becomes increasingly more severe (Table 3-1). This accounts for the progressive signs and symptoms ranging from sluggishness and slurred speech to disorientation and eventually unconsciousness.

Site Health and Safety Plan	
Ice Breaking Demonstration Project in Grasse River	
Table 3-1	
Progressive Clinical Symptoms of Hypothermia	
Core Temperature F°	Clinical Signs
95°	Maximum Shivering
87°-89°	Consciousness clouded; blood pressure becomes difficult to obtain; pupils dilated
84°-86°	Progressive loss of consciousness; muscular rigidity; respiratory rate decreases
79°	Victim rarely conscious
70°-72°	Maximum risk of ventricular fibrillation

Frostbite is both the general and medical term given to areas of cold injury. Unlike hypothermia, frostbite rarely occurs unless environmental temperatures are less than freezing and usually less than 20°F. Frostbite injuries occur most commonly on the distal parts of the body (nose, earlobes, hands and feet) that are subject to intense vasoconstriction. The three general categories of frostbite are:

- *Frostnip* – A whitened area of the skin which is slightly burning or painful.
- *Superficial frostbite* – Waxy, white skin with a firm sensation but with some resiliency. Symptomatically feels “warm” to the victim with a notable cessation of pain.
- *Deep frostbite* – Tissue damage deeper than the skin, at times, down to the bone. The skin is cold, numb and hard.

In preventing cold stress, the PESS must consider factors relating to both the worker and the environment. Training, medical screening, establishment of administrative controls, selecting proper work clothing, and wind-chill monitoring all contribute to the prevention of hypothermia and frostbite.

- Recognizing the early signs and symptoms of cold stress can help prevent serious injury. Thus, workers will be trained to recognize the symptoms of hypothermia and frostbite and have appropriate first-aid instruction. When the air temperature is below 50°F the PESS will inform workers of the proper clothing requirements and any work practices that are in effect to reduce cold exposure.
- Cold injuries and illnesses recognition and prevention measures will be emphasized during daily safety briefings when the potential for cold injuries and illnesses exists.
- Work will cease under unusually hazardous conditions.
- Phenothiazine (a sedative) and beta blocker use will be prohibited.
- A heated area will be available onsite.
- Temperature will be recorded daily onsite.
- Warm beverages will be available onsite.
- The PESS will establish a work/rest schedule based upon worker monitoring. At the first sign of uncontrollable shivering the worker will be rested in a heated shelter.
- Workers will be encouraged to layer clothing when air temperature is below 50°F. Clothing that has a high insulation value will be worn under protective garments. Insulated gloves will be worn when the wind chill index is below 32°F. Insulating dry clothes will be available.

#### **3.3.4 Noise**

Noise is a potential hazard associated with the operation of heavy equipment, power tools, pumps, and generators. Suspected high noise operations will be evaluated to determine if hearing protection devices should be worn. A general field rule is to wear hearing protection if you cannot hear normal conversation within an arm length

of the person talking. Hearing protection must be worn if noise levels are above the following in accordance with Alcoa EHS Standard 71.9:

- 85 dBA - 8-hour time weighted average (TWA);
- 100 dBA - 15 minute short-term exposure limit (STEL); and
- 140 dBA - instantaneous noise.

### **3.3.5 Hand and Power Tools**

In order to complete the various tasks for the project, personnel may utilize hand and power tools. Hand and power tools can present many hazards including: flying objects and particles, cuts and punctures, having a body part caught in or between, electrocution, noise, fire and explosion, and exposure to vapors, aerosols, and dusts from exhaust.

The following protective measures will be implemented to minimize exposure to the hazards presented by the use of hand and power tools:

- Daily inspections of each tool prior to use.
- Remove broken or damaged tools.
- Use of personal protective equipment.
- Use in accordance with the Operator's Manual.
- Use the tool for its intended purpose.
- Ensure proper guards are in place and not removed or bypassed.
- Turn off tools while fueling.
- All electrical tools UL listed or double insulated.
- Inspect all cords for frays or worn sections.
- Do not use electric cords to lower or hoist tools.
- Protect cords from traffic areas and water.
- Use a ground fault circuit interrupter (GFCI) outside at all times.

### **3.3.6 Slips, Trips and Falls**

Working on steel decked floating barges presents a walking/working surface that can lead to difficult footing and overall balance. Floating barge decks will pose slip, trip and fall hazards due to slippery surfaces that may be covered by or wet from snow, ice or rain. Slips, trips and falls are a leading cause of injuries in this work setting,

therefore, a concerted effort to identify, control, and eliminate these hazards and the measures needed to reduce or eliminate the possibility of injury will be communicated to all site personnel.

Site personnel will be instructed to look for these potential safety hazards and immediately inform the PESS or the Site Supervisor about any new hazards. If the hazard cannot be immediately removed, action must be taken to warn site workers about the hazard and markers will be placed to provide for visual identification of the hazard areas. Proper housekeeping (tools, equipment, and material will be picked up and stored) must be maintained on site, particularly in pedestrian traffic routes. Voids and transition areas along high foot traffic areas will be covered to prevent injury. The use of personal protective equipment or alternate, approved methods to prevent falls is required for all personnel working at heights at or greater than, 4 feet above a lower level or surface.

### **3.3.7 Manual Lifting**

Manual lifting may be required. Failure to follow proper lifting technique can result in back injuries and strains. Back injuries are a serious concern as they are the most common workplace injury, often resulting in lost or restricted time, and long treatment and recovery periods. Basic lifting and material handling techniques will be reviewed with all personnel prior to the on-site activities. All tasks will be evaluated on site prior to commencement or during activities in order to evaluate the potential for injury. Controls may include engineering controls, reducing weight of objects that are carried, distance of carrying, or reducing loss potential by rotating workers. McKeil EHS policy states that individual employees are not to lift loads greater than 50 pounds. The following procedure should be used to lift anything, particularly heavier loads, safely:

- Make sure the path of travel is clear.
- Size up the load as to its weight, size and shape.
- Place the feet about a foot apart and close to the object for good balance.
- Bend the knees to a comfortable position and get a good handhold.
- Using both leg and back muscles, lift the load straight up, smoothly and evenly. Pushing with the legs, keep the load close to the body.
- Lift the object into carrying position, avoiding twisting movements until the lift is completed.
- Turn the body with changes of foot position. Do not twist at the waist when lifting.
- Using both leg and back muscles, comfortably lower the load by bending the knees. When the load is securely in place, release the grip. Setting down the load is just as important as picking it up.

The same steps apply to team lifting, with the emphasis on coordination. All should start and finish the lift action at the same time and perform turning movements together.

## Section 4

# Activity Hazard Analysis

The AHA is a systematic way of identifying the potential health and safety hazards associated with major phases of work on the project and the methods to avoid, control and mitigate those hazards. The AHAs follow the guidance of the McKeil's Program. AHAs were developed for all activities and will be used to train workers in proper safety procedures prior to commencement of major work tasks.

AHAs are included in Appendix D of this HASP. AHAs have been developed for the following phases of work:

- General Site Hazards;
- Mobilization/Demobilization;
- Crane Assisted Tugboat/Excavator Launching;
- Fuel Transfers;
- River Access/Egress;
- Work From Barge Platforms; and
- Overhead Utility Lines.

Since the ice breaking work to be performed on the Grasse River is a demonstration project and conditions are subject to change, an AHA for an unplanned event was also included in Appendix D.

# Section 5

## Personal Protective Equipment

The personal protective equipment (PPE) specified in Table 5-1 represents the initial minimum level of PPE selection for each activity required

Personal protective equipment selection shall be made by and approved by the PESS. Any additional tasks not included in Table 5-1 shall be reviewed by the PESS. Any additional PPE requirements will be incorporated into the HASP by completing the field change request form found in Appendix B. All field change request forms and PPE selection will require approval by the PESS and Alcoa Responsible Person.

### 5.1 Upgrade Conditions

Due to the nature of the activities it is not anticipated that upgrading to a higher level of personal protection will be required. Level D is anticipated for all site work but the PESS has the responsibility for work conditions and deciding the appropriate level of protection.

### 5.2 Hazard Assessment for Selection of Personal Protective Equipment

The initial levels of protection were selected by performing a hazard assessment taking into consideration the following:

- Potential site physical hazards present or suspected.
- Work operations to be performed.
- Potential routes of exposure.
- Characteristics, capabilities and limitations of PPE, and any hazards that the PPE presents or magnifies.

**Site Health and Safety Plan**  
**Ice Breaking Demonstration Project in Grasse River**

**Table 5-1**  
**Personal Protective Equipment Selection**

<b>Task</b>	<b>Head</b>	<b>Eye/Face</b>	<b>Feet</b>	<b>Hands</b>	<b>Body</b>	<b>Hearing</b>
Mobilization/ Demobilization.	HH	SG	Insulated STB	LWG	Work Clothes, High visibility vest, PFD within 10' of water	EP around power tools and heavy equipment.
Work on Barge/Tugboat*	HH	SG	Insulated STB	LWG	Work Clothes, high visibility vest, PFD	EP around power tools and heavy equipment.
Notes: EP - Ear Plugs HH - Hard Hat LWG - Leather Work Gloves PFD - Personal Flotation Device SG - Safety Glasses STB - Steel Toe Boots						

\*When in cabs of excavator or tugboat no HH or SG required.



# Section 6

## Communication

The following communications equipment shall be specified as appropriate:

- Hand-held two-way radios are utilized as appropriate by field teams for communication with the Project Superintendent. Alcoa will provide marine radios to site personnel.
- Telephones - A telephone will be located in the office trailer for communication with emergency support services/facilities.
- Air Horns - Air horns will be stored on the tugboat and barge, and will be maintained as the means for announcing emergency evacuation procedures and backup for other forms of communication.
- Hand Signals - Hand signals will be used by field teams along with the buddy system. They will be known by the entire field team before operations commence and their use will be covered during site-specific training. Typical hand signals are the following:

### 6.1 Signal/Meaning

- Hand gripping throat/Out of air, can't breathe;
- Hands on top of head/Need general assistance;
- Hands raised above head/Need immediate assistance;
- Thumbs up/okay, I'm all right, I understand; and
- Thumbs down/No, negative.

# **Section 7**

## **Medical Surveillance Procedures**

### **7.1 Medical Data Sheet**

A medical data sheet is provided in Appendix B. This medical data sheet is voluntary and should be completed by all onsite personnel and will be maintained by McKeil site supervision. It is intended to provide basic information that would be useful to professional medical personnel if medical treatment or transport to emergency medical facilities is required. Where possible, this medical data sheet will accompany the personnel needing medical assistance. The medical data sheet will be maintained in a secure location, treated as confidential, and used only on a need-to-know basis.

# Section 8

## Safety Considerations

### 8.1 General Health and Safety Considerations

A list of work rules and general safe work practices has been included in Appendix G of this plan from the McKeil Health and Safety Program. At a minimum, the work rules and general site work practices will be reviewed with site personnel during their initial site briefing. A copy of the Program and work rules/general safe work practices will be present and available for reference by all site personnel during the duration of all onsite activities.

### 8.2 General Construction Hazards

The following are lists of applicable safety considerations for the major tasks. Further information is provided in the specific AHA and the specific McKeil Health and Safety Program sections.

- Heavy Equipment/Crane Operations;
- Working on/and around Water/Ice;
- Hand and Power Tool Usage; and
- Slips/Trips/Falls.

# Section 9

## Emergency Response Plan

### 9.1 Responsibilities

This section establishes procedures and provides information for use during a project emergency. Emergencies happen unexpectedly and quickly, and require an immediate response. Therefore, contingency planning and advanced training of staff are essential. Specific elements of emergency support procedures are addressed and include communications, local emergency support units, preparation for medical emergencies, first aid for injuries incurred on site, accident/incident reporting, and emergency site evacuation procedures.

#### 9.1.1 Captain/Project Environmental and Safety Supervisor (PESS)

The PESS oversees and approves the Emergency Response/Contingency Plan and will perform audits to determine that the plan is in effect and that all pre-emergency requirements are met. The PESS is responsible for ensuring that all personnel are evacuated safely and that machinery and processes are shut down or stabilized in the event of a stop work order or evacuation. The PESS is required to notify OSHA of any fatalities or catastrophes (three or more workers injured and hospitalized) within the required time frame.

#### 9.1.2 Construction Site Supervisor (CSS)

Alcoa, along with the CSS, shall make contact with Local Emergency Response personnel prior to beginning work onsite. In these contacts Alcoa and the CSS will inform interested parties about the nature and duration of work expected on the site and possible health or safety effects of emergencies. The CSS shall locate emergency phone numbers and identify hospital routes prior to beginning work onsite. The CSS shall make necessary arrangements to be prepared for any emergencies that could occur.

The CSS shall implement the Emergency Response/Contingency Plan whenever conditions at the site warrant such action.

#### 9.1.3 Site Personnel

The contents and requirements of the project-specific Emergency Response/Contingency plan will be reviewed, at a minimum, with all onsite personnel during their initial briefing and during daily briefings as necessary. Site personnel are responsible for knowing how to initiate emergency response actions and their respective responsibilities in the event the Emergency Response/Contingency Plan must be implemented. Personnel are expected to notify the PESS of situations that could constitute a site emergency or result in the occurrence of a site emergency.

## **9.2 Communication**

A variety of communication systems may be utilized during emergency situations. These are discussed in the following sections.

### **9.2.1 Cell Phone/Radio Communication**

Cell phones and radios will be the primary sources of communication in the field. The locations of cell phones will be with supervising personnel. Marine radios will also be used by field personnel for communication.

### **9.2.2 Hand Signals**

Downrange field teams will employ hand signals where necessary for communication during emergency situations. Hand signals are found in Section 6.0, Communication.

### **9.2.3 Audio Signals**

Audio signals will be utilized in the event of an emergency or a need to evacuate the site. Three bursts will be sounded on an air horn or vehicle horn to obtain the attention of site personnel. Site personnel should then follow the procedures listed in Section 9.8, Emergency Site Evacuation Route and Procedures.

## **9.3 Local Emergency Support Units**

In order to be able to deal with any emergency that might occur during activities at the site, an emergency telephone number list (Table 9-1 and 9-2) will be posted in the barge and tugboat and at Alcoa Gate 1. A hospital route map is provided in Appendix F for non-emergency trips to the hospital. The hospital is listed in Table 9-1 can be used for non-emergency treatment. McKeil personnel will drive the route to the hospital to verify the directions are correct and easy to follow.

## **9.4 Pre-Emergency Planning**

McKeil will communicate directly with administrative personnel from the emergency room at the hospital in order to determine whether the hospital has the facilities and personnel needed to treat cases of trauma resulting from exposure to hazards expected to exist onsite. McKeil personnel will make a site visit to the clinic and discuss treatment options with the physician.

<b>Site Health and Safety Plan</b> <b>Ice Breaking Demonstration Project in Grasse River</b> <b>Table 9-1</b> <b>Emergency (and Non-Emergency) Telephone Numbers</b>			
EMERGENCY CONTACT	LOCATION	PHONE NUMBER	NOTIFIED
Massena Fire Department	Alcoa Gate 1 Massena, NY 13662	(315) 764-4500	
Massena Police Department	Alcoa Gate 1 Massena, NY 13662	(315) 764-4500	
Massena Memorial Hospital	10 Hospital Dr. Massena, NY 13662	(315) 764-4500	
Poison Control Center		(315) 764-4500	
<b>Hazardous Materials Spill Response Units</b>			
Fire Department (Alcoa)	Alcoa Gate 1 Massena, NY 13662	(315) 764-4500	
CHEMTREC <sup>1</sup> Chemical Transportation Emergency Center	1300 Wilson Boulevard Arlington, VA 22209	800-424-9300 (703-741-5525)	
National Response Center <sup>2</sup>	United States Coast Guard (G-OPF) 2100 2 <sup>nd</sup> Street, Southwest - Room 2611 Washington, DC 20593-0001 USA	800-424-8802 (202-267-2675)	
<p>Notes:</p> <ol style="list-style-type: none"> <li> <p>CHEMTREC® (Chemical Transportation Emergency Center) is a public service of the Chemical Manufacturers Association. However, CHEMTREC is not intended nor equipped to function as a general information source.</p> <ul style="list-style-type: none"> <li>▪ CHEMTREC® DEALS ONLY WITH CHEMICAL TRANSPORTATION EMERGENCIES!</li> <li>▪ In the event of chemical transportation emergency, CHEMTREC® provides immediate advice for those at the scene of emergencies, then promptly contacts the shipper of the chemicals for more detailed assistance and appropriate follow-up.</li> <li>▪ OPERATES AROUND THE CLOCK - 24 HOURS A DAY, 7 DAYS A WEEK TO RECEIVE EMERGENCY CALLS. IN CASE OF CHEMICAL TRANSPORTATION EMERGENCIES, CALL ONE OF THE FOLLOWING NUMBERS: <ul style="list-style-type: none"> <li>• Continental United States: (800) 424-9300 direct dial, toll free (WATS) number</li> <li>• Outside of Continental USA: (703) 527-3887 (This number may be called collect)</li> </ul> </li> <li>▪ CHEMTREC® provides hazard information warnings and guidance when given the NAME OF THE PRODUCT and the NATURE OF THE PROBLEM. For more detailed assistance, provide the following information:</li> <li>▪ Name of caller and call-back number; Location of problem; Shipper or manufacturer; Container type; Rail car or truck number; Carrier name; Consignee; Local conditions.</li> </ul> </li> <li> <p>The Notional Response Center (NRC) maintains a 24 hours per day, 7 days a week, 365 days a year Operation Center where all information is received via the toll-free number, entered directly into an on-line data base system, and electronically disseminated as part of the National Response System. Once contacted, the NRC Duty Officer will guide the caller through a detailed series of questions based on the Standard Report Form to gather as much information as possible concerning the spill or release. The information is immediately entered into the Incident Reporting Information System (IRIS) and based on several pre-established criteria including material involved, mode of transportation, injuries, damage, and fatalities, select federal agency notification will take place within 15 minutes of receipt. When any of the following incidents occur, the NRC should immediately be contacted by the responsible party via the toll free number. If you see or discover and oil spill or release of chemicals and are NOT the responsible party, you should contact the NRC with whatever information you have.</p> </li> </ol> <p><b>Chemical Releases</b>  The <u>Comprehensive Environmental Response, Compensation, and Liability Act</u> requires that all releases of hazardous substances exceeding reportable quantities be reported by the responsible party to the National Response Center. <u>Title 40 of the Code of Federal Regulations Part 302</u> promulgates reportable quantities and reporting criteria. All the Extremely Hazardous Chemicals (EHC) that overlaps with the CERCLA listed chemicals table (40CFR Part 302.4) should be reported to NRC.</p> <p><b>Other Releases</b>  Discharges from a hazardous waste treatment or storage facility must be reported by the emergency coordinator at the facility. Abandoned dump or waste sites should be reported by anyone having knowledge of such a site.</p>			

**Site Health and Safety Plan  
Ice Breaking Demonstration Project in Grasse River**

**Table 9-2  
Site Contact Numbers**

<b>USEPA Personnel</b>	<b>Contact</b>	<b>Phone Number</b>
Project Manager	Young Chang	212-637-4253
Onsite Representative(s)		
<b>Alcoa Personnel</b>		
Project Manager	Larry McShea	Office: 724-337-5458 Cell: 412-527-3792
Site-Location Manager	Bruce Cook	Office: 315-764-4270 Cell: 315-323-1924
Environmental Health and Safety (EHS) Manager	John George	724-337-4694
Site Environmental Manager	Charlie Dobbs	315-764-4161
Site Security Manager	Lincoln Truax	315-764-4319
<b>McKeil Personnel</b>		
Site Superintendent	Benoit Champoux	514-238-4709
Site Supervisors	Yvan Peloquin Chris Kirby	514-917-1072 905-536-5419
Captains	Jean Lalancette Martin LaPlante	514-971-1360 514-605-9346
<b>CDM Personnel</b>		
Alcoa Responsible Person (ARP), Site EHS Supervisor	Bill Moon	Office 315-769-7011 Cell 315-250-9431

## 9.5 Emergency Drills

### 9.5.1 General Site Emergencies

A general site emergency drill will be conducted to test the site emergency systems. The drill will simulate emergency situations and evacuation scenarios that might occur at site. A critique of the drill by McKeil and the ARP will be conducted.

### 9.5.2 Marine Emergencies

A person overboard or rescue drill will be conducted. This could involve locations on the water and immediately adjacent to water, such as piers, and docks.

The following drills will be held once during the ice breaking project: abandon ship/boat drill, fire drill, and person overboard or rescue drill.

A drill will include, where appropriate, how to handle a pump shell or pipe rupture, or failure within the hull (proper shutdown procedures, system containment, etc.) and how to handle leaks or failures of the hull or portions of it (what compartments to secure, how to handle power losses, pulling spuds to move to shallow water, etc.).

Emergency lighting and power systems will be operated and inspected daily to ensure proper operation. Internal combustion engine driven emergency generators will additionally be tested. Storage batteries for emergency lighting and power systems will also be tested.

Any deficiencies from a drill or emergency testing will be noted and the associated corrective actions taken.

## 9.6 Emergency Medical Treatment

The procedures and rules in this HASP are designed to prevent employee injury. However, should an injury occur, no matter how slight, it will be reported to the PESS immediately. First-aid equipment will be available onsite at the following locations:

First Aid Kit:	Working Barge and Tugboat
ANSI Approved Emergency Eye Wash:	Working Barge and Tugboat

At a minimum, one first aid/CPR trained person will be assigned to each shift. During the site safety briefing, project personnel will be informed of the location of the first aid station(s) that has been set up. Unless they are in immediate danger, severely injured persons will not be moved until paramedics can attend to them. Some injuries, such as severe cuts and lacerations or burns, may require immediate treatment. Any first aid instructions that can be obtained from the paramedics, before an emergency-response squad arrives at the site or before the injured person can be transported to the hospital, will be followed closely.

When personnel are transported to the hospital, the PESS will provide a copy of the Medical Data Sheet to the paramedics and treating physician.



Only in non-emergency situations will an injured person be transported to the hospital by means other than an ambulance.

## **9.7 Emergency and Non-Emergency Response**

### **9.7.1 Emergency Response**

Some physical signs/symptoms that require emergency medical treatment and a call to Alcoa Gate 1 (315-764-4500) include: chest pain, difficulty breathing, uncontrolled bleeding, bone fracture, loss of consciousness, severe head injury, poisoning, shock, loss of limb, and sudden and prolonged dizziness. In an emergency situation:

- Call Alcoa Gate 1 (315-764-4500) for initial employee evaluation and transport to the hospital. A designated McKeil employee shall accompany the injured worker to the hospital.
- Administer first aid to minimize the injury effects.
- Call the PESS, Project Manager, and ARP.

### **9.7.2 Serious Injury to Personnel on the Water/Ice**

A significant amount of work at the site will be performed on or from watercraft, and it is possible that an employee may become sick or injured while located on that watercraft. In the event that an employee becomes disabled while on a vessel, then the following procedures should be followed:

- Call Alcoa Gate 1 (315-764-4500) for initial employee evaluation and transport to the hospital. A designated McKeil employee shall accompany the injured worker to the hospital.

**IMPORTANT:** The logistics of the rescue must be communicated to the emergency responders.

- If the watercraft on which the person is located can maneuver to a shoreline rendezvous point, then the location will be provided to the emergency responders. Shoreline meeting point locations to be used in emergencies must be planned in advance by project management personnel, as they will vary depending on the location of work.
- If the injured employee can be transported on a watercraft where the incident occurred, the employee should be transported to the pre-determined meeting point to rendezvous with the emergency responders.
- If, in the judgment of the First Aid/CPR competent person, the injured individual cannot be moved, the emergency responders will be transported by a predetermined protocol to the scene of the incident. If necessary, CPR and First Aid will be administered while awaiting the arrival of the emergency response personnel.

- Supervisory personnel will meet EMS personnel at the rendezvous point and direct them to the injured party. The rendezvous point should be coordinated with EMS during the initial mobilization activities.
- The EMS personnel will evaluate the patient's condition.
- If the condition of the patient is immediately life-threatening and waiting for the arrival of the emergency responders is not possible, then the project personnel will take the injured employee from the watercraft, and transport to shore. The project personnel will then rendezvous with EMS personnel at the on-shore location.

### 9.7.3 Person in Water (Overboard)

When working on vessels or near water, the possibility exists that a person could fall from the vessel or other location adjacent to water. Since no work on water is to be conducted by one person alone, there will typically be another person to act in the event of an overboard incident. If there is occasion where a single person is working on, over, or adjacent to water, then the person must be equipped with a means of communication with another party. Regular well-being checks should be made using this communication method. If a person does go overboard from a vessel or otherwise falls into the river, then the following applies.

#### 9.7.3.1 Large Watercraft (Barge, Tugboat)

- If a person goes overboard, immediately throw them a life ring (Type IV PFD).
- Give the order to stop all engines.
- Notify the captain or crewmember in charge and the land-based EMS.
- If the person cannot get into the boat because of the boat limitations, injuries, or unconsciousness, then have the person stay with the boat, or tie them off so they do not drift away.
- On large vessels so equipped, the person may be able to be winched back onto the vessel after a line and sling has been placed around and under their arms.
- Quickly notify the land-based EMS by radio and await emergency assistance.

#### 9.7.3.2 Land-Based Areas

- If a person goes into the water, throw them a life ring (Type IV PFD).
- Notify the captain.
- Depending on the configuration of the area, the person may, with the assistance of the life ring and line, be able to come to the shoreline and exit the water.
- Quickly notify the land-based EMS by radio and await emergency assistance.

### 9.7.4 Non-Emergency Response

In a non-emergency situation:

- Administer required first aid to minimize the injury effects.
- Call the PESS, CSS, Alcoa Gate 1 and ARP.
- You may transport the injured employee to the local hospital in a privately owned vehicle. A designated employee must accompany the injured worker to the local hospital.

### **9.7.5 After Emergency and Non-Emergency Treatment**

After emergency and non-emergency treatment:

- Contact McKeil Human Resource by phone within 24 hours.
- Inform the ARP of the post treatment status.

## **9.8 Emergency Site Evacuation Routes and Procedures**

In order to mobilize the manpower resources and equipment necessary to cope with a fire or other emergency, a clear chain of authority will be established. The PESS will take charge of all emergency response activities and dictate the procedures that will be followed for the duration of the emergency. The PESS will report immediately to the scene of the emergency, assess the seriousness of the situation, and direct whatever efforts are necessary until the emergency response units arrive. At his/her discretion, the PESS also may order the closure of the site for an indefinite period.

All project personnel will be instructed on proper emergency response procedures and locations of emergency telephone numbers during the initial site safety meeting. If an emergency occurs, including, but not limited to fire or explosion, an air horn will be sounded on the site. The horn will sound for three blasts, signaling that immediate evacuation of all personnel is necessary due to an immediate or impending danger. All heavy equipment will be shut down and all personnel will evacuate the work areas and assemble at the designated rally point, which shall be determined upon arrival at the site.

The PESS will give directions for implementing whatever actions are necessary. Any project team member may be assigned to be in charge of emergency communications during an emergency. He/she will attend the site telephone specified by the PESS from the time the alarm sounds until the emergency has ended.

After sounding the alarm and initiating emergency response procedures, the PESS will check and verify that access roads are not obstructed. If traffic control is necessary, as in the event of a fire or explosion, a project team member, who has been trained in these procedures and designated at the site safety meeting, will take over these duties until local police and fire fighters arrive.

The PESS will remain at the site to provide any assistance requested by emergency-response squads as they arrive to deal with the situation. Evacuation routes, meeting places, and location of emergency equipment and first aid supplies shall be discussed during the site-specific briefing.

## 9.9 Fire Prevention and Protection

In the event of a fire or explosion, procedures will include immediately evacuating the site (air horn will sound for a three blasts), and notification to Alcoa Gate 1. No personnel will fight a fire beyond the stage where it can be put out with a portable extinguisher (incipient stage).

Adhering to the following precautions will prevent fires:

- Good housekeeping and storage of materials;
- Storage of flammable liquids and gases away from oxidizers;
- Smoking will be allowed only in designated areas appointed by PESS;
- No hot work will be done without a properly executed hot work permit;
- Shutting off engines to refuel and following the strict refueling protocol;
- Grounding and bonding metal containers during transfer of flammable liquids;
- Use of UL approved flammable storage cans;
- Fire extinguishers rated at least 10 pounds ABC located on all heavy equipment barges and tugboat; and
- Inspections of all fire extinguishers prior to work tasks commencement.

## 9.10 Chemical Exposure

The following are standard procedures to treat any chemical exposures. Other, specific procedures detailed on the supported MSDS or recommended by the Corporate Medical Consultant will be followed, when necessary.

SKIN AND EYE CONTACT:	Use copious amounts of water. Wash/rinse affected areas thoroughly, and then provide appropriate medical attention. Eyes should be rinsed for 15 minutes upon any chemical contamination. Skin should also be rinsed for 15 minutes if contact with any caustics, acids or hydrogen peroxide occurs.
INHALATION:	Move to fresh air. Contact Alcoa Gate 1 (315-764-4500) for emergency assistance.
INGESTION:	Contact Alcoa Gate 1 (315-764-4500) for emergency assistance.
PUNCTURE WOUND OR LACERATION:	Contact Alcoa Gate 1 (315-764-4500) for emergency assistance.

## 9.11 Accident/Incident reporting

As soon as first aid and/or emergency response needs have been met, the following parties are to be contacted by telephone:

Benoit Champoux, Project Manager	(514) 238-4709
Yvan Peloquin, Site Supervisor/Captain	(514) 917-1072
Chris Kirby, Site Supervisor/Captain	(905) 536-5419
Bill Moon, Alcoa Responsible Person	(315) 250-9431

Incident reporting needs to occur to McKeil and to the ARP immediately to assure that any injury is properly managed. Written confirmations of verbal reports are to be submitted within 24 hours. The accident/incident report is found in Appendix B. This report will be done by the employee(s) involved in the incident, and the PESS, Site Superintendent, or Project Manager.

## 9.12 Adverse Weather Conditions

In the event of adverse weather conditions, the PESS or designee will determine if work can continue without potentially risking the safety of all field workers. Some of the items to be considered prior to determining if work should continue are:

- Potential for cold stress and cold-related injuries;
- Treacherous weather-related working conditions (hail, rain, lightning, snow, ice, or high winds);
- High flow events coinciding with elevated air temperature, which could trigger a natural ice breakup and facilitate downstream transport of river ice;
- Rough water;
- Limited visibility (fog);
- Any potential for electrical storms;
- Earthquakes; and
- Other major incidents.

Site activities will take place 24 hours/day using suitable artificial light during times of darkness, and requiring that acceptable weather conditions prevail. The PESS will determine the need to cease field operations, if necessary, in case of severe inclement weather conditions.

A detailed weather forecast will be obtained by the PESS for the Massena, New York area for the current and following day's weather forecast to determine the impending

weather. The weather forecasts will be discussed at each morning's health and safety briefing.

### **9.12.1 Storms, Squalls, and Short Duration High Wind Storms**

The following actions should be taken to secure the site whenever there is a threatening storm and or the chance of high winds:

- Secure all loose materials, supplies and equipment.
- Stop all work and bring all workers indoors if lightning is within view of the site. Work will not commence until 30 minutes after last sighting of lightning.
- Ice breaking will stop and the equipment will be lowered and secured.
- Any evacuation of the crew from the barge will be at the discretion of the PESS and Site Superintendent.

### **9.12.2 Snow**

The degree of response to a snowstorm depends on the severity/expected severity of the storm. Weather forecasts should be monitored closely. Snow storms, especially N'oreasters, may often be accompanied by high winds, and other effects normally associated with significant storms, therefore some precautions and measures from other categories in this section may need to be implemented as well.

- Shutdown the project if there is a serious chance that not enough workers will be able to report to the job site to perform the work safely. Shut down work early enough that workers can depart the site before the storm hits. Give workers instructions as to when to come back to work.
- If necessary, plan for snow removal operations and plowing services.

### **9.12.3 Special Marine Considerations**

Pre-planning and response to extreme weather conditions in this planned ice breaking environment, especially for vessel operations, is very dependent on the specific task being conducted and the particular equipment involved. Therefore, in addition to the information in the above sections, there are additional severe weather elements, which must be considered for these marine operations. Special extreme weather considerations for marine activities are discussed below.

#### **9.12.3.1 High Winds**

Of particular concern during periods of high winds is: 1) the limited communications between persons on the barge and tugboat to others via the two-way radios; and 2) the potential of strong winds knocking persons on the barge over.

Safety procedures for high-risk equipment (i.e., crane, or barge) which may need special attention should be established during mobilization activities and communicated to field personnel. All equipment will be lashed to the deck or placed in the storage area, and all personnel will be transported to shore. Any watercraft

must be equipped with sufficient weight trip anchors, and each anchor must have sufficient chain and line for anchoring.

Should it be determined by the onboard personnel and the tugboat captain that the weather conditions being encountered during a day of ice breaking are dangerous and are worsening, all operations will cease, all equipment will be lashed to the deck or placed in the storage area, and all personnel to shore.

Additionally, when operations are conducted to secure the barge and tugboat for protection against forthcoming weather events, a meeting will occur with all responsible parties to discuss proper docking and securing procedures.

#### ***9.12.3.2 Heavy Downpours and Snow Squalls***

In the event heavy downpours (where visibility is obscured), or snow squalls are forecasted or encountered, all operations will be suspended until the heavy rains or snow squalls end. Personnel may remain on the watercraft during heavy rain or snow squall events only when leaving poses greater danger. The watercraft will be left in place, secured by anchors. Should it be determined by the McKeil personnel and the captain that the weather conditions being encountered are dangerous and are worsening, all operations will cease, all equipment will be lashed to the deck or placed in the storage area, and all personnel will move to shore.

#### ***9.12.3.3 Snow, Ice and Hail***

In the event snow, ice, or hail is forecasted or encountered, work may continue after the watercraft(s) are cleared of ice and accumulated snow as needed. Ample amounts of sand will be available and applied to the deck surfaces as needed. Should it be determined by the personnel on board, and the tugboat captain, that the weather conditions being experienced on the watercraft are dangerous and are worsening, all operations will cease, all equipment will be lashed to the deck or placed in the storage area, and all personnel will move to shore.

#### ***9.12.3.4 Thunderstorms***

In the event a non-seasonal thunderstorm is forecasted, the PESS, or designee, will monitor the activity. Additionally, all site personnel will keep an "eye to the sky", observing conditions. Operations will cease when lightning is observed from any location. Operations will be allowed to continue 30-minutes after the last lightning is observed, unless monitoring and other communications shows other storms approaching.

#### ***9.12.3.5 Natural Ice Breakup***

In the event that actual or forecasted weather conditions (i.e., significant increase in river flow and elevated air temperatures) indicate a pending natural breakup of the ice in the upper river during ice breaking operations and the conditions are deemed unsafe for operations, the operations will be terminated, the barge and equipment secured, and the crew removed from the river.

#### 9.12.3.6 General

- The barge and tugboat personnel will maintain radio and cellular telephone communications/contact between themselves and land-based team members. The radio channels to be used must be coordinated in advance.
- Local weather forecasts will be monitored daily by McKeil, for predicted inclement weather. Local weather forecasts will be discussed at the daily health and safety meeting.

### 9.13 Spill Control and Response

All small hazardous spills/environmental releases shall be contained as close to the source as possible. Whenever possible, the Material Safety Data Sheets (MSDS) will be consulted to assist in determining the best means of containment and cleanup. For small spills, absorbent materials such as sand, sawdust or commercial absorbents should be placed directly on the substance to contain the spill and aid recovery. On land, berms of earthen or absorbent materials can be used to contain the leading edge of the spills. All spill containment materials will be properly disposed after discussion with the ARP. An exclusion zone of 25-50 feet around the spill area should be established depending on the size of the spill.

The following seven steps should be taken by the PESS:

- Determine the nature, identity and amounts of major spill components.
- Make sure all unnecessary persons are removed from the spill area.
- Notify the PM, CSS, ARP and Alcoa Gate 1. See Table 9-1 and 9-2.
- Use proper PPE in consultation with the CSS.
- If a flammable liquid, gas or vapor is involved, remove all ignition sources and use non-sparking and/or explosive proof equipment to contain or clean up the spill (diesel only vehicles, air operated pumps, etc.).
- If possible, try to stop the leak with appropriate material.
- Remove all surrounding materials that can react or compound with the spill.
- Attempt to divert spilled liquids from entering streams, surface waters, or drainage ditches using berms or sorbent materials.

#### 9.13.1 Minor Spill Less than Recordable Quantity (RQ)

On Vessels(Barge and Tugboat):

- Contain the spill on the vessel and clean up with absorbents or absorbent pillows in order to prevent the spill from reaching the water. The CSS will follow the notification procedures outlined above.



In the Water:

- Contain and cleanup the spill with an absorbent boom or pads. The CSS will follow the notification procedures outlined above.
- Note that an appearance of a “sheen” on the water surface from a release of petroleum constitutes a RQ in New York, regardless of the actual quantity of petroleum released.

On Land:

- Prevent the spill from reaching the water using an earthen berm or other barrier in order to prevent the spill from reaching the water. Remediate spill area according to State and Federal regulations. The CSS will follow the notification procedures outlined above.

### 9.13.2 Large Spills above the RQ

- Contain spill to the smallest area possible using booms, berms, or any other effective barrier. The CSS will follow the notification procedures outlined above.
- In the event that additional emergency cleanup help is needed, McKeil will request additional assistance from off-site response by placing a call to Alcoa Gate 1.
- McKeil will collect all material discharged including contaminated booms and absorbent materials. All residue discharged will be disposed of in accordance with all applicable waste Alcoa, Federal and State regulations.
- All emergency equipment will be decontaminated prior to being placed back into routine service.
- Contaminated decontamination water, waste solutions, or residues generated from decontaminating the equipment will be collected and disposed of in compliance with all applicable Alcoa, State and Federal regulations.
- McKeil will keep all records related to the spill of petroleum for a period of at least three years after the spill has been cleaned up or for longer periods of time, if required as part of any unresolved enforcement action.

### 9.14 Emergency Equipment

The following minimum emergency equipment shall be kept and maintained onsite:

- Industrial first aid kit.
- American National Standards Institute (ANSI) approved eye wash with capability of several minutes non-stop flushing operation.
- Fire extinguisher (minimum of each approved type for barge and tugboat).

- Spill control equipment to include, but not limited to, absorbent booms, absorbent pads, and absorbent material, scoop or shovel and disposal container.

#### 9.14.1 Marine Emergency Equipment

- The barge and tugboat shall carry fire extinguishers (for use in gasoline, oil and grease fires) approved by UL. Each fire extinguisher shall be inspected by the owner/operator daily to ensure that it is sufficiently charged and that the nozzles are free and clear. Discharged fire extinguishers shall be replaced or recharged immediately. Extinguisher requirements are as follows:

Length of Watercraft	Extinguisher Type	Number Required
26 feet or less	1-A:10-B:C	1
26 feet or more	1-A:10-B:C	2

- The barge and tugboat shall each carry at least one air horn or similar sound-signaling device.
- The barge and tugboat shall each carry a non-pyrotechnic visual distress signal. Non-pyrotechnic visual distress signals include an orange distress flag and a flashlight or other electric distress light. No single signaling device is ideal under all conditions and for all purposes.
- All powered watercraft shall carry a tool kit sufficient for the watercraft operator to troubleshoot common mechanical problems such as fouled spark plugs, flooded carburetor, electrical shorts, etc. Watercraft operated in remote areas shall also carry appropriate spare parts (propellers, shear pins, patch kits, air pumps, etc.). The tool kit shall be maintained by the watercraft operator, and expended supplies shall be replaced immediately.
- All controls requiring operation in cases of emergency - such as, safety valves, power switches, fuel valves, and alarms - shall be located so that they are protected against accidental operation but are readily accessible in an emergency.
- General alarm systems shall be installed and maintained on all vessels where it is possible that a crewman to be out of sight or hearing from any other person. Where general alarm systems are used they shall be operated from the primary electrical system with standby batteries on trickle charge that will automatically furnish the required energy during an electrical system failure.
- A sufficient number of signaling devices shall be placed on each deck so that they can be distinctly heard above the normal background noise at any point on the deck.

- All tugboat doors shall be capable of being opened from either side and provided with positive means to secure them in both the open and closed position.
- Emergency exits shall be marked on both sides with letters, at least 2.5 cm (1 in) high, stating "EMERGENCY EXIT - KEEP CLEAR."
- Any fuel and lubricant containers and tanks shall be diked or curbed to contain the tank contents in case of leakage in accordance with NAVFAC DM-22, Petroleum Fuel Facilities. In lieu of a dike or curb, other means complying with USCG requirements in 46 CFR Parts 64, Marine Portable Tanks, and 98.30, Handling and Storage of Portable Tanks, may be used.
- Petroleum transfers for a floating vessel (tugboat) shall be in accordance with the provisions of USCG regulations, 46 CFR and 33 CFR Parts 155 and/or 156. For uninspected vessels, USCG regulations in 33 CFR 156.120 and 33 CFR 155.320 for fuel coupling devices and fuel oil discharge containment apply. Venting fuel tanks is necessary when using the couplings prescribed by 33 CFR 156.120(1) or (2).

#### **9.14.2 Floatation Devices**

##### **9.14.2.1 Personal**

- A USCG approved Personal Floatation Device (PFD) shall be provided to and properly worn by all persons in the following circumstances:
  - On all watercraft, including the barge and tugboat;
  - On structures extending over or next to water except where guardrails or safety nets are provided for employees;
  - Any work on or near within 10 feet of water where falling into the water is a potential hazard;
  - Working alone at night where there are drowning hazards, regardless of other safeguards provided and;
  - Wherever there is a drowning hazard.
- PFDs are required for all marine work, when an individual is within 10 feet of the water.

##### **9.14.2.2 Life Rings - Watercraft**

- The barge and tugboat shall be equipped with at least one Type IV PFD, designed to be thrown to a person in the water, and grasped and held by the user until rescued. A life ring or horse-shoe buoy are two common examples of a Type IV PFD. All Type IV PFDs must be approved by the PESS prior to use. Life rings (rope attachment not required) and ring buoys (rope attachment required) shall conform to the requirements of 46 CFR 160 (USCG approval) and shall have at least 70 feet (21 meters) of 3/8 inch (1 centimeter) solid braid polypropylene line, or

equivalent, attached. Throw bags may be used in addition to life rings or ring buoys.

- Life rings or ring buoys shall be readily available and shall be provided as follows:
  - A minimum of one on each vessel.

### **9.15 Postings**

The following information shall be posted at the site:

- Emergency telephone numbers.
- Emergency evacuation routes and staging area.
- Route to Hospital.

### **9.16 Restoration and Salvage**

After an emergency, prompt restoration of utilities, fire protection equipment, medical supplies and other equipment will reduce the possibility of further losses. Some of the items that may need to be addressed are:

- Refilling fire extinguishers;
- Refilling medical supplies;
- Recharging eyewashes and/or showers;
- Replenishing spill control supplies; and
- Replacing used air horns.

# Section 10

## Training

### 10.1 General Health and Safety Training

Project personnel shall receive site training prior to any work commencement including review of this HASP. This training will address the duties the employees are expected to perform. In good practice, a review of McKeil's general health and safety procedure will be completed. The ARP will participate in this training.

### 10.2 Site-Specific Health and Safety Training

Prior to beginning any site activities, McKeil will schedule a site-specific training with all personnel who work on the site. During this meeting, McKeil will review the site specific HASP as well as the Site Conditions, Oil Pollution Emergency Plan, Emergency Response Plans and the Engineering Standards developed by Alcoa that pertain to this project. This meeting will be documented and signed by all parties attending the training. As work progresses, additional training may be required for new worker(s) entering the site. All site personnel, as defined in Section 2.4, will be required to receive the appropriate safety training and sign an acknowledgement of such training prior to entering the site. All site personnel not employed by McKeil will require an escort to access river operations.

### 10.3 Onsite Safety Briefings

Project personnel and visitors will be given health and safety briefings by the PESS to assist site personnel in safely conducting their work activities. The briefings will include information on new operations to be conducted, changes in work practices or changes in the site's environmental conditions, as well as periodic reinforcement of previously discussed topics. The briefings will also provide a forum to facilitate conformance with safety requirements and to identify performance deficiencies related to safety during daily activities or as a result of safety inspections. Prior to starting any new activity, a training session using the AHA will be held for workers involved in the activity. During these daily briefings, the PESS will also incorporate any Alcoa standards that apply to the tasks to be done for that day. These standards will be discussed in detail when going through related AHAs with the site personnel. A list of the most relevant Alcoa Standards can be found in Appendix G. A copy of these standards will be made available upon request. A copy of the attendance sheet for these daily briefings is included in Appendix B.

### 10.4 First Aid and CPR

The PESS will identify those individuals requiring first aid and CPR training in order to ensure that emergency medical treatment is available during field activities. It is expected that a minimum of one field personnel on-site at any one time will have first aid, CPR training, and bloodborne pathogen training. The training will be consistent with the requirements of the American Red Cross Association; OSHA 29 CFR 1910.1030, Bloodborne Pathogen Standard.

## **10.5 Hazard Communication**

Hazard communication training will be provided and documented in accordance with the requirements of OSHA and contained in the McKeil Health and Safety Program, a copy of which will be maintained on site. This training will be included, at a minimum, during the initial site briefing and additionally during daily site safety briefings as necessary or indicated.

# Section 11

## Logs, Reports and Recordkeeping

The following is a summary of required health and safety logs, reports and recordkeeping.

### 11.1 Field Change Request

Field change requests are to be completed for initiating a change to the HASP. The PESS, Project Manager or designee, and ARP approval is required. The original will be kept in the project file. Approved changes will be reviewed with affected field personnel at a safety briefing. A field change request form is provided in Appendix B.

### 11.2 Medical and Training Records

All employee voluntary medical records will be maintained by human resources in accordance with McKeil Health and Safety Program.

### 11.3 Onsite Log

The PESS or designee will keep each day a log of personnel onsite.

### 11.4 Daily Safety Reports

The PESS shall complete daily safety reports. The report is provided in Appendix B.

### 11.5 Accident/Incident Reports

Incident reporting needs to occur to McKeil and to the ARP immediately to assure that any injury is properly managed. The incident reporting and investigation during site work will follow McKeil Health and Safety Program, Section 5. Written confirmation of verbal reports are to be submitted within 24 hours.

### 11.6 Hazard Communication Program/MSDS

The hazard communication program will be maintained on site and training on the program information and requirements will be provided in accordance with 29 CFRs 1910.1200 and 1926.59, *Hazard Communication*, 1910.1201, *Retention of DOT Markings, Placards and Labels*, and McKeil Health and Safety Program.

MSDSs will be obtained for applicable substances and included in the site hazard communication file. Prior to bringing any additional chemicals onsite, a New Material Request Form must be completed and given to the ARP to be submitted to Alcoa for approval. A copy of the MSDSs will be obtained and maintained in the file for all chemicals to which the requirements apply. All chemical containers will be properly labeled in accordance with the requirements of the applicable standards.

# Section 12

## Field Personnel Review

This form serves as documentation that field personnel have read, or have been informed of, and understand the provisions of the HASP. It is maintained on site by the PESH as a project record.

Each field team member shall sign this section after site-specific training is completed and before being permitted to work onsite.

I have read, or have been informed of, the Health and Safety Plan for the Ice Breaking Demonstration Project in Grasse River and understand the information presented. I will comply with the provisions contained therein.

<i>Name (Print and Sign)</i>	<i>Date</i>





# Section 13

## References

Alcoa. 2006. Lower Grasse River Ice Breaking Demonstration Project - Draft Work Plan. October 2006.

American Conference of Governmental Industrial Hygienists, Inc., 1992, "Documentation of the threshold limit values and biological exposure indices;" 6th Edition, ACGIH, Cincinnati, Ohio.

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American Conference of Governmental Industrial Hygienists, Inc., 2006, "Threshold limit values for chemical substances and physical agents in the work environment and biological exposure indices;" ACGIH, Cincinnati, Ohio.

McKeil Marine LTÉE Health and Safety Program

NIOSH/OSHA/USCG/EPA, 1985, "Occupational safety and health, guidance manual for hazardous waste site activities;" October 1985.

Sax, N. Irving, 1992, "Dangerous properties of industrial materials," 8th Ed.; Van Nostrand Reinhold Co. Inc., New York, NY.

U.S. Department of Labor, Occupational Safety & Health Administration, 1995, 29 CFR 1910 - General Industry, and 29 CFR 1926 - Construction Industry Standards.

U.S. Department of Labor, Occupational Safety & Health Administration, 1989, 29 CFR 1910.120, "Hazardous Waste Operations & Emergency Response," Final Rule.

## Appendix A

### Alcoa Massena Operations Site Conditions Document

A Copy of this document is available  
upon request.

# Appendix B

## Health and Safety Forms

**McKeil**

**HASP FIELD CHANGE REQUEST FORM**

**PROJECT:**

**TASK OR PHASE:** \_\_\_\_\_

**PROJECT LOCATION:** \_\_\_\_\_

**DESCRIPTION OF CHANGE:** \_\_\_\_\_

**REASON FOR CHANGE:** \_\_\_\_\_

**RECOMMENDED DISPOSITION:**

**PM:** \_\_\_\_\_  
Signature Date

**Site Superintendent:** \_\_\_\_\_  
Signature Date

**PESS:** \_\_\_\_\_  
Signature Date

**ARP:** \_\_\_\_\_  
Signature Date

**DISTRIBUTION:** PESS \_\_\_\_\_  
ARP \_\_\_\_\_  
Site Superintendent \_\_\_\_\_  
PM \_\_\_\_\_

**McKeil  
HASP FIELD CHANGE DOCUMENTATION**

Field Change Number: \_\_\_\_\_

Date Effective: \_\_\_\_\_

Pen and ink changes to be made in the HASP to alert the reader of this change:

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Reason for the change to be incorporated into the HASP:

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**TEXT OF CHANGE TO BE INCORPORATED:**



## VOLUNTARY MEDICAL DATA SHEET

The brief medical data sheet shall be completed by all on-site personnel and will be kept by the PESS as a project record during the conduct of site operations. It accompanies any personnel when medical assistance is needed or if transport to a hospital is required.

Project: \_\_\_\_\_

Name: \_\_\_\_\_ Home Telephone: \_\_\_\_\_

Address: \_\_\_\_\_

Age: \_\_\_\_\_ Height: \_\_\_\_\_ Weight: \_\_\_\_\_ Blood Type: \_\_\_\_\_

Name and Telephone Number of Emergency Contact: \_\_\_\_\_

Drug or Other Allergies: \_\_\_\_\_

Particular Sensitivities: \_\_\_\_\_

Do You Wear Contacts? \_\_\_\_\_

Provide A Check List Of Previous Illnesses: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

What Medications Are You Presently Using? \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Do You Have Any Medical Restrictions? \_\_\_\_\_

\_\_\_\_\_

Name, Address, and Phone Number Of Personal Physician: \_\_\_\_\_

\_\_\_\_\_





**PER SHIFT HEALTH AND SAFETY REPORT**

<b>Project Name:</b> _____	
<b>Location:</b> _____	
<b>SITE INFORMATION</b> Shift (Night/Day) _____  Hours Worked : _____ Craft: _____ PS: _____ Subs: _____  Level of Protection For the Week:            B _ C _ D _	<b>INJURIES AND ILLNESSES</b> Yes _____ No _____  Describe: _____ _____ _____
<b>MAJOR ACTIVITIES CONDUCTED THIS SHIFT:</b> (ice breaking, measurements, etc.) _____ _____	
<b>SIGNIFICANT EVENTS THIS SHIFT:</b> (regulatory visits, equipment malfunctions, process start-up or shutdown): _____ _____	
<b>FUTURE ISSUES:</b> (schedule, manpower allocation, other resources needed) _____ _____	
<b>SITE AUDIT/INSPECTIONS CONDUCTED</b> Yes _____ No _____ (describe outstanding findings and attach results) _____ _____ _____	
<b>ADDITIONAL ACTIVITIES</b>  Crane On-Site                                      Yes _____ No _____ Dates: _____ Critical Lift Plan Performed                      Yes _____ No _____ Dates: _____	

## EHS PER SHIFT CHECKLIST AND ACTION ITEM REPORT

Object: \_\_\_\_\_ Area of Inspection: \_\_\_\_\_

Inspection Type:     DAY         NIGHT

Inspector: \_\_\_\_\_ Date: \_\_\_\_\_

Signature: \_\_\_\_\_ Time: \_\_\_\_\_

REQUIREMENTS	OBSERVATIONS (N/A if not applicable)	FINDING YES/NO
<b>11.1 WORK CONDITIONS</b>		
1 Walking /Working Surfaces		
2 Aisles and Passageways		
3 Platforms/ Scaffolding		
4 Roadways		
5 Ventilation		
6 Lighting		
7 Noise Exposure		
8 Ergonomics		
<b>Materials</b>		
1 Stacking and Storage		
Chemicals and Fuel		
<b>Equipment</b>		
1 Hand / Portable Tools		
2 Machine, Tools, Guarding		
3 Mobile/ Heavy Equipment a. Physical inspection of equipment b. Review of daily inspection reports c. Review of equipment deficiency correction logs/records		

REQUIREMENTS	OBSERVATIONS (N/A if not applicable)	FINDING YES/NO
4 Lifting Gear Equipment		
5 Materials Handling Equipment		
6 Mechanical Power Systems		
7 Hydraulic Power Systems		
8 Pneumatic Power Systems		
9 Electrical Power Systems		
10 Valves and Controls		
<b>Hazard Controls</b>		
1 Other Heavy Equipment		
2 Signs and Tags		
3 Materials Labeling		
4 Warning Systems		
<b>Emergency Systems</b>		
1 Emergency Instructions		
2 Fire Protection		
3 First Aid Kits/ Stations		
4 Emergency Rescue Equipment		
<b>Protective Equipment</b>		
1 Eye Protection		
2 Ear Protection		
3 Head Protection		
4 Hand Protection		
5 Foot Protection		
6 Body Protection		
7 Fall Protection		

- End of Checklist-

*Daily Inspections must be sent to PESS, ARP and Project Manager by the following morning.*

**ACTION ITEMS**

**Project:**

**Area of Inspection:**

**Inspection Type:**     Day Shift         Night Shift

**Date of Inspection:**

<b>ACTION ITEM</b>	<b>RESPONSIBLE PARTY</b>	<b>SCHEDULE</b>	<b>DATE COMPLETED</b>
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			

Reviewed by: \_\_\_\_\_

Site Supervisor

Date \_\_\_\_\_

cc: *Project Manager (daily only)*

*ARP (daily only)*

*Alcoa PM (daily only)*

## Appendix C

### Material Safety Data Sheets

Applicable MSDSs will be provided for by McKeil Marine LTEÉ prior to commencement of ice breaking operations.

## Appendix D

### Activity Hazard Analysis

## ACTIVITY HAZARD ANALYSIS

Project: Ice Breaking Demonstration Project in Grasse River		Location: Massena, New York
Activity: General Site Hazards		
MAJOR STEPS	POTENTIAL HAZARDS	PROTECTIVE MEASURES/CONTROLS
1. General Site Hazards	a. Back Injuries and Strains	a. Back Injuries and Strains <ul style="list-style-type: none"> <li>• Procedures in Section 3.3.8 will be followed.</li> <li>• Site personnel will be instructed on proper lifting techniques (keep back straight, lift with legs, limit twisting, etc).</li> <li>• Mechanical devices should be used to reduce manual handling of materials. Team lifting should be utilized if mechanical devices are not available.</li> <li>• An individual will not lift loads greater than 50 pounds. This amount may be lowered by PESS's judgment due to individual's stature &amp; lifting ability.</li> </ul>
	b. Slips/Trips/Falls	b. Slips/Trips/Falls <ul style="list-style-type: none"> <li>• Visually inspect work areas and mark, barricade, or eliminate slip, trip and fall hazards if feasible.</li> <li>• Maintain work areas safe and orderly. Unloading areas should be on even terrain.</li> <li>• Watch and prepare for uneven terrain, stumps, and vegetation in walk areas.</li> <li>• Replace work boots when worn out or the tread on the sole does not provide traction.</li> <li>• Tools and supplies/equipment will be properly stored.</li> <li>• Ensure that loads are properly distributed in all small boats.</li> </ul>
	c. Dropped Objects	c. Dropped Objects <ul style="list-style-type: none"> <li>• Steel toe boots meeting ANSI Standard Z41 will be worn as directed.</li> <li>• Secure all radios, cell phones and equipment</li> </ul>
	d. Noise	d. Noise <ul style="list-style-type: none"> <li>• Evaluate high noise operations to determine if hearing protective devices should be worn.</li> <li>• Hearing protection with a noise reduction rating capable of maintaining personal exposure below 85 dBA (ear muffs or plugs) will be worn during high noise operations.</li> <li>• All equipment will have manufacturer's required mufflers.</li> </ul>



**Project:** Leaking Demonstration Project in Grasse River  
**Activity:** General Site Hazards

**Location:** Massena, New York

MAJOR STEPS	POTENTIAL HAZARDS	PROTECTIVE MEASURES/CONTROLS
	e. Heavy Equipment Operation	e. Heavy Equipment Operation <ul style="list-style-type: none"><li>• Supervisors and operators will ensure that the procedures in Section 3.3.1 of this document and the equipment manufacturers' instructions and recommendations are followed consistently.</li><li>• All equipment will be initially inspected to certify safe to use onsite and before each days use.</li><li>• Unsafe equipment will be taken out of service, tagged and will not be used until repaired.</li><li>• Only operators trained and experienced with the specific equipment will operate that equipment.</li><li>• Equipment will have guards, canopies or grills to protect from flying objects.</li><li>• Ground personnel will stay clear of all suspended loads.</li><li>• All slings chains and ropes will be rated for the load in which it is expected to lift.</li><li>• Spills and absorbent materials will be readily available. Drip pans, polyethylene sheeting or other means will be used for secondary containment.</li><li>• Eye contact with operators will be made before approaching equipment. Equipment will not be approached on blind sides.</li><li>• Avoid equipment swing radius (5-10 feet beyond the counterweight). This area will be delineated with cones.</li><li>• Know hand signals.</li><li>• All equipment will be equipped with backup alarms.</li><li>• The use of headphones for entertainment purposes is prohibited.</li><li>• A 15 foot minimum safe separation distance will be maintained between the equipment and overhead utility lines.</li><li>• Equipment will be shut down before and during fueling operations.</li><li>• Prior to performing any "reach" operations on water (e.g., with a crane/excavator on barge), verify list has been taken into account along with the load and angle calculations.</li><li>• Conduct activity hazard analysis if modified operational practices are required.</li></ul>

**Project:** Ice Breaking Demonstration Project in Grasse River  
**Activity:** General Site Hazards

**Location:** Massena, New York

MAJOR STEPS	POTENTIAL HAZARDS	PROTECTIVE MEASURES/CONTROLS
	f. Temperature Extremes	f. Temperature Extremes <ul style="list-style-type: none"> <li>• Drink plenty of fluids.</li> <li>• Train personnel of signs/symptoms of cold stress.</li> <li>• Monitor air temperatures when extreme weather conditions are present.</li> <li>• Stay in visual and verbal contact with your buddy.</li> <li>• Controls will be implemented to minimize exposure to temperature extremes including work rest regimens, warm rest areas, protective clothing, and minimize exposure time.</li> </ul>
	g. Overhead Hazards	g. Overhead Hazards <ul style="list-style-type: none"> <li>• Personnel will be required to wear hard hats that meet ANSI Standard Z89.1 when an overhead hazard exists.</li> <li>• All ground personnel will stay clear of suspended loads and equipment swing areas.</li> <li>• All equipment will be provided with guards, canopies or grills to protect the operator from falling or flying objects.</li> <li>• All overhead hazards will be identified prior to commencing work operations.</li> </ul>
	h. Eye Injuries	h. Eye Injuries <ul style="list-style-type: none"> <li>• Safety glasses meeting ANSI Standard Z87 will be worn for all field operations where eye hazards exist.</li> <li>• A portable eye wash station will be located adjacent to work activities.</li> </ul>
	i. Sharp Objects/punctures	i. Sharp Objects/punctures <ul style="list-style-type: none"> <li>• Leather gloves (minimum) or cut resistant work gloves will be worn depending on the material working with.</li> <li>• All hand and power tools will be maintained in a safe condition. When possible, blunt all sharp objects.</li> <li>• First aid kits will be available on the barge and tugboat.</li> </ul>
	j. Fire	j. Fire <ul style="list-style-type: none"> <li>• Reference Section 9.9.</li> <li>• Only use NFPA-approved fuel cans with a pouring spout or funnel.</li> <li>• Smoking and open flames are not permitted in fueling areas.</li> <li>• A properly rated fire extinguisher will be located in the refueling area and appropriately on the barge and tugboat.</li> <li>• All gasoline-powered equipment will be grounded and bonded.</li> <li>• Equip all heavy equipment with 20A:B:C-type fire extinguishers.</li> <li>• Area(s) for personnel smoking will be designated.</li> </ul>

**Project:** IC Leaking Demonstration Project in Grasse River  
**Activity:** General Site Hazards

**Location:** Massena, New York

MAJOR STEPS	POTENTIAL HAZARDS	PROTECTIVE MEASURES/CONTROLS
	k. Spills	k. Spills <ul style="list-style-type: none"> <li>• Reference Section 9.13.</li> <li>• Secondary Containment will be provided in storage areas.</li> <li>• Spill and absorbent materials will be readily available.</li> <li>• Absorbent materials will be used during transfer of fuel/oil.</li> <li>• Contain, control and clean up the spill and affected area (soil, water). Manage and dispose of spill material appropriately.</li> <li>• All waste materials generated will be contained in a seal-able container appropriate for the size of the spill.</li> <li>• Commercial spill kits will be supplied.</li> <li>• Employees will be instructed on proper fueling techniques.</li> <li>• Fuel nozzles and hose will be secure in holder after use.</li> <li>• Fuel caps will be secured after fueling operations.</li> </ul>
	l. Hand and Power Tools	l. Hand and Power Tools <ul style="list-style-type: none"> <li>• Reference Section 3.3.6.</li> <li>• The proper tools will be used for each task.</li> <li>• All tools will be inspected before each use. Damaged tools will be removed from service and tagged (splintered wood bases, missing guards, "mushroom" head).</li> <li>• Tools will be used in accordance with manufacturer's instructions.</li> <li>• Modifications to tools are prohibited unless approved by the PESS.</li> <li>• GFCIs will be used with all electrical power tools.</li> </ul>
	m. Chemicals brought on site	m. Chemicals brought on site <ul style="list-style-type: none"> <li>• Complete a New Material Request Form and submit to ARP prior to bringing any new chemicals on-site.</li> <li>• Identify all chemical hazards and receive training (Haz Com-Material Safety Data Sheets/MSDS) regarding safe handling and storage of chemicals.</li> <li>• The PESS maintains copies of all MSDS for chemicals that are on site.</li> <li>• A portable eye wash station will be located by the work area.</li> </ul>

**Project:** Ice Breaking Demonstration Project in Grasse River  
**Activity:** General Site Hazards

**Location:** Massena, New York

MAJOR STEPS	POTENTIAL HAZARDS	PROTECTIVE MEASURES/CONTROLS
	n. Struck By/Against	n. Struck By/Against <ul style="list-style-type: none"> <li>• Personnel will understand and review hand signals.</li> <li>• All mobile heavy equipment will be equipped with backup alarms.</li> <li>• Ladders will be free of ice and snow before climbing.</li> </ul>
	o. Adverse Weather	o. Adverse Weather <ul style="list-style-type: none"> <li>• National weather forecasts will be monitored daily for predicted inclement weather. The field supervisors will call for the local conditions and forecast each morning.</li> <li>• All personnel shall be aware of the forecast and keep an “eye to the sky”. Unforecasted storms may also occur without warning.</li> <li>• Work at the discretion of the tugboat captain or PESS be postponed in the event of very strong winds, high seas or at times of very poor visibility.</li> <li>• In the event of lightning in the area, work will cease at the direction of the McKeil Supervisor or PESS, and will not proceed further until return to work permit is issued.</li> </ul>
EQUIPMENT USED	INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS
<ol style="list-style-type: none"> <li>1. Heavy Equipment</li> <li>2. Boats</li> <li>3. Appropriate PPE</li> <li>4. Hand and Power Tools</li> <li>5. Portable Eyewash</li> <li>6. First Aid Kits</li> <li>7. 20A:B:C Fire Extinguisher</li> <li>8. GFCI</li> </ol>	<ol style="list-style-type: none"> <li>1. Inspect all boats daily.</li> <li>2. Inspect all heavy equipment prior to use.</li> <li>3. Inspect all hand and power tools prior to use.</li> <li>4. Inspect all PPE prior to use.</li> <li>5. Inspect portable eye washes and First Aid Kits weekly.</li> <li>6. Inspect Fire Extinguishers weekly.</li> <li>7. Check and Test GFCI's weekly.</li> </ol>	<ol style="list-style-type: none"> <li>1. All site personnel will read and comply with this HASP.</li> <li>2. All site personnel will receive site specific training.</li> <li>3. Qualified operators will be used for heavy equipment and boat operation.</li> <li>4. At least two individuals on-site will have current CPR, First Aid, and Bloodborne pathogen training.</li> <li>5. Instruct personnel of proper use of fire extinguishers.</li> <li>6. Personnel will be trained on the proper use of hand and power tools, Including the steam cleaner.</li> </ol>

**Project:** Leaking Demonstration Project in Grasse River  
**Activity:** Mobilization/Demobilization

**Location:** Massena, New York

MAJOR STEPS	POTENTIAL HAZARDS	PROTECTIVE MEASURES/CONTROLS
1. Mobilization/Demobilization	a. Back Injuries and Strains	a. Back Injuries and Strains <ul style="list-style-type: none"> <li>• Refer to General Site Hazards.</li> <li>• Site personnel will be instructed on proper lifting techniques (keep back straight, lift with legs, limit twisting, etc).</li> <li>• Mechanical devices should be used to reduce manual handling of materials. Team lifting should be utilized if mechanical devices are not available.</li> <li>• An individual will not lift loads greater than 50 pounds. This amount may be lowered by PESS's judgment due to individual's stature &amp; lifting ability.</li> </ul>
	b. Dropped Objects	b. Dropped Objects <ul style="list-style-type: none"> <li>• Refer to General Site Hazards.</li> </ul>
	c. Noise	c. Noise <ul style="list-style-type: none"> <li>• Refer to General Site Hazards.</li> <li>• Hearing protection with a noise reduction rating capable of maintaining personal exposure below 85 dBA (ear muffs or plugs) will be worn during high noise operations.</li> <li>• All equipment will have manufacturer's required mufflers.</li> </ul>
	d. Heavy Equipment Operation	d. Heavy Equipment Operation <ul style="list-style-type: none"> <li>• Refer to General Site Hazards.</li> <li>• Inspect heavy equipment initially when it arrives on site. Report any problems to the supplier and take pictures of any defects in the equipment.</li> <li>• Unsafe equipment will be taken out of service, tagged and will not be used until repaired.</li> <li>• Only operators trained and experienced with the specific equipment will operate that equipment.</li> <li>• Equipment will have rollover protective structures and seat belts. Operators shall wear seat belts when operating equipment.</li> <li>• Spills and absorbent materials will be readily available. Drip pans, polyethylene sheeting or other means will be used for secondary containment.</li> <li>• Ground personnel will stay clear of all suspended loads.</li> <li>• All slings chains and ropes will be rated for the load in which it is expected to lift.</li> </ul>

**Project: Ice Breaking Demonstration Project in Grasse River**  
**Activity: Mobilization/Demobilization**

**Location: Massena, New York**

MAJOR STEPS	POTENTIAL HAZARDS	PROTECTIVE MEASURES/CONTROLS
		<ul style="list-style-type: none"> <li>• All equipment will be equipped with backup alarms.</li> <li>• A spotter will be used for backing up equipment in congested areas.</li> </ul>
	<p>e. Man Overboard/Drowning</p>	<p>e. Man Overboard/Drowning</p> <ul style="list-style-type: none"> <li>• All personnel shall wear United States Coast Guard (USCG) approved Type III Life Preservers at all times while on the water.</li> <li>• As per Alcoa requirements, guardrails are required on working platforms on barges that are 4 feet or more above the water. The barge to be used during the Ice Breaking project will float approximately 3 feet above the water.</li> <li>• All means of barge access shall be properly secured, guarded, and maintained free of slipping and tripping hazards.</li> <li>• A Coast Guard approved Type IV flotation device (lift ring) will be maintained on the barge.</li> </ul>
	<p>f. Water Craft Operation</p>	<p>f. Water Craft Operation</p> <ul style="list-style-type: none"> <li>• All barge and tugboat pilots shall be familiar with the rules that regulate movement of boat traffic.</li> <li>• All USCG boating regulations will be strictly observed.</li> <li>• All watercraft must have required Coast Guard approved lighting and signaling devices.</li> </ul>
	<p>g. Temperature Extremes</p>	<p>g. Temperature Extremes</p> <ul style="list-style-type: none"> <li>• Refer to General Site Hazards.</li> </ul>
	<p>h. Vehicular Traffic</p>	<p>h. Vehicular Traffic</p> <ul style="list-style-type: none"> <li>• Refer to General Site Hazards.</li> <li>• Spotters will be used when backing up trucks and heavy equipment.</li> <li>• Trucks and heavy equipment will be equipped with back up alarms.</li> <li>• Traffic cones and orange traffic vests will be used when working in areas of traffic, construction vehicles and near roadways. Implement traffic controls such as flag persons, warning devices, etc., as necessary.</li> <li>• Employees will need to pay attention to operations around and adjacent to their work and continually evaluate the need for traffic control measures.</li> </ul>

**Project:** Ice Breaking Demonstration Project in Grasse River

**Activity:** Mobilization/Demobilization

**Location:** Massena, NY

MAJOR STEPS	POTENTIAL HAZARDS	PROTECTIVE MEASURES/CONTROLS
	i. Overhead Hazards	i. Overhead Hazards <ul style="list-style-type: none"><li>• Refer to General Site Hazards.</li><li>• All ground personnel will stay clear of suspended loads and equipment swing areas.</li><li>• All overhead hazards will be identified prior to commencing work operations.</li><li>• No personnel will be allowed to walk or do any work under any loads being picked.</li><li>• Personnel will be aware of other personnel working on crane in lift area.</li></ul>
	j. Hand and Power Tools	j. Hand and Power Tools <ul style="list-style-type: none"><li>• Refer to General Site Hazards.</li><li>• The proper tools will be used for each task.</li><li>• All tools will be inspected before each use. Damaged tools will be removed from service and tagged (splintered wood bases, missing guards, "mushroom" head).</li><li>• Tools will be used in accordance with manufacturer's instructions.</li><li>• Modifications to tools are prohibited unless approved by the ESS.</li><li>• GFCIs will be used with all electrical power tools.</li></ul>
	k. Caught In/Between	k. Caught In/Between <ul style="list-style-type: none"><li>• Do not allow personnel between a moving object and a stationary object.</li><li>• Ensure all personnel within unloading and loading areas are accounted for and out of the way.</li><li>• Personnel will keep hands inside scissor/boom lift during movement.</li></ul>
	l. Contact with Overhead Utilities	l. Contact with Overhead Utilities <ul style="list-style-type: none"><li>• If equipment is being operated, delivered, or off loaded in an area with overhead utilities, a spotter must be used.</li></ul>
	m. Chemicals brought on site	m. Chemicals brought on site <ul style="list-style-type: none"><li>• Refer to General Site Hazards.</li><li>• Complete a New Material Request Form and submit to Alcoa prior to bringing any new chemicals on-site.</li><li>• Identify all chemical hazards and receive training (Haz Com-Material Safety Data Sheets/MSDS) regarding safe handling and storage of chemicals.</li></ul>

**Project: Ice Breaking Demonstration Project in Grasse River**  
**Activity: Crane Assisted Tugboat Launching**

**Location: Massena, New York**

MAJOR STEPS	POTENTIAL HAZARDS	PROTECTIVE MEASURES/CONTROLS
<p>1. Crane Set up</p>	<p>a. Crane Inspection            b. Contact with objects in boom radius – overhead utilities Traffic control            c. Traffic Control            d. Pinched, caught between, struck by            e. Overhead Hazards            f. Unstable Ground</p>	<p>a. Crane Inspection            • All cranes must have annual inspection reviewed before use; daily inspections and competent person named for conducting inspections; load chart available, operator must know how to read a load chart and be deemed competent by McKeil.            • All cranes to be outfitted with anti-two-block protection.            b. Contact with objects in boom radius – overhead utilities.            • Set crane up in an area free of overhead obstacles including overhead utilities. Minimum distance between crane and 50 kV power lines is 15 feet. This distance increases if the lines are over 50 kV. Refer to chart attached at the end of this appendix.            c. Traffic Control            • Traffic cones and orange traffic vests will be used when working in areas of traffic, construction vehicles and near roadways. Implement traffic controls such as flag persons, warning devices, etc., as necessary.            • Employees will need to pay attention to operations around and adjacent to their work and continually evaluate the need for traffic control measures.            • Spotters will be used when backing up trucks and heavy equipment.            d. Pinched, Caught Between, Struck By            • Do not allow personnel between a moving object and a stationary object.            • Ensure all personnel within unloading and loading areas are accounted for and out of the way.            • All cranes are to have swing protection demarcated.            • Only operator shall be on crane during operation.            e. Overhead Hazards            • No personnel will be allowed to walk or do any work under any loads being picked.            • Personnel will be aware of overhead operations. Unauthorized personnel will not be in the swing radius.            f. Unstable Ground            • Set crane up on even terrain. Ground should be stable enough to support the weight of the crane and loads during lifting.            • If necessary, use crane mats to provide additional ground stability.</p>



**Project: Ice Breaking Demonstration Project in Grasse River**  
**Activity: Crane Assisted Tugboat Launching**

**Location: Massena, New York**

MAJOR STEPS	POTENTIAL HAZARDS	PROTECTIVE MEASURES/CONTROLS
		<ul style="list-style-type: none"> <li>• All rigging hardware shall be of sufficient capacity in the configuration of use, suitable for the lift.</li> <li>• All rigging will be tagged with its lifting capacity.</li> <li>• All chokers, slings and lifting gear shall be inspected daily (both nylon and steel) and shall be free from defects prior to use.</li> <li>• Unload trucks on even and stable ground.</li> </ul>
<p>2. Lift tugboat and place in water. Drive excavators onto the barge.</p>	<p>a. Struck by/Overhead Hazards</p>	<p>a. Struck By/Overhead Hazards</p> <ul style="list-style-type: none"> <li>• Do not allow personnel between a moving object and a stationary object.</li> <li>• Ensure all personnel within unloading and loading areas are accounted for and out of the way.</li> <li>• All cranes are to have swing protection demarcated.</li> <li>• Only operator shall be on crane during operation.</li> <li>• No personnel will be allowed to walk or do any work under any loads being picked.</li> <li>• Personnel will be aware of overhead operations. Unauthorized personnel will not be in the swing radius.</li> <li>• Use tag lines to minimize swinging of objects being moved.</li> <li>• Crane will honk horn prior to starting any lift to warn ground personnel.</li> </ul>
<p>3. Remove rigging</p>	<p>a. Overhead Hazards/Struck By  b. Watercraft Operations  c. Man overboard/drowning</p>	<p>a. Overhead hazards/Struck By</p> <ul style="list-style-type: none"> <li>• Personnel will stay out of the swing radius and not approach tugboat to remove rigging until crane operator indicates over the radio that it is safe to proceed.</li> </ul> <p>b. Water Craft Operations</p> <ul style="list-style-type: none"> <li>• All barge and tugboat pilots shall be familiar with the rules that regulate movement of boat traffic.</li> <li>• Maximum weight capacity for watercraft will not be exceeded.</li> </ul> <p>c. Man Overboard/Drowning</p> <ul style="list-style-type: none"> <li>• All personnel shall wear United States Coast Guard (USCG) Approved Type III Life Preservers at all times while on the water.</li> </ul>

**Project: Ice Breaking Demonstration Project in Grasse River**  
**Activity: Crane Assisted Tugboat Launching**

**Location: Massena, New York**

MAJOR STEPS	POTENTIAL HAZARDS	PROTECTIVE MEASURES/CONTROLS
		<ul style="list-style-type: none"> <li>• Personnel will ascertain the stability of the deck surfaces of the derelict vessels on a vessel by vessel basis before going on board. The use of planks/plywood/ladders/picks and deck stabilization devices will be available and used on a vessel by vessel basis.</li> <li>• Any vessel deemed unsafe by the attendant, inspector, PESS, or captain of the boat will not be boarded.</li> <li>• All means of barge access shall be properly secured, guarded, and maintained free of slipping and tripping hazards.</li> <li>• Maximum weight capacity for barge will not be exceeded.</li> </ul>
<p>4. Securing Excavators onto Barge</p>	<p>a. Falling Overboard and/or Standing            b. Struck By/Against            c. Hand Tools            d. Equipment Lost Overboard/crushed</p>	<p>a. Falling Overboard and/or Standing</p> <ul style="list-style-type: none"> <li>• All personnel shall wear USCG Approved Type III Live Preservers at all times while on water.</li> <li>• All PFDs will be properly worn, snug, and fully zippered/buttoned.</li> <li>• A USCG Approved Type IV flotation device (life ring) with 70 feet of line will be maintained on each tug/barge.</li> <li>• Personnel will ascertain the stability of the deck surfaces of the derelict vessels on a vessel by vessel basis before going on board. The use of planks/plywood/ladders/picks and deck stabilization devices will be available and used on a vessel by vessel basis.</li> <li>• Any vessel deemed unsafe by the attendant, inspector, PESS, or pilot of the tugboat will not be boarded.</li> <li>• All means of barge access shall be properly secured, guarded, and maintained free of slipping and tripping hazards.</li> <li>• Maximum weight capacity for barge will not be exceeded.</li> </ul> <p>b. Struck By/Against</p> <ul style="list-style-type: none"> <li>• Personnel will understand and review hand signals.</li> <li>• Do not place hands/feet between barge and tugboat.</li> </ul>

**Project: Ice Breaking Demonstration Project in Grasse River**  
**Activity: Crane Assisted Tugboat Launching**

**Location: Massena, New York**

<b>MAJOR STEPS</b>	<b>POTENTIAL HAZARDS</b>	<b>PROTECTIVE MEASURES/CONTROLS</b>
		<p>c. Hand Tools</p> <ul style="list-style-type: none"><li>• All tools will be inspected before each use. Damaged tools will be removed from service and tagged (splintered wood bases, missing guards, “mushroom” head).</li><li>• Tools will be used in accordance with manufacturer’s instructions.</li><li>• Modifications to tools are prohibited unless approved by the PESS.</li></ul> <p>d. Equipment Lost Overboard/crushed</p> <ul style="list-style-type: none"><li>• Instruments shall not be placed near edge of the barge when not in use/not secured.</li><li>• Equipment will be secured to the deck or to personnel when appropriate. Secure all radios and cell phones.</li><li>• Instruments will be kept clear of all tooling lay down areas. Good housekeeping will be critical on the boat.</li></ul>

**Project: Ice Breaking Demonstration Project in Grasse River**  
**Activity: Fuel Transfers**

**Location: Massena, New York**

<b>MAJOR STEPS</b>	<b>POTENTIAL HAZARDS</b>	<b>PROTECTIVE MEASURES/CONTROLS</b>
1. Fuel Transfer to Floating Barge Equipment and Tug	a. Site Protocol/Spill to Water way. b. Fire/Explosion	a. Site Protocol/Spill to Waterway <ul style="list-style-type: none"><li>• Immediate notification to Alcoa (315-764-4500).</li><li>• Spill and absorbent materials will be readily available.</li><li>• Contain, control and clean up the spill and affected area (soil, water). Manage and dispose of spill material appropriately.</li><li>• All waste materials generated will be contained in a seal-able container appropriate for the size of the spill.</li><li>• Commercial spill kits are available.</li><li>• Employees and fuel vendors will be instructed on proper fueling techniques.</li><li>• Fuel nozzles and hose will be secure in holder after use.</li><li>• Fuel caps will be secured after fueling operations.</li><li>• Deploy spill/drip sorbents when doing any transfer</li><li>• During Land to barge and tug fueling, trained persons will be assigned to each end of fuel transfer system to shut down transfer if needed.</li></ul> b. Fire/Explosion <ul style="list-style-type: none"><li>• Smoking and open flames are not permitted in fueling areas.</li><li>• A 20A:B:C-type fire extinguisher will be located in the refueling area.</li><li>• All gasoline-powered equipment will be grounded and bonded.</li><li>• Fuel storage areas will be a minimum of 50 feet from all combustibles or appropriate barriers will be erected between.</li></ul>

**Project: Ice Breaking Demonstration Project in Grasse River**  
**Activity: River Access/Egress/Transportation**

**Location: Massena, New York**

MAJOR STEPS	POTENTIAL HAZARDS	PROTECTIVE MEASURES/CONTROLS
<p>1. Tugboat/Barge Launching/Docking and Boarding.</p>	<p>a. Slips/Trips/Falls  b. Barge &amp; Tug Operations  c. Dropped Objects  d. Struck By/Against</p>	<p>a. Slips/Trips/Falls  • Ensure that loads are properly distributed in all small boats.  • Barge must be secured to bank or dock before loading.  • Keep barge/tug well organized, to eliminate trip hazards.  • Never exceed boats rated capacity for weight and number of persons.  • Do not disembark until barge is secured.</p> <p>b. Barge and Tugboat Operations  • Spotters will be used when moving equipment.  • Provide radio for communication.  • Assure fuel tank has sufficient gas before departure.</p> <p>c. Dropped Objects  • Ensure the drain plug is tightly secured in the boat  • Secure all radios, cell phones and equipment</p> <p>d. Struck By/Against  • Personnel will understand and review hand signals.  • Keep hands inside barge/tug when approaching dock</p>
<p>2. Transportation</p>	<p>a. Falling Overboard and/or Standing  b. Struck By/Against  c. Severe Weather  d. Sinking Boat  e. Watercraft Operation  f. Flying objects and debris  g. Equipment Lost  Overboard/crushed  h. Emergencies: Fire, Weather and Medical /Spills/Releases</p>	<p>a. Falling Overboard and/or Standing  • All persons on board will remain standing securely whenever a watercraft is moving,  • Maximum weight capacity for watercraft will not be exceeded.  • Watercraft will not be used without shore support personnel with rescue skiff available onshore.</p> <p>• Personnel on board watercraft must be in constant radio contact with shore personnel.</p>

**Project: Ice Breaking Demonstration Project in Grasse River**  
**Activity: River Access/Egress/Transportation**

MAJOR STEPS	POTENTIAL HAZARDS	PROTECTIVE MEASURES/CONTROLS
		<ul style="list-style-type: none"> <li>b. Struck By/Against                             <ul style="list-style-type: none"> <li>• Personnel will understand and review hand signals.</li> <li>• Caution will be used offloading the barge, personnel will ensure the barge is securely docked before embarking. All supply transfer work will be done only when barge is docked before and after.</li> <li>• Ensure the air horn on each boat used is in proper working order.</li> </ul> </li>   <li>• Ladders will be free of ice and snow before climbing. c. Severe Weather and Natural Ice Break-up</li> <li>c. Severe Weather and Natural Ice Break-up                             <ul style="list-style-type: none"> <li>• National weather forecasts will be monitored daily for predicted inclement weather, such as thunderstorms, snow squalls or high winds. Each Supervisor will check on the local conditions and forecast each morning.</li> <li>• Personnel working in an exposed marine location shall monitor the NOAA marine weather broadcasts.</li> <li>• All personnel shall be aware of the forecast and keep an “eye to the sky”. Unforecasted storms may also occur without warning.</li> <li>• While activities are in progress, McKeil Supervisor will be in contact with the CDM Grasse River Ice Monitoring Team to assess likelihood of natural ice break-up upstream of activities.</li> <li>• Work will be postponed in the event of very strong winds, high seas or at times of very poor visibility.</li> <li>• At the discretion of the McKeil Supervisor and the ARP, work will be terminated if the river stage and ice floes associated with the natural ice break-up are thought to cause a potential safety hazard.</li> <li>• In the event of lightning in the area, work will cease at the direction of the McKeil Supervisor or PESS, and will not proceed further until return to work permit is issued.</li> </ul> </li>   <li>d. Sinking Boat                             <ul style="list-style-type: none"> <li>• All watercraft not subject to USCG inspection and certification or not having a current American Bureau of Shipping (ABS) classification shall be inspected by a marine surveyor accredited by the National Association of Marine Surveyors (NAMS) or the Society of Accredited Marine Surveyors (SAMS).</li> <li>• A pre-use inspection of any rented vessel shall be completed, including picture documentation of pre-use conditions.</li> <li>• The load ratings of tugboats will be strictly adhered to; overloading of vessels prohibited.</li> </ul> </li> </ul>

**Project: Ice Breaking Demonstration Project in Grasse River**  
**Activity: River Access/Egress/Transportation**

**Location: Massena, New York**

<b>MAJOR STEPS</b>	<b>POTENTIAL HAZARDS</b>	<b>PROTECTIVE MEASURES/CONTROLS</b>
		<p>e. Watercraft Operations</p> <ul style="list-style-type: none"><li>• All tugboat pilots shall be familiar with the rules that regulate movement of boat traffic within the harbor.</li><li>• Kill switch tether must be used.</li><li>• Charts of the work areas, with depths for mean low water, will be obtained and watercraft pilots will be familiar with their use.</li><li>• All offshore boating regulations will be strictly observed; prudent speed limits observed.</li><li>• All watercraft (including pipelines, barges, moored boats, etc.) must have required Coast Guard approved lighting and/or signaling devices.</li></ul> <p>f. Flying objects and debris</p> <ul style="list-style-type: none"><li>• ANSI approved Safety glasses will be worn at all times while on the water.</li></ul> <p>g. Equipment Lost Overboard/crushed</p> <ul style="list-style-type: none"><li>• Instruments shall not be placed near the edge of the boat when not in use/not secured.</li><li>• Equipment will be secured to the deck or to personnel when appropriate. Secure all radios and cell phones.</li><li>• Instruments will be kept clear of all tooling lay down areas. Good housekeeping will be critical on the boat.</li></ul> <p>h. Emergencies: Fire, Weather and Medical /Spills/Releases</p> <ul style="list-style-type: none"><li>• Fire extinguishers will be carried on all launches, barges, and tugboats. Minimum number and rating are as follows: Length Extinguisher 26 feet or less one 1-A: 10-B:C 26 feet or more two 1-A: 10-B:C</li><li>• Open boat workers shall be evacuated to shore or secure location by tugboat when lightning is spotted or threatens the area.</li><li>• Medical emergencies will be handled as they are onshore.</li><li>• Booms shall be available to prevent any fuel or hydraulic spills from spreading.</li><li>• Personnel shall evacuate the boat/barge if a fire can not be contained with one 10 LB fire extinguisher.</li></ul>

**Project: Ice Breaking Demonstration Project in Grasse River**  
**Activity: Work From Mobile Platforms**

**Location: Massena, New York**

MAJOR STEPS	POTENTIAL HAZARDS	PROTECTIVE MEASURES/CONTROLS
<p>1. Work from Mobile Platforms</p>	<p>a. Falling Overboard and/or Standing            b. Man Overboard/ Drowning Struck            c. By/Against Severe Weather Sinking            d. Severe Weather            e. Boat/ Barge Damage Watercraft            f. Watercraft Operations            g. Heavy Equipment Operations            h. Flying objects and debris            i. Equipment Lost Overboard/crushed            j. Emergencies: Fire, Weather and Medical /Spills/Releases</p>	<p>a. Falling Overboard and/or Standing</p> <ul style="list-style-type: none"> <li>• All persons on board will remain seated/standing securely whenever a watercraft is moving,</li> <li>• Maximum weight capacity for watercraft will not be exceeded.</li> <li>• Personnel will ascertain the stability of the deck surfaces of the derelict vessels on a vessel by vessel basis before going on board. The use of planks/plywood/ladders and deck stabilization devices will be available and used on a vessel by vessel basis.</li> <li>• Any vessel deemed unsafe by the attendant, inspector, PESS, or pilot of the tugboat or barge will not be boarded.</li> </ul> <p>• All means of boat access shall be properly secured, guarded, and maintained free of slipping and tripping hazards.</p> <p>• As per Alcoa requirements guardrails are required on working platforms for barges that are 4 feet or more above the water. The barges to be used during the Ice Breaking demonstration will float approximately 3 feet above the water.</p> <ul style="list-style-type: none"> <li>• Watercraft will not be used without shore support personnel.</li> <li>• Personnel on board watercraft must be in constant radio contact with shore personnel.</li> </ul> <p>b. Man Overboard/ Drowning</p> <ul style="list-style-type: none"> <li>• All personnel shall wear United States Coast Guard (USCG) Approved Type III Life Preservers at all times while on the water.</li> <li>• All means of barge access shall be properly secured, guarded, and maintained free of slipping and tripping hazards.</li> <li>• A Coast Guard approved Type IV flotation device (life ring) will be maintained on each barge.</li> </ul> <p>c. Struck By/Against</p> <ul style="list-style-type: none"> <li>• Personnel will understand and review hand signals.</li> </ul>



**Project: Ice Breaking Demonstration Project in Grasse River**  
**Activity: Work From Mobile Platforms**

**Location: Massena, New York**

MAJOR STEPS	POTENTIAL HAZARDS	PROTECTIVE MEASURES/CONTROLS
		<ul style="list-style-type: none"><li>• Caution will be used offloading the barge personnel will ensure the barge is securely docked before embarking. All supply transfer work will be done only when the barge is docked before and after.</li><li>• Ensure the air horn on each boat used is in proper working order.</li><li>• Ladders will be free of ice and snow before climbing.</li><li>d. Severe Weather<ul style="list-style-type: none"><li>• National weather forecasts will be monitored daily for predicted inclement weather, such as thunderstorms, snow squalls and high winds. Each Supervisor will check on the local conditions and forecast each morning.</li><li>• Personnel working in an exposed marine location shall monitor the NOAA marine weather broadcasts.</li><li>• All personnel shall be aware of the forecast and keep an “eye to the sky”. Unforecasted storms may also occur without warning.</li><li>• Work will be postponed in the event of very strong winds, high seas or at times of very poor visibility.</li><li>• In the event of lightning in the area, work will cease at the direction of the McKeil Supervisor or PESS, and will not proceed further until return to work permit is issued.</li></ul></li><li>e. Sinking Boat/ Barge Damage<ul style="list-style-type: none"><li>• A pre-use inspection of any rented vessel shall be completed, including picture documentation of pre-use conditions.</li><li>• The load ratings of barges and tugboats will be strictly adhered to; overloading of vessels is prohibited.</li></ul></li><li>f. Watercraft Operations<ul style="list-style-type: none"><li>• All barge and tugboat pilots shall be familiar with the rules that regulate movement of boat traffic within the St Lawrence River.</li></ul></li></ul>

**Project: Ice Breaking Demonstration Project in Grasse River**  
**Activity: Work From Mobile Platforms**

**Location: Massena, New York**

**MAJOR STEPS**

**POTENTIAL HAZARDS**

**PROTECTIVE MEASURES/CONTROLS**

- Kill switch tether must be used.
- Charts of the work areas, with depths for mean low water, will be obtained and watercraft pilots will be familiar with their use.
- All offshore boating regulations will be strictly observed; prudent speed limits observed.
- All watercraft (including pipelines, barges, moored boats, etc.) must have required Coast Guard approved lighting and/or signaling devices.

g. Heavy Equipment Operations

- Supervisors and operators will ensure that the procedures in Section 3.3.1 of this document and the equipment manufacturers' instructions and recommendations are followed consistently.
- All equipment will be initially inspected to certify safe to use onsite and before each days use.
- Unsafe equipment will be taken out of service, tagged and will not be used until repaired.
- Only operators trained and experienced with the specific equipment will operate that equipment.
- Equipment will have guards, canopies or grills to protect from flying objects.
- Ground personnel will stay clear of all suspended loads.
- All slings chains and ropes will be rated for the load in which it is expected to lift.
- Eye contact with operators will be made before approaching equipment. Equipment will not be approached on blind sides.
- Avoid equipment swing areas.
- Know hand signals.
- All equipment will be equipped with backup alarms.
- The use of headphones for entertainment purposes is prohibited.
- A 15 foot minimum safe separation distance will be maintained between equipment and overhead utility lines.
- Prior to performing any "reach" operations on water (e.g., with a crane/excavator on barge), verify list has been taken into account along with the load and angle calculations.

h. Flying objects and debris

- ANSI approved Safety glasses will be worn at all times while on the water.

**Project: Ice Breaking Demonstration Project in Grasse River**  
**Activity: Work From Mobile Platforms**

**Location: Massena, New York**

MAJOR STEPS	POTENTIAL HAZARDS	PROTECTIVE MEASURES/CONTROLS
		<ul style="list-style-type: none"><li>• All objects pulled up from the water will be brought aboard slowly to check for contamination or entanglement.</li><li>i. Equipment Lost Overboard/crushed<ul style="list-style-type: none"><li>• Instruments shall not be placed near the edge of the barge/boat when not in use/not secured.</li><li>• Equipment will be secured to the deck or to personnel when appropriate. Secure all radios and cell phones.</li><li>• Instruments will be kept clear of all tooling lay down areas. Good housekeeping will be critical on the barge/boat.</li></ul></li><li>j. Emergencies: Fire, Weather and Medical /Spills/Releases<ul style="list-style-type: none"><li>• Fire extinguishers will be carried on all launches, barges, and motorboats. Minimum number and rating are as follows: Length Extinguisher 26 feet or less one 1-A: 10-B:C 26 feet or more two 1-A: 10-B:C</li><li>• Open boat workers shall be evacuated to shore or secure location by tenderboat when lightning is spotted or threatens the area.</li><li>• Medical emergencies will be handled as they are onshore except when low or no water renders a boat evacuation impossible.</li><li>• Booms shall be available to prevent any fuel or hydraulic spills from spreading.</li><li>• Personnel shall evacuate the boat/barge if a fire can not be contained with one 10 LB fire extinguisher</li></ul></li></ul>

**Project: Ice Breaking Demonstration Project in Grasse River**  
**Activity: Overhead Utilities**

**Location: Massena, New York**

**MAJOR STEPS**

**POTENTIAL HAZARDS**

**PROTECTIVE MEASURES/CONTROLS**

1. Traversing/Breaking Ice in area of communications of line up river of 131 bridge.

a. Contact with communication line

- a
  - Contact with communication line
  - Notification on 131 bridge station (concrete support) in 6" reflective Hi-Viz material of low hanging overhead utilities
  - Marking of the line with Hi-Viz ribbon w/ reflective properties. This would be applied directly to the wiring.
  - Map of all overhead utilities supplied to both the tug boat captain's as well as all of the heavy equipment operators.
  - Each operator will be trained/informed prior to the project of Alcoas/OSHA's overhead utilities regulations, in regards to heavy equipment in close proximity. The operators will be required to sign off on this orientation training and will be provided with a copy of the requirements.

**Project: Ice Breaking Demonstration Project in Grasse River**

**Location: Massena, New York**

**Activity: Shift Change**

<b>MAJOR STEPS</b>	<b>POTENTIAL HAZARDS</b>	<b>PROTECTIVE MEASURES/CONTROLS</b>
1. Accessing the Tugboat/barge	a. Slips/Trips/Falls b. Weather/Ice c. Visibility	a. Slips/Trips/Falls  • All shift changes, when feasible, should be done at AE gate 28 dock area. • When alternative shift change areas are used a specific AHA must be completed. • All personnel to don Hi-Viz PFD within 10 ft of waters edge, and the need for cold weather survival suits will be evaluated at such time. • Inspect the ladder prior to use • Boats must be secured to bank or dock before accessing. • Keep boats well organized, to eliminate trip hazards. • All personnel will wear proper clothing for current weather conditions. • When shift changes are made during minimal lighting hrs. Other artificial means of lighting will be provided.  • Never exceed boats rated capacity for weight and number of persons. • Do not disembark until boat is secured and all personnel is accounted for.

## Appendix E

# Heavy Equipment Inspections Forms



## Equipment/Vehicle Inspection Report

Date: \_\_\_\_\_ Unit Number: \_\_\_\_\_ Description: \_\_\_\_\_

Miles/ Hours: \_\_\_\_\_ MFG: \_\_\_\_\_

Unit to be taken from: \_\_\_\_\_ to: \_\_\_\_\_

	Good	Satisfactory	Repair Req.	N/A		Good	Satisfactory	Repair Req.	N/A
1. Tires _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	16. Interior	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Brakes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	17. Glass	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Steering	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	18. Wipers/Review Mirrors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Undercarriage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	19. Heater	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Suspension	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	20. Safety Equipment/Belts	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Engine	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	21. Lights/Turn Signals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Drive Train	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	22. Mounted Equipment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Fuel System	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	23. Mounted Attachments	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Cooling System	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	24. Blade/Bucket	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Electrical System	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	25. Boom	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Exhaust System	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	26. Outriggers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Hydraulic System	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	27. Fire Ext./First Aid Kit	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Transmission	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	28. Horn/Backup Alarm	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Clutch	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	29. _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Body	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	30. _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Note percentage of tread usefulness

Comments: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Inspected By: \_\_\_\_\_

DISTRIBUTION: (1) Sent with equipment (2) McKeil, Equipment Department (3) Receiving Copy (4) Originator's Copy  
 EQUIPMENT TRANSFER REPORT MUST ACCOMPANY THIS FORM



Daily Equipment Inspection

EQUIP. NO. \_\_\_\_\_ TYPE \_\_\_\_\_  
 MANUFACTURER \_\_\_\_\_ MODEL \_\_\_\_\_  
 PROJECT \_\_\_\_\_ DATE \_\_\_\_\_  
 ENGINE HRS/MILEAGE \_\_\_\_\_ SHIFT \_\_\_\_\_

Check appropriate column and describe correction needed.

	Condition Good	Correction Needed
Steering	_____	_____
Service Brakes	_____	_____
Emergency Brakes	_____	_____
Retarder	_____	_____
Transmission	_____	_____
Controls	_____	_____
Hydraulic Leaks	_____	_____
Exhaust System	_____	_____
Warning Gauges	_____	_____
Windshield	_____	_____
Lights	_____	_____
Mirrors	_____	_____
Seat and Seat Belts	_____	_____
Tires/Tread	_____	_____
Regular Horn	_____	_____
Back-up Alarm	_____	_____
Steps, Hand-holds	_____	_____
Fire Extinguisher	_____	_____
Rollover Cage	_____	_____
Oil Level	_____	_____
Other	_____	_____

Remarks: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Signed \_\_\_\_\_  
 Operator

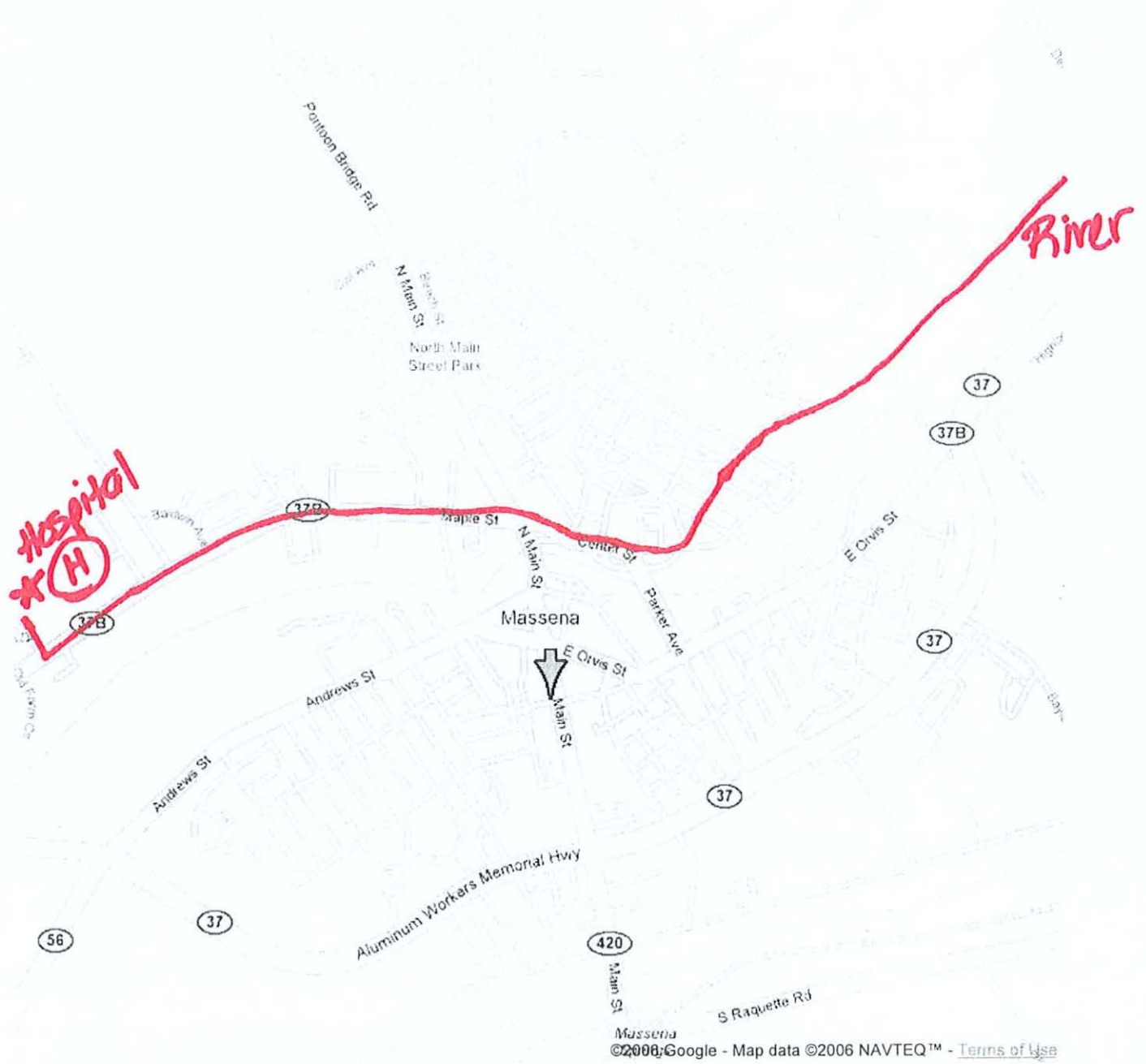
Repairs or adjustments completed:  
 Date: \_\_\_\_\_

Signed \_\_\_\_\_  
 Equipment Supervisor/Mechanic

Appendix F  
Hospital Route Map



Address **Massena, NY 13662**



## Appendix G

### McKeil Occupational Health and Safety Manual/Oil Pollution Emergency Plan

**STANDARD PROCEDURES**

**OCCUPATIONAL  
HEALTH AND SAFETY MANUAL**

**STANDARD PROCEDURES**

**KNOWLEDGE IS THE FIRST STEP IN  
ACCIDENT PREVENTION**

*THINK.*

**YOU ARE YOUR OWN BEST SAFETY OFFICER**

## **STANDARD PROCEDURES**

### **HEALTH, SAFETY & ENVIRONMENTAL POLICY**

The management of McKeil Marine recognizes that its primary duty is:

- ε To conduct its activities in a manner commensurate with the safety and health of those involved in all its business operations;
- ε To preserve the environment in which it operates.

McKeil Marine, through its commitment to this policy:

- Requires all levels of management practice the principles of risk management. These principles involve developing and following systems designed to eliminate or reduce risks to People, Equipment, Materials or the Environment;
- Recognizes that employees at all levels are responsible and accountable, in matters of Safety, Health and the Environment;
- Shall comply with all existing legislation and participate in industry and government initiatives that promote Safety, Health and Environmental protection;
- Shall ensure compliance with set standards and procedures conducive to prevention of personal injuries, property damage, fire and health hazards;
- Is committed to providing resources for training, inspections, investigations and task analysis to ensure its risk management standards are maintained;
- Requires that all contractors servicing its facilities comply with established government and company rules and regulations.

Active support and participation of all will ensure that our standards are maintained and our objectives are met.

Mr. Blair McKeil.  
President





## STANDARD PROCEDURES

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# McKeil Marine Ltd / Remorqueurs et Barges Montréal Ltée

## STANDARD PROCEDURES

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.6 High Pressure Washers (Lasers) .....		0	July 1, 06
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.7 Heavy Equipment (Fork lifts, front end loaders etc.) .		0	July 1, 06
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14. EMERGENC DRILLS .....	2	0	July 1, 06
.1 Emergency signals .....		0	July 1, 06
.2 Fire emergency .....		0	July 1, 06
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19. HOURS OF REST .....	1	0	July 1, 06
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24. WORKING ON ICE (MECHANICAL ICE BREAKING OP.)..	4	0	July 1, 06
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## STANDARD PROCEDURES

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### 1. SAFETY RULES \* GENERAL

These rules shall apply to all McKeil Marine / Remorqueurs et Barges Montréal Ltée Units.

1. Employees shall wear the appropriate protection equipment required for the task being performed.
  - 1.1 Employees shall only use equipment they have been properly trained on.
  - 1.2 Possession and/or use of alcohol or unauthorized drugs is prohibited on board.
  - 1.3 Fire arms, explosives, fire works and other dangerous weapons are not permitted on board.
  - 1.4 Animals, birds or any other pets are not allowed aboard.
  - 1.5 Follow instructions on all warning signs.
  - 1.6 All injuries, accidents or illnesses, no matter how minor should be reported immediately to the ship's officer on watch (refer to accident/incident reporting section).
  - 1.7 Report immediately any unsafe condition(s) to ship's officer on watch.
  - 1.8 Horseplay and fighting are forbidden aboard our units.
  - 1.9 Portholes and dead lights are to be secured in bad weather.
  - 1.10 Secure all equipment and loose gear in heavy weather.
  - 1.11 Know the potential dangers of your job. Be aware of what is happening around you, at all times.
  - 1.12 Immediately after joining the ship, learn the location of the emergency exits, life saving and fire fighting equipment, fire alarm pulls, muster points and other emergency equipment of your ship.
  - 1.13 Do not sit on railing or bulwarks.
  - 1.14 When lifting, always bend your knees, keep your back straight and let the leg muscles do the work.

## STANDARD PROCEDURES

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- 1.15 Avoid running on deck or in the accommodation, jumping over door sills or down stairways. Potential hazards such as beams and corners can cause serious head, knee or shin injuries.
- 1.16 Loose clothing shall not be worn around machinery.
- 1.17 Rings and loose necklaces are potential hazards and it is recommended that they not be worn while on duty.
- 1.18 Long hair shall be tied back and secured when in all working conditions.
- 1.19 Smoking is permitted only in designated areas.
- 1.20 Keep work areas and living quarters clean.
- 1.21 Access to fixed ladders, electrical switches, fire fighting, life saving equipment shall be kept clear at all times;
- 1.22 Paints, solvents and chemicals shall be stored in lockers specifically provided for such.
- 1.23 Use only those cleaning solvents authorized for the job.

## STANDARD PROCEDURES

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### 2. OPERATIONAL SAFETY RULES

#### 2.1 ALL DEPARTMENTS:

- 2.1.1 Every employee shall wear a life jacket / PFD and safety shoes when on an unmanned barge
- 2.1.2 Boat and Fire drills shall be conducted at least once a month and recorded.
- 2.1.3 Management meetings shall be carried out once per month and recorded.
- 2.1.4 An employee shall not attempt to lift or move objects that are too heavy or bulky or awkward. He shall seek additional help to perform the function.
- 2.1.5 Whenever overhead work is being carried out or the environment in which the employee is working, appropriate protective equipment shall be worn. This would include hard hats, eye protection, safety shoes, appropriate gloves, face masks, reflective vests etc. either worn individually or in combination as necessary, to keep the employee protected.
- 2.1.6 All containers containing WHMIS classed products are to be appropriately labelled.
- 2.1.7 Eyewash and first aid stations shall be maintained in a state of readiness at all times.
- 2.1.8 Operation of valves and switches:
  - (a) Only authorized personnel shall be allowed to operate valves and switches.
  - (b) All guards, covers and screens shall be in place and secured before machinery is put back in service.
  - (c) Fuses shall be replaced by authorized personnel only.
  - (d) All electric wires, conductors and equipment should be considered "live", unless tagged and tested.
- 2.1.9 Lock Out and tag rules:
  - (a) Before work is permitted, the main switch or valve controlling the source of power to machinery shall be locked out and tagged.
  - (b) After closing and locking, ensure tightness of the valves, set and release any pressure by opening necessary drains.
- 2.1.10 Confined spaces:
  - (a) Personnel shall not enter a confined space without the permission of the officer on watch.

## STANDARD PROCEDURES

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(b) Personnel entering an enclosed space shall be supervised at all times, from the entrance to such space, by a designated person.

### 2.1.11 Working with tools and equipment:

- (a) Before operating any tools or equipment, ensure you have received the necessary training.
- (b) Use the correct tools for the job.
- (c) Do not use tools that are worn and defective. Worn and unsafe tools shall be replaced soon as possible.
- (d) Tools and materials shall be returned to their respective storage location at the end of each day.

## 2.2 DECK DEPARTMENT:

2.2.1 Only crewmembers trained and authorized by the officer on watch, in the operation of deck equipment (winches, deck crane, windlass etc.) shall operate such equipment.

2.2.2 Never step over a line or cable under tension or that could come suddenly under tension.

2.2.3 When handling mooring lines never place your arm through the eye of the cable.

2.2.4 Stand-by at a safe distance from all running wires.

2.2.5 Operators of the equipment shall ensure warning devices, if fitted, are functioning as designed.

2.2.6 Reflective vests, safety shoes and hard hats must be worn when working cargo in the cargo spaces (see section on working in cargo spaces).

2.2.7 Under no circumstances shall a person be made or allowed to work over the ship's side while vessel is underway.

2.2.8 Crewmembers shall remain outside hatch coaming pockets at all times.

2.2.9 The deck officer on watch must notify the engineer on watch:

- (a) Before personnel are sent to work around the propeller
- (b) Before personnel enter any ballast tank
- (c) Before personnel enter any cargo tanks.

## STANDARD PROCEDURES

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### NOTE:

1. Only after clearance from the engine room is received, shall personnel be allowed to work in locations mentioned above. The engineer in turn, shall post a sign at the engine station that the propeller is 'not clear'.
2. Advise the engineer once propeller is clear or tank is free of personnel.
3. All timings of notices given and to whom shall be noted in the deck workbook.
4. All pertinent information shall be passed along to the subsequent deck officers on watch, until the work is complete.

### 2.3 ENGINE DEPARTMENT:

- 2.3.1 Appropriate personal protective equipment shall be worn when machinery is operating or when repairs are being carried out.
- 2.3.2 Loose clothing, such that could get caught in machinery, shall not be worn. Similarly, long hair shall be tied back and secured when around machinery.
- 2.3.3 Ensure WHMIS requirements are met at all times.
- 2.3.4 Do not secure blocks or hoists to pipes or gratings. Secure them to solid structure.
- 2.3.5 Use the right tools for the job to be performed. Always work within the safe working load of cranes, block, tackles, ropes, wires etc.
- 2.3.6 Do not stand under loads being lowered or raised - stand clear.
- 2.3.7 When not in use, chains shall be secured.
- 2.3.8 Damaged or broken tools shall be appropriately tagged and taken out of service. These shall either be repaired if possible or got rid of.
- 2.3.9 Safety guards, hand rails, gratings if removed for work, shall have the area roped off with an appropriate sign(s) attached to it.
- 2.3.10 Floor plates, ladders and gratings shall be kept clean and free from oil and grease.
- 2.3.11 Deck officers have been instructed to notify the engineer on watch:
  - (a) Before personnel are sent to work around the propeller.
  - (b) Before personnel enter any ballast tank.



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*NOTE:*

The engineer shall give the deck officer the clearance, once it is safe to do so. The engineer shall post such information, in a conspicuous location, to avoid accidental operation of propellers or pumps. The information shall be passed along to all subsequent engineers on watch, until the deck officer confirms that the propeller(s) is clear or that the ballast tanks are safe to fill, if required.

### 2.4 GALLEY DEPARTMENT:

- 2.4.1 Galley personnel shall maintain a high level of personal hygiene. Hands shall be washed frequently during the day and each time before handling food.
- 2.4.2 The chief cook shall ensure that all areas under his/her responsibility are kept clean and tidy.
- 2.4.3 The galley department shall wear protective equipment as mentioned in section under 'Personal Protective equipment'.
- 2.4.4 Galley personnel shall ensure they have been trained in the equipment they are to use in the galley. The chief engineer shall be the person to train any of the galley staff in the use of the equipment.
- 2.4.5 Repairs to galley equipment shall be carried out by authorized persons only.
- 2.4.6 The chief cook shall test all refrigerator alarms (audio and visual), at least once every two weeks and record the same. Any defects shall be brought to the attention of the chief engineer as soon as possible to rectify.
- 2.4.7 Smoking is not permitted in food preparation areas. (Refer non-smoking policy);
- 2.4.8 Store knives in the knife rack provided.
- 2.4.9 Store supplies properly to prevent shifting in heavy seas.
- 2.4.10 Wipe up spilled grease, oils and water within your area of responsibility, immediately.

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**3. GENERAL HOUSE KEEPING**

- 3.1 Keep your vessel "ship shape". This means place and store all equipment and personal gear where it belongs and in a neat fashion. Good house keeping and orderliness are essential ingredients for this function.
- 3.2 It shall be the responsibility of each individual to keep his/her living quarters clean and tidy.
- 3.3 Keep walkways clean and clear of obstructions.
- 3.4 Oil and grease spills shall be promptly cleaned up.
- 3.5 Hand rails in all areas shall be kept free of oil or grease.
- 3.6 Accesses to fixed ladders, electrical switches, fire fighting equipment, rescue and emergency equipment shall be kept clear at all times.
- 3.7 Do not store materials near switchboards or switch boxes.
- 3.8 Store cans of paint and other flammable liquids only in spaces designated for such materials.

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**4. PERSONAL PROTECTIVE EQUIPMENT**

**4.1 POLICY:**

4.1.1 Personal protective equipment shall be worn when working or as required. Proper care of safety equipment is the responsibility of each individual.

4.1.2 Every activity on board warrants some protection for the employee. This section shall attempt to spell out which protective equipment is required and when, bearing in mind that this list is not exhaustive as it is not possible to cover unforeseen circumstances.

**4.2 FOOTWEAR:**

All safety footwear shall be CSA approved.

<b>LOCATION</b>	<b>FOOT WEAR PROTECTION REQUIRED</b>
Wheel house	Non-skid shoes (could be casual or dress style)
Deck	Work boots, steel toe, puncture resistant soles with metatarsal protection (ankle high). Rubber boots: steel toes.
Galley	Steel toes and non-skid shoes (could be casual style)
Engine room	Work boots, steel toes, slip resistant soles

**4.3 HEAD PROTECTION:**

Hard hats shall be worn at all times when overhead work is being carried out or when there is a possibility of being struck by falling objects. They shall be worn with the beak over the face (not backwards). Damaged hard hats shall be taken out of service and destroyed.

Head protection shall be worn under the following designated situations:

- \* During all loading and unloading operations;
- \* Working in cargo holds;
- \* Hoisting or lowering stores and materials;
- \* Canalling
- \* Handling mooring lines and winches;
- \* At all dry docks.

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*The engine room is a designated area requiring the use of hard hats or bump caps during fit-out, lay-up and at all times when overhead work is being carried out;*

### 4.4 EYE PROTECTION:

Eye protection shall be worn whenever a risk of eye injury exists from physical, chemical or radioactive material. Eye protection includes CSA approved goggles, shields, safety glasses or other suitable eye protection equipment.

Operations that require the wearing of eye protection include but not limited to:

- \* When using portable or fixed tools (e.g. grinder, lathe, drill etc.).
- \* When using needle guns, scraping, chipping, wire brushing.
- \* When working dusty cargoes.
- \* When operating anchor windlass.
- \* When welding, cutting, burning or using any spark producing equipment.
- \* When using chemicals.
- \* When working in boilers.
- \* When handling chemicals.
- \* Whenever deemed necessary.

### 4.5 FACE PROTECTION:

4.5.1 Certain operations require the use of a face shield to be used by itself or in conjunction with safety glasses.

4.5.2 Face shields shall be worn when full-face protection is required from exposure similar to those listed under eye protection.

### 4.6 EAR PROTECTION:

4.6.1 Hearing protection shall be worn when employees are exposed to detrimental noise levels, over a period of time.

4.6.2 All personnel entering or working in the engine room shall wear approved hearing protection.

4.6.3 Hearing protection may be in the form of earmuffs or earplugs, as appropriate.

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**4.7 HAND PROTECTION:**

4.7.1 It is essential that work gloves be considered as an important part of a seaman's working gear and shall be used under the following circumstances but not be restricted to:

- \* Handling wires and ropes;
- \* Welding and burning;
- \* Handling chemicals.

**4.8 RESPIRATORS:**

4.8.1 Where concentrations of dust or vapour exist, appropriate types of respirators shall be used.

4.8.2 Respirators shall be used but not limited to, the following circumstances:

- \* Spray painting;
- \* Spray cleaning with solvents;
- \* Working in boilers;
- \* Loading or discharging dusty cargoes.

**4.9 SAFETY BELTS AND HARNESSSES**

4.9.1 Safety harnesses shall be worn every time when entering or leaving a cargo hold;

4.9.2 Safety harnesses/belts shall be worn when working at heights exceeding 5 feet and where a danger of falling exists. The lanyard used shall be no more than 4 feet.

4.9.3 The lanyard shall be securely attached to a fixed support, capable of withstanding the individual's weight, in case of a fall.

4.9.4 Safety belts/harnesses and lanyards shall be inspected every time before being used. If found defective (cuts, broken buckle etc.), it shall be taken out of service and replaced.

**4.10 PERSONAL FLOATATION DEVICES (PFDs)**

4.10.1 PFDs shall be worn every time under the following circumstances:

- \* When involved in mooring operations (aboard and on dock);
- \* When being lowered on a landing boom.
- \* When working over the side.

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- \* When working from a punt/scow/raft etc.
- \* On a barge when vessel is underway and going between tug & barge.
- \* Notching up or going on a towline.
- \* In close proximity to waters edge where there is a risk of falling in the water.

**4.11 REFLECTIVE VESTS**

**4.11.1** Reflective vests shall be worn when working around material handling equipment (fork lifts, loaders etc.)

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**5. ACCIDENT/INCIDENT REPORTING AND INVESTIGATION**

- 5.1 All accidents and incidents, no matter how slight, shall be immediately reported to the officer on watch, who shall complete form # S 307 Accident/Incident Investigation Report. The Master shall sign all accident/incident forms. The Master and Chief Engineer shall sign the form if accident/incident takes place in the Engine room.
  
- 5.2 Notify the Human Resource administrator by telephone, immediately when a lost time injury occurs. A report of the accident must be sent to the HR Administrator within 24 hours.
  
- 5.3 For injuries to personnel, complete the forms listed below, following the instructions printed on each:
  - (a) McKeil Marine Form S302 (send to McKeil Marine's Safety Officer);
  - (b) TSB Forms 1808 (if employee cannot return to work within 24 hours due to the degree of the injury);
  
- 5.4 Record all first-aid treatment and/or advice given to an injured employee.
  
- 5.5 The following techniques can help in completing the form:
  - \* Investigate the accident scene.
  - \* Interview injured party (ies) individually.
  - \* Interview witness(es) individually, take statements;
  - \* Take photographs of accident scene;
  - \* Re-enact the incident.

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**6. HOT WORK**

POLICY:

- 6.1.1 No hot work shall be carried out on the tug or barge without the permission of the Chief Engineer.
- 6.1.2 Welding can be carried out by ship's personnel on non-safety items and on safety items on a temporary basis.
- 6.1.3 Safety items shall be repaired by companies certified to carry out such repairs.
- 6.1.4 Appropriate protective equipment shall be worn by all persons involved in the operation, at all times, whilst hot work is being carried out.
- 6.1.5 A hot work certificate shall be provided by the Chief Engineer or a person designated by him, before any hot work (flame and spark producing which includes, but not restricted to welding, cutting, burning heating etc.) can proceed.
- 6.1.6 A fire extinguisher shall be available in the welding area.
- 6.1.7 A Fire watch shall be carried out during the entire hot work operation **and for at least half an hour after.**
- 6.1.8 Combustible materials shall be removed from the hot work area. If this not possible, such materials shall be adequately protected.
- 6.1.9 Hot work shall NOT be carried out under the following conditions:
  - \* Where dust or flammable gasses/vapours could be present. The atmosphere shall be tested and hot work shall proceed only when it is deemed safe to do so (i.e. monitored and determined non-explosive). Where such risk of gasses, vapours and dust exist, testing of the atmosphere shall be carried out frequently;
  - \* On bulkheads containing fuel oil(s), grain or other flammable cargoes or products.



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6.2 HOT WORK SAFETY RULES:

- 6.2.1 Cordon-off area where hot work is to take place
- 6.2.2 Protect bystanders and equipment from potentially harmful exposure to arcs and sparks
- 6.2.3 Operators and assistants shall wear the appropriate safety equipment
- 6.2.4 Ensure proper staging is used for the intended hot work
- 6.2.5 Ensure cylinders are upright and well secured before use
- 6.2.6 Check connections for leaks, using a leak test solution, prior to commencement of work. If leak(s) is observed, fix it before proceeding with the work
- 6.2.7 Use friction lighters to light torch. Do not use cigarettes or matches
- 6.2.8 Do not use slings or electro-magnets to lift or transport cylinders. Use a cradle or a suitable platform
- 6.2.9 Do not lift cylinders by the valve protection cap
- 6.2.10 Do not use a hammer, wrench or pliers for opening and closing cylinder valves equipped with hand wheels
- 6.2.11 Always attach a pressure-reducing regulator to cylinder valves
- 6.2.12 Do not open acetylene cylinders more than one and one half turn (1½)
- 6.2.13 Observe good house keeping practices; dispose welding rods, pick up excess material, roll up hoses etc.

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### 6.3 HOT WORK PERSONAL PROTECTIVE EQUIPMENT

#### 6.3.1 Eye protection:

<b>Application</b>	<b>Lens shade No.</b>
Brazing	3 or 4
Light cutting (up to 1")	3 or 4
Medium cutting (1" to 6")	4 or 5
Heavy cutting (over 6")	5 or 6
Light welding (up to 1/8")	4 or 5
Medium welding (1/8" to 1/2")	5 or 6
Heavy welding (over 1/2")	6 or 8

*Note:* Filter recommendations adapted from ANSI Safety Standards

6.3.2 Wear welding gloves of leather or other suitable fire resistant material.

6.3.3 Wear an appropriate welding jacket/apron of leather or other suitable fire resistant material.

6.3.4 Wear chaps if leg protection is required;

6.3.5 Wear steel toe safety boots. Ensure pants are not tucked into boots.

6.3.6 While welding, a welding helmet shall be worn;

6.3.7 If goggles are worn while cutting or brazing, a hard hat must be worn.

6.3.8 Wear hearing protection where required.

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6.4 (SAMPLE)

HOT WORK PERMIT  
(TO BE POSTED AT LOCATION OF HOT WORK)

Date: \_\_\_\_\_

Time: \_\_\_\_\_

Vessel: \_\_\_\_\_

Location of work: \_\_\_\_\_

Issued by: \_\_\_\_\_  
(Qualified person)

Initial each

The work area has been examined and found safe for hot work \_\_\_\_\_

Adequate portable fire extinguishers are present \_\_\_\_\_

Combustible material(s) in hot work have been removed or appropriately shielded \_\_\_\_\_

A fire watch has been established. The person(s) have been instructed in the requirements of a proper fire watch and are further instructed to carry out fire watch for at least one half (1/2) hour after completion of hot work. \_\_\_\_\_

No dust generating activities are being carried out. \_\_\_\_\_

Personal protective equipment has been provided to those involved & have been instructed to wear the same at all times while hot work is in progress. \_\_\_\_\_

Are there any special precautions to be taken: \_\_\_\_\_

Special precautions:  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Atmospheric testing: (if required)	Reading %	Time
Oxygen content	_____	_____
LEL content	_____	_____

Are subsequent air tests required? Yes/No.  
If 'yes', when or how often: \_\_\_\_\_

A permit is required for each confined space where hot work is to be carried out, and is valid only for the date indicated above. Please place in hot work logbook when work complete

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**7. CONFINED SPACE ENTRY**

**7.1 Definitions:**

"Confined space" means an enclosed or partially enclosed space that:

- (a) Is not designed or intended for human occupancy except for the purpose of performing work,
- (b) Has restricted means of access and egress, and
- (c) May become hazardous to any person entering it owing to:
  - (i) Its design, construction, location or atmosphere,
  - (ii) The materials or substances in it, or
  - (iii) Any other condition relating to it.

"Hot work" means welding, burning, riveting, drilling, grinding, chipping or any other work where flame is used or sparks are produced. (travail à chaud)

"locked out" means, in respect of any equipment, machine or device that the equipment, machine or device has been rendered inoperative and cannot be operated or energized without the consent of the person who rendered it inoperative. (verrouillé)

7.2 Persons granted access to the confined space shall be given whatever protective equipment deemed necessary.

7.3 **A confined space entry log shall be used each time personnel enter and leave a confined space and a copy shall be stored in the wheelhouse.**

7.4 Oxygen level metering shall be conducted before entry into a confined space. If the oxygen level is below 19.5% or above 23% by volume at normal atmospheric pressure, the space shall not be entered without appropriate protection.

**7.5 Qualified competent person**

Entry into confined spaces must be authorized by the Master or in his absence, the 1st mate and in his absence, the Chief Engineer.

Officers trained in the use of the gas monitor and well versed with company procedures on confined space entry, shall be the qualified competent persons. This person will be responsible for identifying hazards, filling the entry permit, ensuring safety equipment availability and for conducting a pre-entry briefing with the employees entering.

The Company Safety Manager shall ensure that the qualified competent persons are adequately trained in confined space entry and use of the air monitoring equipment.

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**7.6 Atmosphere monitoring**

When a confined space is being tested, sample of air shall be drawn from the top, middle and bottom of the space. Because gases stratify or layer, air at one level may be safe whereas it may be hazardous at another level.

The atmosphere shall be tested frequently, throughout the period of hot work being performed.

During meal breaks and coffee breaks while the space has been left unattended, the atmosphere shall be tested prior to re-entry. Even in such short periods, the atmosphere could become oxygen or acetylene enriched from leaking hoses/gaskets.

**7.7 Ventilation**

The confined space shall be adequately ventilated and/or flushed and purged or otherwise emptied of any hazardous atmosphere before each entry. Ventilation may be natural or mechanical. For water ballast tanks that are frequently filled and emptied, natural ventilation is usually adequate. Water ballast tanks that are empty for long periods without ventilation shall be tested and entered only when found safe.

When performing hot work in water ballast tanks for periods exceeding 30 minutes, mechanical ventilation shall be used.

**7.8 Rescue plan**

A rescue plan should be part of the initial considerations before entry. The plan should consider items such as falls/retrieval blocks for hoisting injured personnel out of the confined space, appropriate stretchers, breathing units, etc.

Persons acting as attendants (safety watch) should not attempt to enter the space until back up help arrives.

A hazard audit has been carried out for similar vessels of our fleet and the following outlines the criteria used in the audit.

**7.9 Potential hazards in confined spaces:**

**.1 Oxygen depletion:**

- (a) Hot work such as welding and burning absorbs oxygen and can deplete the safe level of oxygen required to breath. This can be avoided by the use of mechanical ventilation that ensures sufficient exchange of air.
- (b) Grain in bilge wells will absorb oxygen as the grain decomposes.

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### 2 Oxygen enrichment:

(a) Oxygen enrichment is said to take place when the oxygen level increases above 23% by volume at normal atmospheric pressure. Excessive oxygen causes burning to occur at an accelerated rate.

(b) Oxygen enrichment is usually caused by leaks from oxygen cylinders or hoses used during burning and welding operations. Therefore, as far as possible, avoid taking oxygen cylinders into a confined space. Also, when work is stopped for any length of time example coffee or meal breaks, all torches and hoses must be removed from the confined space.

### 3 Combustible Gases:

Fuel oils, acetylene from burning equipment, hydrogen gases from severely rusted tanks etc. create combustible gases. Combustible gases ignite only when they are within their respective concentrations. Example, gasoline will ignite when concentration is between

1.5% to 7.8%. Above or below these levels, gasoline will not ignite. 1.5 is known as the lower explosive level (LEL) and 7.8 the upper explosive level (UEL).

### 4 Toxic Gases:

(a) The most likely toxic gas on board our ships would be Carbon Monoxide. Its source is generally gas emissions from combustible engines. This gas is odorless, colorless, toxic, flammable and slightly lighter than air. Toxic gas on ships is generally controlled by vigorous mechanical ventilation.

(b) Effects of Carbon Monoxide (CO) levels:

- At 35 PPM the permissible exposure level is 8 hours (OSHA).
- At 200 PPM the worker may experience a frontal headache in 2 to 3 hours.
- At 400 PPM the worker may experience frontal headache and nausea in 1 to 2 hours. Occipital after 2½ to 3½ hours.
- At 800 PPM the worker will experience headaches, dizziness and nausea in 45 minutes. Collapse and possible death in 2 hours.
- At 3200 PPM headache and nausea in 5 to 10 minutes. Unconscious and danger of death in 10 to 15 minutes.
- At 12,800 PPM the worker will be immediately unconscious. Danger of death in 1 to 2 minutes.

### 5 Air borne dust:

Air borne dust should be considered a hazard when dust obscures visibility at 5 feet or less. Air borne dust could pose a toxicity problem or an explosive

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hazard. Air borne dust is controlled by ventilation. Respiratory protection shall be worn when dust is present.

.6 Occupational hazards to consider when entering confined spaces

- Slipping, tripping
- Falling
- Falling objects
- Entrapment
- Engulfment
- Drowning

.7 Other hazards to consider when entering confined spaces:

- Electrical shock
- Mechanical shock
- Hydraulic - liquid inflow/outflow, hydraulic controls
- Pneumatic - pressurized air or gasses, pneumatic controls

Preventative measures to be taken for these hazards consist of "lock-out" tags and/or clear signs. It may be necessary with machinery to disconnect linkages, belts, chain drives etc. and to secure moving parts.

**STANDARD PROCEDURES**

7.10 Hazards rating explanation

**Confined space Hazard Audit \* LEGEND**

**EXPECTED HAZARDS**

- A VERTICAL DROP
- B: SUFFOCATION/DROWNING HAZARD (LIQUIDS, SOLIDS)
- C1: ELECTRICAL - REQUIRES LOCK OUT/TAG OUT
- C2: ELECTRICAL - GENERAL (NO LOCK OUT/TAG OUT)
- D: OXYGEN DEFICIENT/ENRICHED (SUBJECT TO)
- E: EXPLOSIVE ATMOSPHERE (SUBJECT TO)
- F: CHEMICAL/PETROLEUM RESIDUE (SUBJECT TO)
- G: CARBON DIOXIDE ATMOSPHERE (SUBJECT TO)
- H RESTRICTED VENTILATION. ATMOSPHERE MAY CHANGE DUE TO HOT WORK OR APPLICATION OF COATINGS
- I: REQUIRES GAS FREE CERTIFICATE
- J: PROTRUDING/SHARP OBJECTS OR SURFACES
- K1: MOVING MACHINERY - REQUIRES LOCK OUT/TAG OUT
- K2: MOVING MACHINERY - LOCK OUT/TAG OUT NOT POSSIBLE

***RATING***

***SAFE***

THIS SPACE IS CONSIDERED SAFE UNDER NORMAL CIRCUMSTANCES, PROVIDING THAT ALL CHECKS AS PRESENTED WITHIN THE CONFINED SPACE ENTRY PERMIT HAVE BEEN COMPLETED.

***MARGINAL***

THIS SPACE HAS BEEN DETERMINED TO POSSESS HAZARDS THAT MAY BE LIFE THREATENING. ALL PRECAUTIONS LISTED MUST BE FOLLOWED AND NO DEVIATION FROM THE LISTED PERSONAL PROTECTIVE EQUIPMENT (ASSESSED BY THE ISSUER) IS ALLOWED.

***HAZARDOUS***

THIS SPACE HAS BEEN DETERMINED TO BE FATAL IF ENTERED WITHOUT THE SPECIFIED PERSONAL PROTECTIVE EQUIPMENT AND RESPIRATORY DEVICES SET OUT BY THE ISSUER OF THE CERTIFICATE.

***CRITICAL***

THIS SPACE HAS BEEN DETERMINED TO BE UNFIT FOR ENTRY BY SHIP'S PERSONNEL OR CONTRACTORS UNLESS CERTIFIED FOR ENTRY BY A LICENSED CHEMIST OR EQUIVALENT.



**STANDARD PROCEDURES**

7.10(i)

TABLE OF CONFINED SPACES

TANK/SPACE	RATING
<b>(A) BALLAST TANKS INCL. DOUBLE BOTTOMS USED FOR SALT, FRESH OR DISTILLED WATER</b>	<b>SAFE</b>
<b>EXPECTED HAZARDS</b>	
VERTICAL DROP	
SUFFOCATING/DROWNING	
OXYGEN DEFICIENT OR ENRICHED	
CARBON DIOXIDE ATMOSPHERE (SUBJECT TO)	
ATMOSPHERE MAY CHANGE DUE TO HOT WORK OR APPLICATION OF PROTECTIVE COATINGS	
PROTRUDING/SHARP OBJECTS OR SURFACES	

TANK/SPACE	RATING
<b>(B) DEEP TANKS</b>	<b>MARGINAL</b>
<b>EXPECTED HAZARDS</b>	
VERTICAL DROP	
SUFFOCATING/DROWNING	
OXYGEN DEFICIENT OR ENRICHED	
CARBON DIOXIDE ATMOSPHERE (SUBJECT TO)	
ATMOSPHERE MAY CHANGE DUE TO HOT WORK OR APPLICATION OF PROTECTIVE COATINGS	
PROTRUDING/SHARP OBJECTS OR SURFACES	

TANK/SPACE	RATING
<b>C) COFFER DAMS</b>	<b>MARGINAL</b>
<b>EXPECTED HAZARDS</b>	
OXYGEN DEFICIENT OR ENRICHED	
CARBON DIOXIDE ATMOSPHERE (SUBJECT TO)	
ATMOSPHERE MAY CHANGE DUE TO HOT WORK OR APPLICATION OF PROTECTIVE COATINGS	
PROTRUDING/SHARP OBJECTS OR SURFACES	
REQUIRES GAS FREE CERTIFICATE BY QUALIFIED INDIVIDUAL ABOARD	

**STANDARD PROCEDURES**

TANK/SPACE	RATING
<b>(D) FRESH WATER TANKS</b>	<b>SAFE</b>
<b>EXPECTED HAZARDS</b>	
VERTICAL DROP	
SUFFOCATING/DROWNING	
OXYGEN DEFICIENT OR ENRICHED	
CARBON DIOXIDE ATMOSPHERE (SUBJECT TO)	
ATMOSPHERE MAY CHANGE DUE TO HOT WORK OR APPLICATION OF PROTECTIVE COATINGS	
PROTRUDING/SHARP OBJECTS OR SURFACES	

TANK /SPACE	RATING
<b>(E) PEAK TANKS</b>	<b>MARGINAL</b>
<b>EXPECTED HAZARDS</b>	
VERTICAL DROP	
SUFFOCATING/DROWNING	
OXYGEN DEFICIENT OR ENRICHED	
CARBON DIOXIDE ATMOSPHERE (SUBJECT TO)	
ATMOSPHERE MAY CHANGE DUE TO HOT WORK OR APPLICATION OF PROTECTIVE COATINGS	
PROTRUDING/SHARP OBJECTS OR SURFACES	

TANK/SPACE	RATING
<b>(F) CHAIN LOCKERS</b>	<b>MARGINAL</b>
<b>EXPECTED HAZARDS</b>	
VERTICAL DROP	
SUFFOCATING/DROWNING	
OXYGEN DEFICIENT OR ENRICHED	
CARBON DIOXIDE ATMOSPHERE (SUBJECT TO)	
ATMOSPHERE MAY CHANGE DUE TO HOT WORK OR APPLICATION OF PROTECTIVE COATINGS	
PROTRUDING/SHARP OBJECTS OR SURFACES	
EXPLOSIVE ATMOSPHERE (SUBJECT TO)	

## STANDARD PROCEDURES

TANK/SPACE	RATING
<b>(G) SUMPS</b>	<b>HAZARDOUS</b>
<b>EXPECTED HAZARDS</b>	
CHEMICAL/OIL RESIDUE	
EXPLOSIVE ATMOSPHERE (SUBJECT TO)	
SUFFOCATING/DROWNING	
OXYGEN DEFICIENT OR ENRICHED	
CARBON DIOXIDE ATMOSPHERE (SUBJECT TO)	
ATMOSPHERE MAY CHANGE DUE TO HOT WORK OR APPLICATION OF PROTECTIVE COATINGS	
PROTRUDING/SHARP OBJECTS OR SURFACES	
VERTICAL DROP	
MOVING MACHINERY - REQUIRES TAG OUT/LOCK OUT	

TANK/SPACE	RATING
<b>(H) PRESSURE VESSELS AND BILGES</b>	<b>SAFE</b>
<b>EXPECTED HAZARDS</b>	
VERTICAL DROP	
SUFFOCATING/DROWNING	
OXYGEN DEFICIENT OR ENRICHED	
CARBON DIOXIDE ATMOSPHERE (SUBJECT TO)	
ATMOSPHERE MAY CHANGE DUE TO HOT WORK OR APPLICATION OF PROTECTIVE COATINGS	
PROTRUDING/SHARP OBJECTS OR SURFACES	
EXPLOSIVE ATMOSPHERE (SUBJECT TO)	
CHEMICAL/PETROLEUM/OILY RESIDUE (SUBJECT TO)	

TANK/SPACE	CLASS	RATING
<b>(I) FUEL OIL TANKS</b>	<b>NUMBER 1</b>	<b>CRITICAL</b>
<b>EXPECTED HAZARDS</b>		
CHEMICAL/PETROLEUM/OILY RESIDUE (SUBJECT TO)		
SUFFOCATING/DROWNING		
OXYGEN DEFICIENT OR ENRICHED		
CARBON DIOXIDE ATMOSPHERE (SUBJECT TO)		
ATMOSPHERE MAY CHANGE DUE TO HOT WORK OR APPLICATION OF PROTECTIVE COATINGS		
PROTRUDING/SHARP OBJECTS OR SURFACES		
EXPLOSIVE ATMOSPHERE (SUBJECT TO)		
VERTICAL DROP		
REQUIRES GAS FREE CERTIFICATE BY LICENSED CHEMIST OR EQUIVALENT		

**STANDARD PROCEDURES**

TANK/SPACE	CLASS	RATING
<b>(J) LUBE OIL TANKS</b>	<b>NUMBER 1</b>	<b>HAZARDOUS</b>
<b>EXPECTED HAZARDS</b>		
CHEMICAL/PETROLEUM/OILY RESIDUE (SUBJECT TO)		
SUFFOCATING/DROWNING		
OXYGEN DEFICIENT OR ENRICHED		
CARBON DIOXIDE ATMOSPHERE (SUBJECT TO)		
ATMOSPHERE MAY CHANGE DUE TO HOT WORK OR APPLICATION OF PROTECTIVE COATINGS		
EXPLOSIVE ATMOSPHERE (SUBJECT TO)		
VERTICAL DROP		
REQUIRES GAS FREE CERTIFICATE BY LICENSED CHEMIST OR EQUIVALENT		

TANK/SPACE	RATING
<b>(K) CABLE TRUNK</b>	<b>HAZARDOUS</b>
<b>EXPECTED HAZARDS</b>	
OXYGEN DEFICIENT OR ENRICHED	
CARBON DIOXIDE ATMOSPHERE (SUBJECT TO)	
ATMOSPHERE MAY CHANGE DUE TO HOT WORK OR APPLICATION OF PROTECTIVE COATINGS	
PROTRUDING/SHARP OBJECTS OR SURFACES	
EXPLOSIVE ATMOSPHERE (SUBJECT TO)	
VERTICAL DROP	
ELECTRICAL - REQUIRES LOCK OUT/TAG OUT	

## STANDARD PROCEDURES

7.10(ii)

**WORK PERMIT FOR CONFINED SPACE**  
**PERMIT NOT VALID FOR PERIODS GREATER THAN 24 HOURS**  
**FORM MUST BE COMPLETED, SIGNED & POSTED AT POINT OF ENTRY.**

Company procedures prohibit an employee from entering tank(s) without due regard to their dangers and the protection of the worker's health and safety. These procedures shall be read and understood before entry and the following **CONDITIONS OF ENTRY** met.

Section 1

1. Reason for entry: \_\_\_\_\_
2. Location of confined space: \_\_\_\_\_
3. Type of work: HOT / COLD
3. Date \_\_\_\_\_; Proposed time of entry \_\_\_\_\_; Proposed time of departure: \_\_\_\_\_
4. Permit valid: from (date & time) \_\_\_\_\_ - to (date & time) \_\_\_\_\_
5. Has the wheelhouse been notified Yes/No; Has the Engine room been notified Yes/No.
6. **HOT WORK PERMITS MUST ACCOMPANY THIS PERMIT, IF HOT WORK IS TO BE CARRIED OUT.**

<b>ITEMS TO CHECK</b>	<b>YES</b>	<b>NO</b>	<b>N/A</b>
Is ventilation required?			
Are all hazardous lines blanked and tagged and/or disconnected?			
Has a competent stand-by person been designated?			
Name: _____ CPR trained? YES / NO			
Have all hazards been looked at and isolated/blanked/disconnected?			

Section 2

**MANDATORY GAS TESTING**

1. Oxygen level observed: \_\_\_\_\_%;  
(If less than 18.0%, a self breathing apparatus is required, if greater than 23%, do not carry out hot work)
2. Highest Carbon Monoxide (CO) level observed: \_\_\_\_\_.  
(If reading is greater than 35 ppm, ENTER ONLY WITH BREATHING APPARATUS or ventilate till level is below 35 ppm before entry).
3. Toxicity: Chemical or substance concentration \_\_\_\_\_  
Max. allowable concentration \_\_\_\_\_; Safe/Unsafe for entry.

Tested by: \_\_\_\_\_ Position: \_\_\_\_\_ Date: \_\_\_\_\_

Name of persons entering the confined space:

Name: \_\_\_\_\_ Title: \_\_\_\_\_ Signature: \_\_\_\_\_  
 Name: \_\_\_\_\_ Title: \_\_\_\_\_ Signature: \_\_\_\_\_  
 Name: \_\_\_\_\_ Title: \_\_\_\_\_ Signature: \_\_\_\_\_

**PERMITS ARE ONLY GOOD FOR THE SHIFT THAT THEY WERE ISSUED FOR. RETURN PERMIT TO OOW WHEN WORK HAS CEASED AND ALL PERSONNEL ARE OUT.**

Captain's Name: \_\_\_\_\_ Signature: \_\_\_\_\_ Date: \_\_\_\_\_

**STANDARD PROCEDURES**

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**8. LOCK OUT / TAG OUT**

- 8.1 Equipment shall be de-activated by locking out or tagging out, when the unexpected movement of parts or energizing of components poses a risk to employee safety.
- 8.2 The chief engineer shall issue locks and tags to their respective engineers, to lock/tag equipment under their responsibility.
- 8.3 Machinery capable of movement shall be de-energized or disconnected from all power sources. Parts that can move and cause injury shall be blocked or locked in an appropriate manner, to prevent such movement.
- 8.4 All electrical equipment shall be considered energized until tested and found de-energized.
- 8.5 Only where it is not possible to lock out a piece of equipment, danger tags shall be used as a warning to potential users.
- 8.6 In cases where systems may be pressurized by air, steam or fluids, their respective compressors, pumps etc. shall be shut down and locked.
- 8.7 Pipes or lines that transfer pressurized materials must be bled to atmospheric pressure before opening.
- 8.8 The officer in charge of the work shall ensure all locks and tags are removed prior to starting the equipment.

**STANDARD PROCEDURES**

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**9 NO-SMOKING POLICY**

9.1 The Federal government has in place non-smoker's health regulations. Due to known ill effects of smoking and second hand smoke, McKeil Marine has implemented a company wide non-smoking policy.

9.2 The entire ship is designated a non-smoking area, except as stated below:  
In the accommodation:

- \* Single occupancy cabins shall be designated as smoking areas. It shall be the decision of the lone occupant to declare his/her cabin a non-smoking area.
- \* In cabins where there is more than one occupant, the non-smoker shall have the right to declare the status of the cabin.
- \* All dining rooms and mess halls shall be designated as non-smoking areas during meal hours.
- \* Where there is no division between the galley and mess room, the entire space shall be considered a non-smoking area
- \* The galley and serving areas are designated non-smoking areas, at all times.
- \* Recreation rooms shall be designated as smoking areas.
- \* The wheelhouse and engine rooms shall be designated as non-smoking areas. Smoking may be permitted if none of the occupants object.

## STANDARD PROCEDURES

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### 10. WORKING IN CARGO SPACES

- 10.1 Entering, leaving and working in cargo holds shall be carried out in the safest manner possible. All persons entering or leaving a cargo hold shall use the fall arrester provided.
- 10.2 Persons working in the cargo holds shall be supervised at all times by a designated person on deck. The function of the person supervising the operation in the cargo hold is to not only assist in providing material and/or equipment, but also to warn personnel of approaching danger.
- 10.3 The designated person shall be capable of attracting attention to persons in the hold by producing a loud sound.
- 10.4 A rescue plan shall be developed for the removal of an injured person from a cargo hold.
- 10.5 Person(s) sent into a cargo hold while cargo is being unloaded, shall wear the following personal protective at all times while in the hold:
- \* Reflective vests.
  - \* Hard hats.
  - \* Dust masks.
  - \* Hearing protection (if required).
- 10.6 Employees working in a hold shall be instructed to:
- \* Maintain eye contact with mobile equipment;
  - \* To approach mobile equipment only when the same has stopped and the operator is aware of them.
  - \* Not to walk behind mobile equipment
- 10.7 An employee shall not be sent into a cargo hold when cargo is being loaded in the hold. If the hold must be entered, the loading operation in the hold must be stopped until the employee is safely out of the hold.



**STANDARD PROCEDURES**

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**11. LANDING BOOM**

- 11.1 Landing booms shall be used to lower personnel from the ship to shore.
- 11.2 They shall be maintained in good order and be available for use through out the sailing season.
- 11.3 Only qualified persons shall be permitted to lower personnel on the landing boom.
- 11.4 Personal protection equipment shall be worn by the person lowering personnel as well as those being lowered.
- 11.5 Persons being lowered shall wear hard hats, safety gloves, life vests/life jackets, and safety shoes.
- 11.6 Persons lowering personnel shall wear at the minimum, safety gloves and safety shoes to carry out the operation.
- 11.7 Under normal circumstances, personnel shall be lowered on shore when the ship is alongside the dock. In unusual circumstances, personnel shall be lowered when the ship is as close to the dock as is possible.

**STANDARD PROCEDURES**

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**12. DECK EQUIPMENT SAFETY**

12.1 Maintenance and repairs on deck equipment shall be carried out by a qualified person. Only personnel trained in the use of the equipment shall operate such equipment.

**12.2 MOORING WINCHES**

12.2.1 While using the winch, employees shall wear the appropriate protective equipment (i.e. leather palm gloves, safety shoes, hard hats, safety glasses). **The wearing of shorts while working with a winch or its wire is prohibited.**

12.2.2 The person in charge of operating the winch shall pay close attention to the safety of personnel handling the wires, and shall operate the winch and its wire such that the operation is safe. Stepping into the eye of the wire, stepping on running wire or stepping over a wire under tension shall be avoided, at all times.

12.2.3 The person operating the winch while docking, undocking or canalling shall pay particular attention to the safety of personnel handling the mooring wires on shore.

12.2.4 Do not 'plug' automatic winches. Plugging winches does not only burn the equipment but is also a fire hazard. Individuals found plugging winches shall be disciplined.

**12.3 WINDLASS**

12.3.1 Only persons trained in the use of the windlass shall operate the same. The deck officers shall train their respective ordinary seamen on watch and wheelsman, in the operation of the windlass.

12.3.2 When operating the windlass, hard hats, work gloves, foot protection and eye protection shall be worn.

**12.4 CRANES**

12.4.1 Only personnel trained in the operation of the crane shall be allowed to operate the same. The deck officer shall train their respective ordinary seamen on watch and wheelmen to operate the same. It would be prudent to train all deck crew in the use of the same.

**STANDARD PROCEDURES**

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12.4.2 Prior to using the crane, the operator shall ensure that the safety features of the crane, such as brakes, audio/visual warning of motion etc. are operational.

12.4.3 Excessive and jerky operation of the deck crane shall be avoided.

12.4.2 Store cranes shall only be used to bring stores to and from the ship. Personnel shall not be raised or lowered by this crane.

12.4.3 Only one person shall act as a signalman, when required.

12.4.4 Ensure the SWL of the crane is clearly identified.

12.4.5 All loads shall be properly secured when being lifted. All weights lifted shall be within the safe working load of the crane.

12.4.6 Lifts are to be carried out in a safe and careful manner. Avoid jerking and swaying of the load.

12.4.7 Maintenance of each crane shall be carried out as per their respective maintenance manuals.

**12.5 INCINERATOR**

12.5.1 Do not place aerosol cans in the incinerator. They will explode when placed under high heat.

12.5.2 Only flammable garbage shall be burnt in the incinerator.

12.5.3 An appropriate extinguisher shall be placed in the vicinity of the incinerator.

12.5.4 Personnel shall wear face protection and work gloves when operating the incinerator.

**12.6 HIGH PRESSURE WASHERS (LASERS)**

12.6.1 Only personnel trained in the use of this equipment shall do so.

12.6.2 Maintenance to this equipment shall be carried out as per instructions of its owner's manual.

**STANDARD PROCEDURES**

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12.6.3 When used, the operators of this equipment shall:

- a) Point the lance at the work area, at all times.
- b) Maintain a good and secure footing.
- c) Ensure co-workers are well clear and at a safe distance away from the operator.

12.6.4 Operators shall be relieved as frequently as possible to avoid fatigue.

12.6.5 No unauthorized alteration(s) shall be made to this equipment.

12.6.6 The following Personal Protection Equipment shall be worn by the operator and the assistant:

- a) Safety boots.
- b) Hearing protection, if necessary
- c) Eye protection – safety glasses and face shields.
- d) Hardhat.
- e) Rain suit (if necessary).
- f) Work gloves.

12.7 HEAVY EQUIPMENT (Fork lifts, Front end loaders etc.)

12.7.1 Most heavy equipment is designed to be operated by one person at a time.

12.7.2 Only persons that are trained in their use shall operate such equipment.

12.7.3 A person shall be designated to signal directions to the operator.

12.7.4 Each piece of heavy equipment shall have a minimum of one 5 lbs. ABC rated fire extinguisher.

12.7.5 The following care shall be taken when operating such equipment:

- a) Put on the seat belt (if equipped).
- b) The operator shall ensure the path is clear before backing the equipment.
- c) The bucket, blade or fork shall be left in the lowered position, when not in use.
- d) When refuelling equipment, ensure the equipment has been switched off.
- e) Compressed gas cylinders shall not be carried in the bucket of forks.
- f) Employees are not to jump on and off the equipment. Instead they shall face the equipment and use the hand and foot holds provided.

**STANDARD PROCEDURES**

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**13. ELECTRICAL SAFETY**

- 13.1 McKeil Marine shall follow the standards set by the Marine Occupational Health and Safety Act.
- 13.2 Only qualified persons shall work on electrical equipment.
- 13.3 All electrical work shall be done “cold” when possible as opposed to “hot”.
- 13.4 Where electrical work must be done “hot”, the qualified person shall use insulated equipment and tools to protect himself from injury.
- 13.5 Defective electrical equipment shall be tagged and taken out of service.
- 13.6 Extension cords shall:
  - \* Be kept clean, dry and free of kinks.
  - \* Be protected from chemicals and sharp objects.
  - \* Be protected when being used through a doorway by securing door by means of a hook or block to prevent accidental closing.
- 13.7 Electrical equipment shall be kept dry at all times.

**STANDARD PROCEDURES**

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**14. EMERGENCY DRILLS**

14.1 Emergency signals and lifeboat stations are printed on ship's Station Bill, which is prominently displayed at various locations throughout the ship. It is employee's responsibility to familiarize himself/herself with them, as soon as possible after joining the ship.

14.1.1 For fire and boat drills refer to duties on your muster station card.

**14.2 FIRE EMERGENCIES**

14.2.1 On discovering a fire immediately raise the alarm and notify the officer on watch.

14.2.2 Try and extinguish the fire while at its infancy.

14.2.3 Few people die of heat, it is the smoke that kills. When attempting to escape a smoke filled space, keep your face as close to the deck as possible, covering your nose, preferably with a wet cloth.

14.2.4 Do not enter a fire zone to look for other crewmembers unless ordered by a responsible officer.

14.2.5 When exiting from a fire close all doors behind you and secure all ventilation to the area;

14.2.6 Never open doors that are hot to touch

14.2.7 Before opening or entering any compartment or cabin, check the door and bulkhead for heat, where fire may be present.

**14.3 PORTABLE EXTINGUISHERS**

14.3.1 Hand held portable extinguishers are identified by letters that indicate the type of fire the extinguisher is effective against.

14.3.2 Personnel should be familiar with the operation of each type of extinguisher on board.

14.3.3 Notify the officer in charge after using, testing or accidentally setting off an extinguisher. The same shall be refilled as soon as possible.

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**STANDARD PROCEDURES**

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**14.4 MAN OVERBOARD**

**14.4.1** If you see a person falling overboard:

(a) Immediately toss or drop a life buoy, life jacket or any other buoyant object into the water, as near to the individual as possible. During periods of darkness, a life buoy with an attached light is preferable.

(b) Raise an alarm and advise the wheelhouse at once if the ship is on the run.

**14.4.2** If an individual falls over board between the ship and dock:

(a) Place and secure the safety block on the ship's side at a height that will maximize space between ship and dock, when ship comes alongside (the height at which to secure the block will depend on the shape of the dockside).

(b) Raise an alarm and seek additional help if required and inform the officer on watch by the quickest means possible.

**STANDARD PROCEDURES**

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**15. FIRE PREPAREDNESS**

- 15.1 Some vessels are equipped with an electronic fire detection system. This system shall be kept functional and operating throughout the sailing season. When the detection system is not available for use, a manual fire watch shall be maintained. Every effort shall be made to have the detection system operational as soon as possible
- 15.2 On vessels where smoke detectors are used, the detectors shall be checked at monthly intervals to ensure they are operational
- 15.2 Areas around fire extinguishers, hoses, hydrants and all other fire fighting equipment shall be kept clear of obstructions.
- 15.3 Fire fighting equipment shall be maintained in a state of readiness at all times.
- 15.4 Portable extinguishers shall be mounted in conspicuous locations. This ship carries extinguishers in excess of regulations and will be maintained as such.
- 15.5 Fire hoses shall be connected to their respective hydrants at all times. Each hydrant shall have a hydrant wrench attached near by, ready for use.
- 15.6 All defective equipment shall be taken out of service and repaired/replaced as soon as possible.
- 15.7 Fire doors designed to stay closed, shall be kept so and not hooked back or propped open.
- 15.8 Fireman's outfit and breathing apparatuses shall be stored in their designated locations, at all times while the ship is operating.



**STANDARD PROCEDURES**

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**16. LIFE SAVING PREPAREDNESS**

- 16.1 Life boats and life rafts and their respective boarding ladders shall be maintained and kept in a state of readiness at all times while the vessel is in operation.
- 16.2 Life buoys shall be kept in their designated locations, ready for use, throughout the sailing season.
- 16.3 Distress rockets and flares shall be replaced when expired

## STANDARD PROCEDURES

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### 17. PORTABLE LADDERS.

17.1 Portable ladders shall be used to reach no more than 5 feet above the deck. When working aloft at heights larger than 5 feet, Stages shall be used.

17.1.2 Employees shall not use ladders when it is safe and practical to use permanent structures.

17.1.3 The use of ladders shall be avoided under adverse weather conditions, unless the use of such is for the rescue of personnel, removing a hazard or protecting the safety of the ship.

17.1.4 Ladders shall be maintained in good condition. Defective ladders shall either be repaired or be removed from the ship, as soon as possible.

17.1.5 When using step or extension ladders, only one person shall be on the ladder at any given time.

17.1.6 Tools, equipment, and materials used on a ladder shall be arranged or secured in such a manner that they cannot be knocked off the ladder accidentally.

17.1.7 Employees using portable ladders must:

- \* Use both hands and face ladder to ascend or descend the ladder.
- \* Face the ladder while working.
- \* Perform work within one arms length off the ladder.
- \* Raise and lower material and equipment by means of a rope or bucket, which ever is appropriate.

17.1.8 A person shall be assigned to hold the ladder in place, unless the ladder has a hook and that the ladder can be secured safely on top and the ladder is safely tied off at the bottom.

17.1.9 The correct angle for using a ladder safely is one foot horizontal for every four feet vertical.

17.1.10 Avoid using ladders in front of doors. If they must be used in such location, the door shall be locked with a sign indicating not to open door.

### 17.2 STAGES.

17.2.1 The erection, use, dismantling and removal of a stage shall be carried out by or under the supervision of a qualified person.

**STANDARD PROCEDURES**

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17.2.2 Every stage shall

- a) Have a flat and horizontal working surface capable of supporting any load that is likely to be imposed on it.
- b) Be fitted with an effective means for holding the stage away from the working area.
- c) Where the stage is to be used at a height of more than 3 meters, be fitted with guard lines.

17.2.3 The supporting structure and the ropes or tackle supporting the stage shall have a safety factor of not less than six.

17.2.4 Employees working on a staging over the ship's side shall wear life jackets and be secured with a safety belt and line.

## STANDARD PROCEDURES

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### 18. ACCESS POINTS TO AND FROM VESSEL AND ON BOARD

18.1 Personnel should pay particular attention to access points around, to and aboard the vessel.

#### 18.2 DOCK PROPERTY

18.2.1 Stop, look, listen and make sure it is safe before crossing railway tracks and roadways.

18.2.2 Always use designated routes and walkways. Do not crawl over, between or under rail cars. Always go around the end of the train. Beware of other traffic movements in the surrounding area.

18.2.3 Avoid as far as possible, passing under or near cargo handling equipment.

18.2.4 For personal safety reasons, it is suggested that crew members travel in groups of two or more. At night, stay in well-lit areas and avoid dimly lit or isolated areas.

18.2.5 Caution is advised when walking on dock property, with special attention to be paid where there is an accumulation of spilled cargo and when passing idle or unattended dock equipment and machinery.

#### 18.3 BOARDING LADDERS & GANGWAYS

18.3.1 Every ship that is secured alongside a wharf or another ship shall be fitted with at least one ladder or gangway between the ship and the wharf or the other ship.

18.3.2 Where an access ladder or gangway leads to a location on board a ship that is more than one meter above the deck, access to the deck shall be provided by means of steps.

18.3.3 Where a bulwark ladder is used to provide access to the deck of the ship, it shall be:

- a) Firmly secure to the bulwark to prevent shifting, slipping or pivoting.
- b) Equipped with two handhold stanchions that are:
  - i) Not less than 40mm in diameter.
  - ii) Extend not less than 1.2 meters above the top of the bulwark.
  - iii) Fitted not less than 700 mm and not more than 800 mm apart at the point of boarding or disembarking from the ship.
  - iv) Firmly secured to the ship's structure at or near the base of the ladder and at a higher point.

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18.3.4 Every boarding ladder and gangway shall be:

- a) Maintained in a safe condition.
- b) Suitably rigged and maintained to compensate for the movement of the ship.
- c) Adequately lighted.
- d) Provided with a life buoy that has an attached line and is strategically placed and ready for immediate use.

18.3.5 Do not use boarding ladders until the vessel is secured and the safety net is in place.

18.3.6 When in port:

- (a) A safety net shall be placed under the ladder or gangway at all times.
- (b) The access point shall be manned during the hours of darkness or adverse weather conditions.

18.3.7 Access to and from the vessel in a lock shall only take place by means of the canal gangway provided. Stepping to and from the vessel over the ship's bulwark or guardrails is strictly prohibited.

### 18.4 SAFETY NET

18.4.1 A safety net shall be fitted under every part of an access ladder or gangway except where:

- a) The ladder or the gangway and the approach thereto are constructed in a manner that makes the fitting of the net unnecessary.
- b) The fitting of a safety net is not practicable.

18.4.2 Every safety net shall:

- a) Extend 1.8 meters on each side of the ladder or gangway.
- b) Be kept taut at all times.

### 18.5.1 WALKWAYS AND TUNNELS

18.5.2 When cargo operations are underway, or the ship is canalling or mooring, keep to the side of deck opposite to where the activities are taking place. The use of ship's tunnel should be considered.

18.5.3 Walkways shall be kept clear of ice and snow during winter operations.

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18.5.4 Use the tunnels to go forward or aft during adverse weather conditions or when it is safer to use than the deck.

18.6 STAIRWAYS AND COMPANIONWAYS

18.6.1 Use handrails when ascending or descending stairways or companionways.

18.6.2 Stairways and companionways shall be well illuminated and kept free of debris, oil/grease and obstructions.

**19. HOURS OF REST**

19.1 The master of a ship shall ensure that each member of the complement has:

(a) A period of rest of not less than six consecutive hours in every 24-hour period

and

(b) At least 16 hours of rest in every 48-hour period.

Not more than 18 hours and not less than six hours shall elapse between the end of a period of rest and the beginning of the next period of rest.

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**20. INSPECTIONS AND MONTHLY MANAGEMENT MEETINGS**

- 20.1 Planned and unplanned inspections shall be carried out to ensure the tug and barge is in a safe state and ready for any emergency. These inspections shall be separate from other inspections carried out by the ship's safety officer and other drills required by Transport Canada Marine Safety.
- 20.2 A monthly inspection of the vessel shall be carried out by the Master and Chief Engineer. The purpose of such inspection shall primarily be to ensure vessel is safely maintained, cabins are safely used and are clean and tidy. The same shall be noted in vessel's log and office notified.
- 20.3 The Safety officer shall carry out the "Vessel safety inspections – deck". The Chief cook shall carry out the "Vessel safety inspections - Galley" and the engineer shall carry out the "Vessel safety inspections - Engine room". The office copy shall be sent to the operations manager as soon as the forms have been completed.
- 20.4 A safety management meeting shall be carried out once a month, chaired by the first officer. As far as practical, the tugs compliment should be in attendance however, at the minimum there shall be a representative from the engineers, deck crew, engine crew and galley. The purpose of these meetings is to enhance communications and operating awareness and safety among ship's personnel. Items that must be addressed at the meetings are:
- (a) Minutes of previous meeting to agree upon
  - (b) Any items from old business to be addressed
  - (c) Communicate and discuss reply from manager
  - (d) New business
  - (e) Other
  - (f) Date of next meeting

Minutes of these meetings shall be given to the master, with a copy to the Safety Officer.

- 20.5 The vessel's manager/DP shall attend the safety meeting with each tug's team under their charge, at least two times (2) per year. During such meeting the agenda topics to address/discuss shall be:
- a) Minutes of previous tug's meeting plus his previous meeting
  - b) Progress and action(s) from previous meetings
  - c) Ship's operation: General discussion on vessel's trading, cargo, ports etc.
  - d) Condition of vessel: Maintenance, repairs, non-conformities etc.
  - e) Budget status
  - f) Performance of vessel's staff in general
  - g) Other

The manager shall compile the minutes and send to vessel within two weeks of the meeting. The Captain shall ensure proper filing.



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**21. SHORE CONTRACTORS WORKING ON BOARD**

- 21.1 Contractors working aboard McKeil Marine tugs and/or barges shall comply with all applicable regulations as well as McKeil Marine specific health and safety regulations.
- 21.2.1 Contractors riding on the vessel shall be provided with life jackets and survival suits. Contractors shall provide their own personal protection equipment, other than those mentioned above.
- 21.2.2 All McKeil Marine's Health and Safety policies shall apply to shore contractors. Therefore, they shall be advised of the company's policy. Those refusing to abide by company policies, shall be reported to the operation's manager or company safety officer, as soon as possible.
- 21.2.3 The Master and/or the Chief Engineer shall monitor the progress of the work. They shall keep an eye to ensure work is being carried out safely and efficiently. If in doubt, contact the operations manager.
- 21.2.4 All contractors entering the property operated by McKeil Marine's customers shall be conversant with and shall abide by the relevant safety policies of the customers. This includes ore docks, grain terminals, seaway locks etc.

**STANDARD PROCEDURES**

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22. **The Workplace Hazardous Materials Information System (WHMIS)**

**Introduction:**

The workplace Hazardous Materials Information System is a Canada wide system to provide employers and workers with information about the hazardous materials they work with on the job. WHMIS gives everyone in the workplace the right to know about the hazards they work with and it does this by means of:

- Material Safety Data Sheets (MSDS)
- Supplier/Workplace labels.
- Worker training.

**Objectives:**

WHMIS was set up with three objectives in mind:

- To identify hazards in the workplace.
- To provide information about hazardous materials.
- To ensure consistency of information about hazardous materials in all Canadian workplaces.

To achieve these three goals, WHMIS set up the information delivery system that is comprised of three key elements:

- Labels.
- Material Safety Data Sheets (MSDS).
- Worker education.

**Labels:**

Under WHMIS Legislation there are four kinds of labels; supplier label, workplace label, laboratory sample label and the laboratory supply house label.

**Supplier label:**

This type of label that is found most frequently in the workplace is the full information label that applies to all containers of controlled products in excess of 100 ml. The required contents of the label are as follows:

1. Product Identifier
  - Common name, trade name, generic name etc.
2. Supplier Identifier
  - Name of supplier.
3. MSDS Statement
  - See Material Safety Data Sheet.

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4. Hazard Symbol
  - One or more of the eight hazard symbols and must be exact reproductions except for size and colour.
5. Risk Phrases
  - Description of effects that may result from exposure.
6. Precautionary Measures
  - Measures to avoid the risk(s) with the product.
7. First Aid Measures
  - Treatment to give for the type of exposure to the product.

Containers that contain less than 100 ml. of a controlled product, the labelling requirements are slightly different than the full label.

1. Product Identifier.
2. Supplier Identifier.
3. MSDS Statement.
4. Hazardous symbol.

The supplier label has certain design requirements that must be met and are as follows:

- The label must convey the information in both English and French.
- The label must have a border with the slant and shape of the marks being the same with only the size and spacing that can be varied.
- The required information can be located anywhere within the WHMIS border.
- There is no minimum or maximum size for the supplier label as long as the label is easily legible.
- The border must be in a colour that contrasts with the container.

### Workplace label

The workplace label is a label that the employer produces for the workplace. The workplace label is used instead of a supplier label under the following circumstances:

- Materials that are produced in the workplace for the workplace.
- Material that is decanted from the original container into a workplace container.
- The original supplier label has been removed or is illegible.

Workplace labels requires the following contents:

- Product identifier.

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- Precautionary measures.
- Statement that a MSDS is available.

The workplace label has no standard format that must be followed other than the content requirement.

### Piping System

When a controlled product is contained or transferred in a pipe, tank, conveyor belt, vessel, etc. the employer can use any means to identify the product. The use of colour coding, warning signs, symbols, placards, etc. can be used as long as the worker is trained and understands the system.

### Laboratory Supplies:

Where chemicals are supplied from a laboratory supply house and are packaged in a container weighing less than 10 kg, the following information is required on the label:

- Product identifier.
- MSDS statement.
- Risk phrases.
- Precautionary measures.
- First aid measures.

Containers weighing 10 kg or more require the full supplier label.

### Laboratory Sample:

If the product is for the sole purpose of laboratory analysis and is in a container weighing less than 10 kg, the following information is required on the label:

- Product identifier.
- Chemical identity or generic chemical identity of every ingredient of the controlled product, if known to the employer.
- Supplier identifier.
- The statement "Hazardous Laboratory Sample".
- Emergency telephone number of the supplier that will enable:
  1. One to obtain hazard information.
  2. A medical professional to obtain information to make a medical diagnosis or give emergency treatment.

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Ensure there is a supplier label affixed to any container of a controlled product and if there is no label, report this to your supervisor immediately.

If you are using a decanted product, ensure the container has a workplace label. Ensure all containers are labelled before use.

### **Material Safety Data Sheets:**

Material Safety Data Sheets are required for all hazardous materials in the workplace except for the following:

- If the controlled product is exempt from WHMIS regulation.
- Laboratory sample in a quantity of less than 10 kg and has the required label.
- Laboratory supply house product used for the laboratory in a quantity less than 10 kg and has the required label.

The Material Safety Data Sheet contains detailed information on the product for which it describes. The exact layout of the Material Safety Data Sheet is not specific, however, there are nine categories of information that must be found on the MSDS:

- Hazardous ingredients.
- Preparation information.
- Product information.
- Physical data.
- Fire or explosion hazard.
- Toxicological properties.
- Preventive measures.
- First aid measures.

From these nine categories there are about 60 specific items of information which must be included, if available and applicable.

Material Safety Data Sheets must be updated every three years or when new information comes available.

They are to be readily available to workers.

Supplier MSDS must be available in both French and English at the time of sale.

There must be a MSDS for every controlled product before it can be used.

If there is no MSDS, report this to your supervisor.

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### **Employee Education**

Employee education programs are used to educate employees on how to properly use labels and Material Safety Data Sheets, to protect themselves from hazardous materials. It is the employers' responsibility to supply the training, and the employees' responsibility to participate in the training.

### **Ingredient Disclosure List:**

This list was established to be used by suppliers to assist them when preparing Material Safety Data Sheets. If the product contains a listed ingredient in a concentration at or above the level listed, then it must be named on the Material Safety Data Sheet with its percentage of concentration in the product.

### **Excluded Materials:**

The following is a list of hazardous materials that are excluded from the WHMIS regulation with regard to labels and Material Safety Data Sheets because they are regulated by other laws within Canada:

1. An explosive within the meaning of the Explosives Act.
2. A cosmetic device, drug or food within the meaning of the Food and Drug Act.
3. A control product within the meaning of the Pest Control Products Act.
4. A product, material or substance packaged as a consumer product and in quantities normally used by the consuming public.

The following are controlled products that are not covered by WHMIS legislation:

1. Wood or a product made of wood.
2. Tobacco or a product made of tobacco.
3. A manufactured article.
4. A controlled product being transported or handled in accordance with the requirements of the Transportation of Dangerous Goods Act or the Transportation of Dangerous Goods Act (Canada).
5. Hazardous waste - except to the extent that an employer shall ensure safe storage and handling of hazardous waste generated at a workplace. This will include identification of the hazardous waste and work training/education for the hazardous waste.

### **Responsibilities:**

Under the WHMIS Regulation there are three distinct groups with certain obligations.

SUPPLIER shall:

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- Determine which hazardous materials intended for use in the workplace are controlled products.
- Label all controlled products as a condition of sale.
- Provide MSDS for controlled products as a condition of sale.

### EMPLOYER shall:

- Ensure controlled products are appropriately labelled.
- Ensure a controlled product received from a supplier has a label.
- A proper supplier label is shown.
- Ensure labels are not removed or altered.
- Ensure decanted controlled products are labelled.
- Obtain Material Safety Data Sheets for controlled products.
- Ensure that a MSDS is obtained before or on the date of delivery for a controlled product.
- Update MSDS every three years or when new information is known.
- Provide employee access to MSDS.
- Educate workers.
- The employer has a general duty to educate workers who are working with, or around a controlled product.

### WORKER shall:

- Worker must participate in training programs and apply that knowledge and common sense to their daily jobs.

### **Hazardous Classification**

A controlled product is any product that can be included in and of the following six classes:

- Class A compressed gases.
- Class B flammable and combustible material.
- Class C oxidizing material.
- Class D poisonous and infectious material.
- Class E corrosive material.
- Class F dangerously reactive material.

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**23 FIRST AID SUPPLIES AND EQUIPMENT**

23.1 An employer shall post and keep posted in a conspicuous place accessible to every employee on a ship:

- a) Information regarding first aid to be rendered for any injury, occupational disease or illness and
- b) Information regarding location of first aid station.

23.2 A portable eye wash station shall be provided on all McKeil tugs.

23.3.1 The following shall be **the minimum supplies** and equipment carried aboard:

ITEM	WORK PLACE	TYPE OF FIRST AID KIT
1.	On a ship <ul style="list-style-type: none"><li>a) With 2 to 5 employees</li><li>b) With 6 to 19 employees</li><li>c) With 20 to 49 employees</li><li>d) With 50 or more</li></ul>	A B C D
2.	At a detached work place	E



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Column: I		Column				
		II	III	IV	V	VI
		Type of First Aid Kit				
		A	B	C	D	E
Item	Supplies and Equipment	Quantity per Type of First Aid Kit				
1	Antiseptic-wound solution, 60 ml or antiseptic swabs (10-pack)	1	2	3	6	1
2	Applicator –disposable (10-pack) not needed if antiseptic swabs used)	1	2	4	8	--
3	Bag-disposable, water proof, emesis	1	2	2	4	--
4	Bandage-adhesive straps	12	100	200	400	6
5	Bandage-gauze 2.5 cm X 4.5 m (not needed if ties attached to dressing)	2	6	8	12	--
6	Bandage-triangular-100 cm Folded and 2 pins	4	8	12	18	2
7	Container-First aid kit	1	1	1	1	1
8	Dressing-compress, sterile 7.5 cm x 12 cm approx.	2	4	8	12	--
9	Dressing-gauze, sterile 7.5 cm x 7.5 cm approx.	4	8	12	18	2
10	Forceps-splinter	1	1	1	1	--
11	Manual-First Aid, English – current edition	1	1	1	1	--
12	Manual-First Aid, French – current edition	1	1	1	1	--
13	Pad with shield or tape for eye	1	1	2	4	1
14	Record – First aid (section 13.9)	1	1	1	1	1
15	Scissors – 10 cm	--	1	1	1	--
16	Tape-adhesive, surgical 1.2 cm x 4.6 cm (not needed if ties attached to dressing)	1	1	2	3	--
17	Antipruritic lotion 30 ml or swabs (10 pack)	1	1	1	2	--
18	Bandage elastic 7.5 cm x 5 m	--	--	1	2	--
19	Blanket-emergency, pocket size	--	--	--	--	1
20	Dressing-burn, sterile, 10 cm x 10 cm	1	1	1	2	--
21	Hand cleaner or cleaning towelettes, 1 pack	1	1	1	1	--
22	Splint set with padding	--	1	1	1	--
23	Stretcher	--	--	1	1	--

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**24. WORKING ON ICE (MECHANICAL ICE BREAKING OPERATIONS)**

24.1 The following information are taken from:

- Environment Canada
- Health and Safety Alberta
- American Pulpwood Association

24.1.1 Environment Canada

24.1.2 The following table of **ice thickness versus iced strength**, provided by the National Research Council of Canada and developed by E. R. Pounder, gives you the **safe load** for a given ice thickness of:

- fresh water ice ( lake and river ice) and
- sea ice (St. Lawrence River, Gulf of St. Lawrence, and East Newfoundland Waters)

24.1.3 Since ice strength is related to temperature, the following table applies to ice that is cold. Ice that is 0°C is weak and will not be able to support the same weight as colder ice – regardless of ice thickness. If the snow is beginning to melt, then the ice is losing its strength.

<b>SAFE LOAD</b>	<b>OPERATION</b>	<b>FRESH ICE</b>	<b>SEA ICE</b>
One person	at rest	8 cm	13 cm
0,4 ton	moving slowly	10 cm	18 cm
2 ton vehicle	moving slowly	25 cm	40 cm
10 ton tracked vehicle	moving slowly	43 cm	66 cm
13 ton aircraft	parked	61 cm	102 cm

24.2.1 Health and Safety Alberta

24.2.2 Traveling, Standing and Working on Ice Requires Extreme Caution

24.2.3 The effective thickness of a base of clear, blue ice plus white ice or snow ice is a thickness of clear, blue ice of equivalent load bearing strength. The formula to calculate total effective ice thickness is :

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$$T \text{ Clear} + \frac{1}{2} T \text{ White} = T \text{ Effective}$$

Exemple: 400 millimetres of clear ice plus 200 millimetres of snow ice

= 400 millimetres clear +  $\frac{1}{2}$  of 200 millimetres of snow ice

= 500 millimetres effective

Where water lies between layers, use only the depth of the top layer ice.

### 24.2.4 Temperature variation

24.2.5 Daily air temperature must be constant over a given period so that ice thickness will withstand the permissible load as outlined in the Table 1 and 2.

### 24.2.6 Table 1 Ice strength for continuous travel

This table is for clear blue ice on lakes and on rivers. This table does not apply for parked loads, or where ice faults are evident.

Permissible load (clear, blue ice)	Effective Ice Thickness in Millimetres	
	Lake	River
One person on foot	50	60
Group, in single file	80	90
Passenger car 2 000 kilograms	180	210
Light truck 2 500 kilograms	200	230
Medium truck 3 500 kilograms	260	300
Heavy duty truck 7 000 to 8 000 kilograms	350	410
10 000 kilograms	380	440
25 000 kilograms	630	730
45 000 kilograms	800	920
70 000 kilograms	1 000	1 150
110 000 kilograms	1 250	1 440

This table is intended to provide general guidance only

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### 24.2.7 Table 2 Ice stationary loads and working on ice

This table is for clear blue ice on lakes and on rivers. This table applies to loads to be stationary on ice for more than two hours.

Permissible load (clear, blue ice)	Effective Ice Thickness in Millimetres	
	Lake	River
1 000 kilograms	200	230
2 000 kilograms	300	350
4 000 kilograms	450	520
8 000 kilograms	600	690
25 000 kilograms	1 100	1 270
45 000 kilograms	1 500	1 730
70 000 kilograms	1 800	2 070
110 000 kilograms	2 300	2 650

This Table is intended for general guidance only

### 24.2.8 When ice is

- Less than 500 millimetres thick, temperature must be constant for three days
- Between 500 and 1 000 millimetres thick, temperature must be constant for four days
- Over 1 000 millimetres thick, temperature must be constant for five days

24.2.9 During a sudden drop in temperature and for three to five days following such a decline, the minimum ice thickness should be adjusted. If the temperature drop is excessive, severe thermal stressing or cracking of the ice will require caution and temporary load restrictions.

### 24.2.10 If drop is

- 5% or less – multiply 1.4 X minimum ice thickness
- 5 to 10% - multiply 2.0 X minimum ice thickness
- 10% or more – multiply 2.4 X minimum ice thickness

24.2.11 Under thawing temperatures where the average air temperature exceeds 0 degrees Celsius, increase the required ice thickness given in the tables by 20% or, reduce the allowable weight by one-third.

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### 24.3.1 Estimated Lake and Pond Ice Strength Chart

The following chart of ice strength was provided by the Forest Resources Association (formerly the American Pulpwood Association), and quoted in Tom Hennessy's and John Holyoke's past *Bangor Daily* news articles.

<b>ICE SAFETY ESTIMATES</b>	
<b>source : American Pulpwood Association</b>	
These loads are calculated for clear, hard ice on lakes and ponds. Reduce the strength by 50 % for slush ice, 15 % for hard river ice. This table does not apply to parked or standing loads	
<b>Ice Thickness</b>	<b>Permissible moving load (gross weight, U. S. customary tons)</b>
2 inches	One person on foot
3 inches	Group in single file
7 ½ inches	Passenger car (2 tons)
8 inches	Light Truck (2 ½ tons)
10 inches	Medium truck (3½ tons)
12 inches	Heavy truck (7 to 8 tons)
15 inches	Heavy truck (10 tons)
20 inches	25 tons
25 inches	45 tons
30 inches	70 tons
36 inches	110 tons

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### 24.4.1 How to get out of the water if you fall in

- Try not to panic. Yell for assistance if there is a chance someone could hear you
- Turn in the direction from which you came from – the ice is usually strongest there
- Place your arms and hands on the unbroken surface
- Reach across the ice as far as you can and try to pull yourself using anything you have that might grip the ice (keys, pen...)
- Kick your feet as you try to pull yourself out of the water
- Once out, roll away from the hole and then crawl in the direction you came from till you reach solid ice

### 24.4.2 Helping others get out

Since a rescue attempt can quickly result in two victims, a bystander should:

- Keep a safe distance so as to not fall through the ice as well
- Try and find something that can reach the victim from a safe distance, such as a throw rope, floating aid or long object such as a branch
- Call 911 or your local fire department for assistance

**TUG "GRETA V" and  
BARGE "LE C. F. COLOMBIER"**

**PRELIMINARY SHIPBOARD OIL POLLUTION  
EMERGENCY PLAN FOR THE  
MECHANICAL ICE BREAKING OPERATION  
ON THE GRASS RIVER**

**Prepared in accordance with the requirements of  
Section 7 of the Canadian Oil Pollution Prevention  
Regulation (SOR / 93-3)**

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## INTRODUCTION

1. This plan is written in accordance with the requirements of *Section 7* of the Canadian Oil Pollution Prevention Regulations (SOR/93-3), and *Regulation 26* of *Annex I* of the *International Convention for the Prevention of Pollution from Ships, 1973*, as modified by the Protocol of 1978 relating thereto.
2. The purpose of this plan is to provide guidance to the Master, the Engineer - seaman and the two excavators' operators on board the tug and the barge as well as the Shore Superintendant and the two Shore Supervisors, with respect to the steps to be taken when a marine pollution incident involving the tug and the barge has occurred or is likely to occur.
3. The Plan contains all information and operational instructions required by the CG Guidelines. The appendices contains names, telephone numbers, pager numbers, etc., of all contact referenced in the Plan, as well as other valuable reference material that would be used by the Company's response team personnel.
4. This plan has been examined by the Canadian Board of Steamship Inspection (as applicable) and, except as provided below, no alteration or revisions shall be made to any part without the prior approval of the Board.
5. Changes to the appendices will not be required to be reviewed by the Board. The appendices should be maintained up to date by the company personnel assigned to this responsibility as identified in the Plan.

# RECORD OF EXAMINATION

*SHIPBOARD OIL POLLUTION EMERGENCY PLAN* examined:

Official Stamp	Examined By:	Date:
Change Number _____		
Official Stamp	Examined By:	Date:
Change Number _____		
Official Stamp	Examined By:	Date:
Change Number _____		
Official Stamp	Examined By:	Date:
Change Number _____		



## VESSEL PARTICULARS

Name of Vessels:	<b>Tug GRETA V and barge LE C. F. COLOMBIER</b>
Official Number of the Tug:	<b>190436</b>
Official Number of the Barge:	<b>808079</b>
Call Sign:	
Port of Registry of the Tug:	<b>Montreal, QUEBEC</b>
Tug Gross Registered Tonnage:	<b>13,97</b>
Barge Gross Registered Tonnage:	<b>78,94</b>
Tug Length Overall:	<b>13,53 m</b>
Barge Length Overall:	<b>24,38 m</b>
Tug Breadth Overall:	<b>3,72 m</b>
Barge Breadth Overall:	<b>7,31 m</b>
Tug Summer Draught:	<b>0,91 m</b>
Crew Size:	<b>Variable (2 or more)</b>

# **GRETA V and barge LE C. F. COLOMBIER**

## **Shipboard Oil Pollution Emergency Plan (SOPEP) Approved Distribution List**

<b>Copy Number</b>	<b>Location / Name and Organization</b>	<b>Telephone</b>
<b>01</b>		
<b>02</b>		
<b>03</b>		
<b>04</b>		
<b>05</b>		
<b>06</b>		
<b>07</b>		
<b>08</b>		
<b>09</b>		
<b>10</b>		
<b>11</b>		
<b>12</b>		

**THE PROCEDURES OUTLINED IN THIS MANUAL ARE INTENDED AS A GUIDE WHICH DOES NOT OVERRIDE THE MASTER'S AND/OR THE SHORE SUPERINTENDANT AUTHORITY AS THE SENIORS McKEIL OFFICERS AT THE SCENE OF AN INCIDENT.**

**IN ALL CASES, THE MASTER AND/OR SHORE SUPERINTENDANT WILL TAKE WHATEVER ACTION HE/THEY DEEM NECESSARY BASED ON HIS/THEIR ASSESSMENT OF THE SITUATION AND JUDGMENT OF THE INCIDENT REQUIREMENTS AND PRIORITIES.**

**ALL McKEIL PERSONNEL INVOLVED IN THE RESPONSE WILL KEEP A LOG OF ALL CRITICAL ACTIONS TAKEN OR COMPLETED INCLUDING APPROXIMATE TIME.**



# 1 PREAMBLE

## 1.1 PURPOSE OF THE PLAN

The purpose of this plan is to guide McKeil Marine Ltd. tug, barge and shore personnel in responding QUICKLY, SAFELY, and EFFECTIVELY to a marine oil pollution incident involving the tug GRETA V and the barge LE C. F. COLOMBIER during the mechanical ice breaking operations on the Grass River.

It is prepared in accordance with the requirements of *Section 7* of the *Canadian Oil Pollution Prevention Regulations (SOR/93-3)* and the IMO guidelines for *Shipboard Oil Pollution Emergency Plans (OPEP 's)*.

It is intended to be:

- ( realistic, practical, and easy to use for McKeil Marine personnel
- ( clearly understood by vessel management personnel, both on board and ashore.
- ( evaluated, reviewed, and updated on a regular basis.

Training and exercising in the implementation of the shipboard mitigation procedures are held at regular intervals. Similarly, exercises in the communications procedures will be carried out to ensure the communication network is effective.

## 1.2 VESSEL OPERATIONS OVERVIEW

The **GRETA V** is 500 HP twin screw tug which is mainly used for general towing operations throughout the Great Lakes, St. Lawrence River and Eastern Seaboard.

For the Grass River's mechanical ice breaking operation, the **LE C. F. COLOMBIER** carries 2,250 liters of diesel fuel in a double compartmented fuel tank on its deck.

### 1.3 RESPONSE PRIORITIES

All emergency response activities by McKeil Marine personnel will be carried out in accordance with the following overall priorities:

- ( **PROTECTION OF LIFE (i.e.: crew, public)**
- ( **SECURING THE SAFETY OF THE VESSEL AND PROTECTION OF PROPERTY**
- ( **PROTECTION OF THE ENVIRONMENT**

The primary focus of the procedures outlined in this plan is the vessel response to operational oil spills (e.g., tank overflow during fuel transfer), and spills resulting from a casualty incident (e.g., collision, grounding, fire or explosion).

### 1.4 LINKAGES TO OTHER PLANS

Further information which may be useful to responders during an incident response involving the **GRETA V** and the **LE C. F COLOMBIER** is contained in McKeil Marine's Management Plan for shipboard oil pollution emergencies. The Master and the Shore Superintendent will be backed up on-scene by management appointed personnel as circumstances and the position of the vessel at the time of incident require:

Key Sections in Management Plan include:

- υ Emergency Response Team (ERT) organization
- υ Government Agencies
- υ Media / Public Affairs Guidelines
- υ Response Techniques / Waste Disposal
- υ Training and Exercising
- υ Incident Investigation

### 1.5 LOCATIONS OF THE PLAN

A stamped copy of this Plan will be kept on the Bridge of the **GRETA V** also, the Shore Superintendent and the two Shore Supervisors will each have a copy with them and a number of copies will be kept at McKeil Marine head office.

## 1.6 PLAN REVISION / UPDATE PROCEDURES

The **Safety Management, Security Supervisor** is responsible for reviewing, revising, and updating the plan as required. Proposed revision to the Plan may be submitted in writing or faxed to McKeil's Head Office. *Figure 1.2* shows a copy of the *Revision Request Form* that can be used for this purpose. Spare copies in *Appendix F*.

Revision pages will be issued to all Plan holders by the McKeil office as required and changes will be recorded on the *Record of Change* located in the *Introduction* to the Plan. The Plan will be formally reviewed and updated annually, and more if required.



## **2 REPORTING REQUIREMENTS AND PROCEDURES**

### **General**

The Canadian Pollution Discharge Reporting Regulations, Article 8 and Protocol 1 of MARPOL 73/78 requires that the nearest coastal station be notified of actual or probable discharges of oil into the sea. The intent of the requirement is to ensure that coastal states are informed, without delay, of any incidents giving rise to pollution, of the marine environmental, as well as the need for assistance and salvage measures, so that appropriate action may be taken.

### **2.1 WHEN TO REPORT**

#### **2.1.1 ACTUAL DISCHARGE**

An immediate report to the proper authorities and McKeil management is required whenever there is:

- ( a discharge of oil resulting from damage to the vessel or its equipment**
- ( a discharge, during the operation of the ship  
(e.g., during fuel transfer or maintenance)**
- ( an emergency discharge for the purpose of securing the safety of the ship or saving life at sea.**

Reports to coastal states should be in the style given in *Section 2.2*

## 2.1.2 PROBABLE DISCHARGE

Although an actual discharge may not have occurred, a report is required if there is the probability of a discharge.

In judging the probability of a discharge and whether a report should be made, the following factors as a minimum should be taken into account.

### PROBABLE SPILL ASSESSMENT FACTORS

- ( level of risk to crew members and their condition, morale, and state of calmness
- ( nature and extent of damage sustained by the vessel
- ( failure or breakdown of machinery or equipment which may adversely affect the ship's stability to maneuver, navigate or operate pumps
- ( the location of the vessel and its proximity to land or other navigational hazards
- ( traffic density
- ( weather, tide current, and sea state

As a general guide, The Master should report in the case of:

- ( damage, failure or breakdown which affects the safety of the vessel and crew, or other shipping such as collision, fire, explosion, structural failure, instability, or excessive list.
- ( failure or breakdown of machinery or equipment which results in impairment of the safety of navigation such as steering gear, electrical generating system, propulsion or essential ship borne navigational aids.

## Follow Up Reports

Once the vessel has transmitted an initial report, further reports should be sent at regular intervals to keep those concerned informed of developments.

Follow up reports to coastal states should be in the style given in *Section 2.2*, and should include information about every significant change in the vessel's condition, the rate of the release and spread of oil, weather conditions, and details of agencies notified and clean-up activities.

## 2.2 INFORMATION REQUIRED

*Figure 2.1* is the *Initial Incident Reporting Form*. It outlines critical information about a marine casualty or spill incident that should be communicated clearly and accurately throughout the initial notification process to enable appropriate action to be taken by all responders.

The format is consistent with the General Principles for Ship Reporting Systems and Ship Report Requirements, including Guidelines for Reporting Incidents Involving Dangerous Goods, Harmful Substances, and Marine Pollutants, adopted as Resolution A.648(16) by the International Maritime Organization (IMO), and should be followed so far as possible, (Note: The reference letters in the form do not follow complete alphabetical sequence as certain letters are allocated to information required by other reporting formats).

Sufficient information about the incident must be obtained to enable those contacted to react appropriately to the situation and specific circumstances of the incident. This information then must be communicated CLEARLY, ACCURATELY, and CONCISELY at all levels of notification process. As more information becomes available, it can be added to what is already known, or to replace outdated or inaccurate information.

If no assistance is required, this should be CLEARLY stated.

Reports should be transmitted by the quickest available means to McKeil Marine Emergency Response Team (ERT) and to the Canadian or US Coast Guard.

The following additional information should be sent to the ERT either at the same time as the initial report or as soon as possible thereafter:

- ┌ further details of damage to ship and equipment
- ┌ whether damages is still being sustained

- ∫ assessment of fire risk and precautions taken
- ∫ disposition of cargo onboard and quantities involved
- ∫ number of casualties
- ∫ damage to other ships or property
- ∫ time assistance was requested and time assistance expected to arrive at the scene
- ∫ name of salvor and type of salvage equipment
- ∫ whether further assistance is required
- ∫ priority requirement for spare parts and other materials
- ∫ details of outside parties advised or aware of the incident
- ∫ any other important information

After transmission of the information in an initial report, as much as possible of the information essential for the safeguarding of life and the protection of the ship, and the marine environment should be reported in a supplementary report to the coastal station and the ERT, in order to keep them informed of the situation as the incident develops. This should include items P, Q, R, S, and X as appropriate.

## 2.3 WHOM TO CONTACT

*Figure 2.2* and *Figure 2.3* at the back of this section shows initial notification / reporting procedures, for Canadian or US waters respectively this is to be strictly followed for oil spills or marine emergency incidents involving the **GRETA V** and the **LE C. F. COLOMBIER**. This will ensure that a standard spill reporting procedures are in place, that adequate internal and external response personnel and resources are mobilized during the critical first hours following detection, and that the appropriate regulatory and other government agencies are properly notified.



### 2.3.1 INTERNAL NOTIFICATION (McKeil Response Organization)

All spills or potential spills are to be reported immediately by the Master of the **GRETA V** or the Shore Superintendent to **McKeil Marine Dispatcher**.

Upon being notified by the Master or the Shore Superintendent, the Dispatcher will complete the mandatory Coastal State Notifications as outlined in *Section 2.3.2*.

The Dispatcher will then, notify the McKeil Marine **Emergency Response Team (ERT)** by calling **ONE** of the managers in the following order of priority.

- \ **President**
- \ **Vice President - Operations**
- \ **Director of Operations**
- \ **Operations Manager**
- \ **Field Superintendent**

Contact numbers for the ERT personnel are listed in *Appendix A*. The contacted Manager is responsible for alerting other ERT members or assigning this responsibility to the Dispatcher.

### 2.3.2 COASTAL STATE CONTACTS

#### **Regulatory Spill Reporting Requirements (CANADA )**

The Dispatcher will **IMMEDIATELY** report the incident to the appropriate Canadian Coast Guard's **Marine Communications and Vessel Traffic Service Centre (VTS)** and to the 24 hour **Operations Centre** in Ottawa.

**Canadian Coast Guard Operations Centre - 24 HOURS**  
**Tel: (613) 990-5600**  
**Fax:(613) 995-4700**  
**VHF Radio: Channel 16**

The Canadian Coast Guard Safety and Environmental Response Systems Marine Programs, shall be informed **IMMEDIATELY** at the Department of Fisheries and Oceans, in Ottawa.

**Canadian Coast Guard, Safety & Environmental Response Systems  
24 -hours  
Tel: (613) 751-0605  
Fax:(613) 998-0434 (Only during business hours)  
Email [erhqs@dfm-mpo.c.ca](mailto:erhqs@dfm-mpo.c.ca)**

VTS will in turn notify, as required, the agencies listed below (*see Appendix A for 24 Hours Emergency Numbers*):

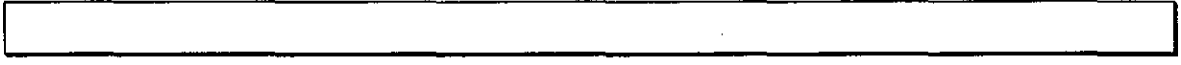
- \ **Transport Canada Ship Safety Branch  
(Pollution Prevention Officer)**
- \ **Corporation Port / Commission Port  
(Spill in a Port)**
- \ **Environment Canada  
(Spills into waters frequented by fish)**
- \ **Provincial Emergency Program (PEP)  
(all spills greater than 100 L.)**

PEP will in turn notify Ontario Ministry of Environment and all other provincial government agencies that might become involved in the response effort.

**Regulatory Spill Reporting Requirements (United States of America, (USA))**

For incidents or spills occurring in US waters, the Dispatcher will immediately notify:

**National Response Center  
Commandant (G MEP)  
United States Coast Guard Headquarters  
2100 2nd Street S.W.  
Washington, DC 20593-0001  
United States of America  
(202) 267-2675 (24 HOURS)**



### **2.3.3 NOTIFICATION OF RESPONSE CONTRACTORS**

If a spill occurs as a result of the incident, the dispatcher will also alert appropriate contractor(s) to begin or prepare for potential deployment of response personnel and equipment to the spill site.

**Eastern Canada Response Corporation** is McKeil Marine primary oil spill response contractor for all spills in the Canadian Maritime waters:

**Eastern Canada Response Corporation**  
**(613) 230-7369 (office number)**  
**(613) 930-9690 (emergency number)**

A list of contractors and suppliers relating to a vessel casualty and marine oil spill incident is provided in *Appendix A - Contact Listing*.

## INITIAL INCIDENT REPORT FORM (page 1)

HS	Harmful Substance Report (in bulk)	HS/ _____ //
AA	Ship identity (name, call sign, flag)	AA/ _____ //
BB	Date and Time of the event	BB/ _____ Z//
CC	Position (latitude / Longitude or	CC/ _____ N/ S/ E/ W/ //
DD	Position (bearing & distance from landmark)	DD/ _____ //
EE	True Course	EE/ _____ //
FF	Speed in knots and tenths of knots	FF/ _____ //
LL	Route information (intended track)	LL/ _____ //
MM	Radio Communication (station(s) guarded)	MM/ _____ //
NN	Next report (date, time of next report)	NN/ _____ //
PP	Type & quantity of cargo/bunkers on board	PP/ _____ //
QQ	Brief details of defect, damage, deficiency, other limitations	QQ/ _____ //
RR	Description of pollution, including estimate of quantity lost	RR/ _____ //
SS	Weather and sea condition	SS/ _____ //
TT	Contact details of ship's owner/operator/agent	TT/ _____ //
UU	Ship size and type	UU/ _____ //
		Length: _____ m Breadth: _____ m Draught: _____ m GRT: _____ Type: _____
XX	Remarks: Brief details of incident: Need for outside assistance: Action being taken: Number of crew and details of any injuries: Others:	XX/ _____ //

**Figure 2.1 - Initial Incident Notification**

**INITIAL INCIDENT REPORT FORM (Page 2)**

**Additional information to be sent to the McKeil Marine Emergency Response Team and/or other agencies at the same time as Page 1 of the *Initial Incident Report Form* or as soon as possible afterward (See Section 2.2 ).**

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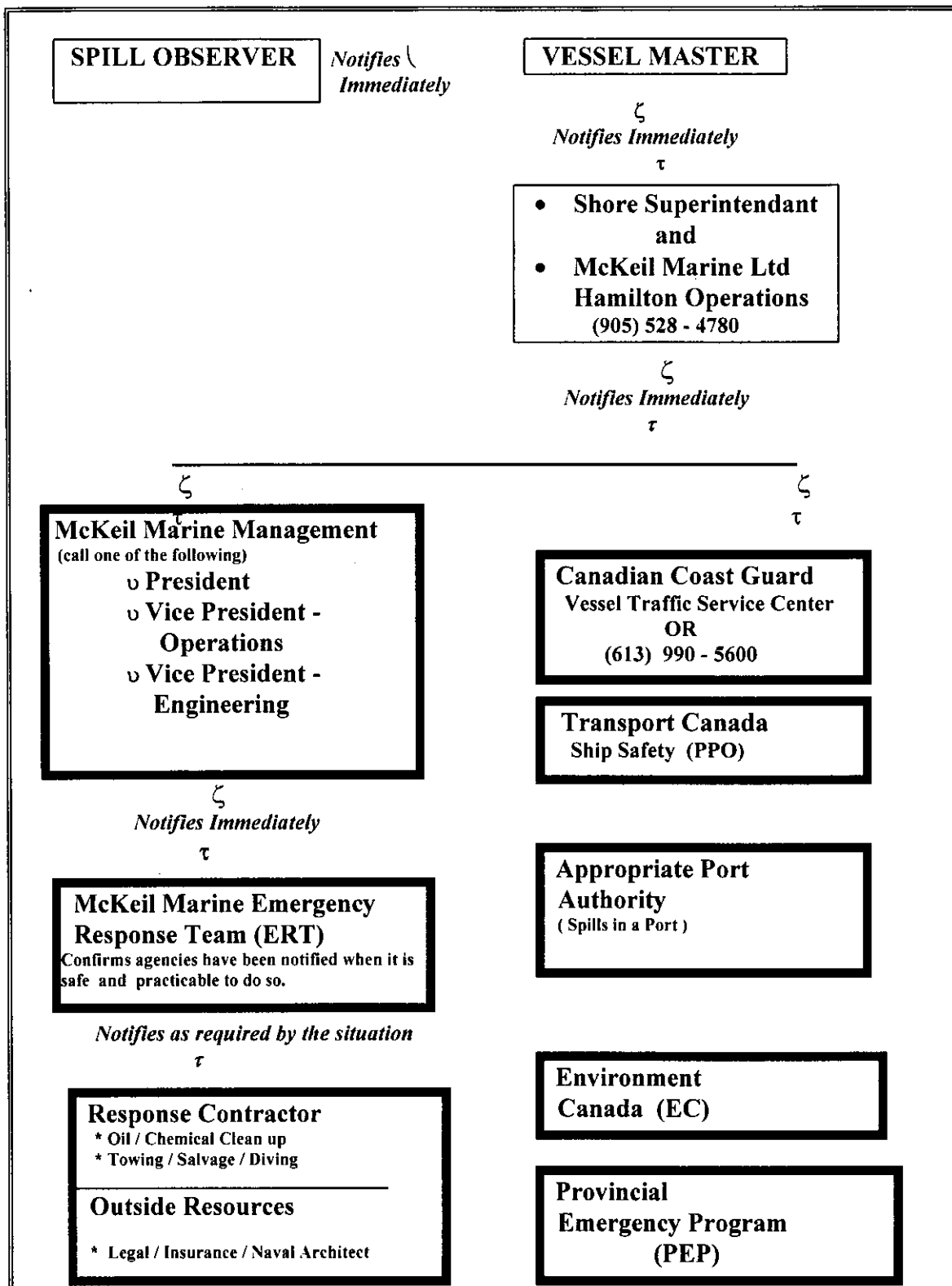
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**Figure 2.1 - Initial Incident Notification (Cont.)**



**Figure 2.2 - Initial Marine Emergency Reporting Procedure – CANADA**

**In the waters of the United States of America, the spill notification point and competent national authority is:**

**National Response Center**

**Room 2611**

**United States Coast Guard Headquarters**

**2100 2nd Street SW**

**Washington, DC 20593-0001**

**United States of America**

**Tel: 1-202-267-2675**

**1-800-424 8802**

**Fax: 1-202-267-4085/4065**

**1-202-267-2165 (after hours)**

**Language Understood: ENGLISH**

**Source: (IMO) MEPC.6/Circ. 9 Last updated Dec. 31 2003**

**Figure 2.3 - Initial Marine Emergency Reporting Procedures  
US Waters**



### **3 STEPS TO CONTROL DISCHARGE**

#### **3.1 OPERATIONAL SPILLS**

Immediately following an operational spill, the Master and Crew members (i.e.: Vessel Response Team) will initiate action to protect the crew, secure the vessel, stop the flow, control and contain the spill, and notify as per contact instructions. The Emergency Response Team (ERT) will provide whatever practical support is required to assist the vessel team in dealing effectively with the incident.

The following operational spill occurrences are covered separately in this section:

- 3.1.1 Hose leakage during fuel transfer ..... 3-2**
- 3.1.2 Tank overflow during fuel transfer ..... 3-5**
- 3.1.3 Hull or tank leakage during fuel transfer ..... 3-8**

**THESE PROCEDURES ARE A GUIDE WHICH DOES NOT LIMIT THE MASTER AND/OR SHORE SUPERINTENDANT AUTHORITY AS THE SENIOR McKEIL MARINE OFFICERS AT THE SCENE OF AN INCIDENT**

**IN ALL CASES, THE MASTER AND/OR THE SUPERINTENDANT WILL TAKE WHATEVER ACTION HE/THEY DEEM NECESSARY BASED ON HIS/THEIRS ASSESMENT AND JUDGEMENT OF THE INCIDENT REQUIREMENTS AND PRIORITIES.**

**ALL McKEIL PERSONNEL INVOLVED IN THE RESPONSE WILL KEEP A LOG OF ALL CRITICAL ACTIONS TAKEN/COMPLETED.**

### 3.1.1 HOSE LEAKAGE DURING FUEL TRANSFER

The following procedures are only to serve as a guide to the actions to be taken in the event of an incident. The order in which they are laid out is not necessarily chronological and the circumstances at hand may dictate an alternative order of response actions.

In the event of a hose leakage or hose failure during fuel transfer, the following steps / measures should be considered and taken.

#### 1. IMMEDIATE ACTIONS

- Inform the fuel truck driver / personnel to stop transfer operations immediately.
- Close fuel line(s) and manifold valves at the vessel or excavator and at the fuel truck or fuel tank.
- Sound General Alarm and notify the Master
- **Eliminate** all avoidable sources of ignitions where flammable vapors could present (e.g.: naked lights, unprotected light bulbs, electric hand tools etc.)
- Consider whether to stop air intake into accommodation areas, and non- essential air intake to engine room.

#### 2. STOP PRODUCT FLOW / CONTAIN THE SPILL

- Ensure scuppers are secured / block potential escape points
- Locate the hose break or source of leakage and secure immediately.
- Drain affected section of hose to a tank.
- If necessary, install the Oil Spill Containment Boom around the tug/barge.

### 3. SECURE THE SPILL AREA / ENFORCE SAFETY PROCEDURES

- Clear the area around the tug / barge of all unauthorized or non-essential personnel.
- Enforce all safety measures and wear appropriate personal protective equipment (e.g., hard hats, gloves, rubber boots).
- Follow standard confined space entry procedures before entering enclosed spaces.

### 4. ASSESS THE SITUATION AND REPORT THE SPILL

(Use the *Initial Incident Report Form* for guidance if readily available)

- Determine the product spilled, estimate quantity, actions taken, and level and type of assistance required.
- **Complete notification responsibilities** as outlined in *Section 2 - Reporting Requirements*. See *Appendix A* or the summary sheet for emergency numbers.

### 5. CONTAIN / CLEAN UP THE SPILL

- Stay upwind of vapors - do not walk through spilled oil
- Use sorbent boom, sheets, sweeps, or other available material to limit the spread of oil across the deck.
- Spread sorbent pads or other available material to soak up spilled oil.
- Use clean, non-sparking tools to recover used sorbent materials
- Store waste materials in leak proof, sealable containers, (i.e.; steel or plastic drums, heavy duty 6 mil plastic bags).
- Identify the type of waste in each container clearly.
- Store waste materials safely aboard the vessel in contained area to prevent further leakage or spillage. (may request if waste materials can be stored on shore due to safety or space considerations).

- Consult with the Environment Canada Representative before removing waste material for disposal.

**WHEN THE OIL SPILLED ON THE VESSEL/BARGE HAS BEEN CLEANED UP AND THE VESSEL/BARGE FULLY SECURED, THE MASTER MAY OFFER ASSISTANCE TO THE FUEL TRUCK DRIVER.**

**AFTER DEALING WITH THE CAUSE OF THE SPILL, IT MAY BE NECESSARY TO OBTAIN PERMISSION FROM THE LOCAL AUTHORITIES TO RESUME NORMAL OPERATIONS.**

### **3.1.2 TANK OVERFLOW DURING FUEL TRANSFER**

The following procedures are only to serve as a guide to the actions to be taken in the event of an incident. The order in which they are laid out is not necessarily chronological and circumstances at hand may dictate an alternative order of response actions.

#### **1. IMMEDIATE ACTIONS**

- Inform fuel truck driver to shut down transfer operations immediately.
- Close fuel line(s) and manifold valves at the vessel, excavator or fuel tank and at the fuel truck.
- Sound General Alarm and notify the Master.
- **Eliminate** all avoidable sources of ignition where flammable vapors could be present (e.g., naked lights, unprotected light bulbs, electric hand tools, etc.,).
- Consider whether to stop air intake into accommodation areas and non-essential air intake to engine room.

#### **2. STOP THE PRODUCT FLOW / CONTAIN THE SPILL**

- Ensure scuppers are secured / block potential escape points

- Reduce the tank level by transferring fuel to an empty or slack tank.
- Drain the fuel line to an empty or slack tank, if possible to do so safely, and without risk of further spillage.
- If necessary, install the Oil Spill Containment Boom around the tug/barge.

**3. SECURE THE SPILL AREA / ENFORCE SAFETY PROCEDURES**

- Clear the area around the vessel / barge of all unauthorized or non-essential personnel.
- Enforce all safety measures and wear appropriate personal protective equipment (e.g., hard hats, gloves, rubber boots).
- Follow standard confined space entry procedures before entering enclosed spaces.

**4. ASSESS THE SITUATION AND REPORT THE SPILL**

**(Use the *Initial Incident Report Form* for guidance if readily available)**

- Determine the product spilled, estimated quantity, actions taken, and level and type of assistance required.
- **Complete notification responsibilities** as outlined in *Section 2 - Reporting Requirements*. See *Appendix A* or the summary sheet for emergency numbers.

**5. CONTAIN / CLEAN UP THE SPILL**

- Stay upwind of vapors - do not walk through spilled oil.
- Use sorbent boom, sheets, sweeps, or other available materials to limit the spread of spilled oil across the deck.
- Spread sorbent pads or material to soak up spilled oil.
- Use clean, non-sparking tools to recover used absorbent materials.

- Store waste materials in leak proof, sealable containers (e.g., steel or plastic drums, heavy duty 6 mil plastic bags).
- Identify the type of waste in each container clearly.
- Store waste materials safely aboard the vessel in a contained area to prevent further leakage or spillage. (may request the terminal if waste materials can be stored on shore due to safety or space considerations).
- Consult with the Environment Canada Representative before removing waste material for disposal.

**WHEN THE OIL SPILLED ON THE VESSEL/BARGE HAS BEEN CLEANED UP AND THE VESSEL/BARGE FULLY SECURED, THE MASTER MAY OFFER ASSISTANCE TO THE FUEL TRUCK DRIVER.**

**AFTER DEALING WITH THE CAUSE OF THE SPILL, IT MAY BE NECESSARY TO OBTAIN PERMISSION FROM THE LOCAL AUTHORITIES TO RESUME NORMAL OPERATIONS.**

### **3.1.3 HULL OR TANK LEAKAGE DURING FUEL TRANSFER**

The following procedures are only to serve as a guide to the actions to be taken in the events of an incident. The order in which they are to be laid out is not necessarily chronological and the circumstances at hand may dictate an alternative order of response actions.

If oil is detected around the vessel/barge or on deck of the barge during fuel transfer, it may be due to a failure in the tug hull plating around one of the fuel tanks or the barge fuel tank. In the event of a suspected hull/tank failure during fuel transfer, the following steps / measures should be considered and taken:

#### **1. IMMEDIATE ACTIONS**

- Inform fuel truck driver to stop transfer operations immediately.
- Close fuel line(s) and manifold valves at the vessel and at the fuel truck.

- Sound the General Alarm and Notify the Master.
- **Eliminate** all avoidable sources of ignition where flammable vapors could be present (naked lights, unprotected light bulbs, electric hand tools, etc.).
- Consider whether to stop air intake into accommodation area, and non-essential air intake to engine room.

## 2. **SECURE THE SPILL AREA / ENFORCE SAFETY PROCEDURES**

- Clear the area around the vessel / barge of all unauthorized or non-essential personnel.
- Enforce all safety measures and wear appropriate personal protective equipment (e.g., hard hats, gloves, rubber boots).
- Follow standard confined space entry procedures before entering enclosed spaces.

## 3. **LOCATE AND SECURE THE SOURCE OF DISCHARGE**

- Identify which tank(s) is leaking by visual inspection if possible.
- Determine whether hull failure is above or below the waterline.
- If visual inspection is not possible, carefully sound all tanks in the vicinity of the spill - do NOT open ullage plugs indiscriminately as loss of buoyancy or additional spillage could occur.
- Reduce the tank level by transferring fuel to an empty or slack tank or to shore.
- Consider pumping water into the leaking tank to create a water cushion to prevent further loss.
- Consider flooding ballast tanks to adjust vessel trim and stability.
- If necessary, install the Oil Spill Containment Boom around the tug/barge.

#### 4. ASSESS THE SITUATION AND REPORT THE SPILL

(Use the *Initial Incident Report Form* for guidance if readily available)

- Evaluate the immediate threat of loss of buoyancy and stability, additional pollution, fire, and explosion.
- Determine the product spilled, estimated quantity, actions taken, and level and type of assistance required.
- **Complete notification responsibilities** as outlined in *Section 2-Reporting Requirements*. See *Appendix A* or the summary sheet for emergency numbers.

**WHEN THE HULL OR TANK LEAKAGE ON THE VESSEL/BARGE HAS BEEN LOCATED, SECURED, CLEANED UP AND THE VESSEL/BARGE FULLY SECURED, THE MASTER MAY OFFER ASSISTANCE TO THE FUEL TRUCK DRIVER.**

**AFTER DEALING WITH THE CAUSE OF THE SPILL, IT MAY BE NECESSARY TO OBTAIN PERMISSION FROM THE LOCAL AUTHORITIES TO RESUME NORMAL OPERATIONS.**

### 3.2 SPILLS RESULTING FROM CASUALTIES

**WHENEVER AN OIL SPILL OCCURS, IT IS THE DUTY OF THE PERSON FINDING THE SPILL TO IMMEDIATELY INFORM THE MASTER WHO SHOULD CALL OUT THE VESSEL RESPONSE TEAM. REMEMBER THAT AN OIL SPILL MAY CREATE A FIRE OR EXPLOSION HAZARD, REQUIRING SAFETY PRECAUTIONS TO BE OBSERVED.**

Immediately following a casualty occurrence, the Master and crew members (i.e., Vessel Response Team) will initiate the proper action to protect themselves, secure the vessel, and notify proper authorities and the McKeil Marine Emergency Response Team (ERT). If necessary, the ERT will proceed immediately to the designated Incident Command Centre at the company's Head Office to support crew's effort, and take over some of the critical aspects of the casualty response.



The following casualty situations are covered separately in this section:

<b>3.2.1</b>	<b>Grounding .....</b>	<b>3-11</b>
<b>3.2.2</b>	<b>Fire / Explosion .....</b>	<b>3.14</b>
<b>3.2.3</b>	<b>Collision .....</b>	<b>3.17</b>
<b>3.2.4</b>	<b>Hull Failure .....</b>	<b>3-20</b>
<b>3.2.5</b>	<b>Excessive List .....</b>	<b>3-22</b>

**THESE PROCEDURES ARE A GUIDE WHICH DOES NOT LIMIT THE MASTER AND/OR SHORE SUPERINTENDANT AUTHORITY AS THE SENIOR McKEIL MARINE OFFICERS AT THE SCENE OF AN INCIDENT**

**IN ALL CASES, THE MASTER AND/OR THE SUPERINTENDANT WILL TAKE WHATEVER ACTION HE/THEY DEEM NECESSARY BASED ON HIS/THEIRS ASSESMENT AND JUDGEMENT OF THE INCIDENT REQUIREMENTS AND PRIORITIES.**

**ALL McKEIL PERSONNEL INVOLVED IN THE RESPONSE WILL KEEP A LOG OF ALL CRITICAL ACTIONS TAKEN/COMPLETED.**

### **3.2.1 GROUNDING**

The following procedures are only to serve as a guide to the actions to be taken in the event of an incident. The order in which they are laid out is not necessarily chronological and the circumstances at hand may dictate an alternative order of response action.

In the event of a glancing blow or hard grounding incident, the following steps / measures should be considered and taken.

#### **1. IMMEDIATE ACTIONS**

- Stop or slow propulsion.
- Sound General Alarm - muster crew to Emergency Stations.
- **Eliminate** all avoidable sources of ignition where flammable vapors could be present (e.g., naked lights, unprotected light bulbs, electric handtools etc.).

- Fix exact position and complete notification responsibilities as outlined in *Section 2 - Reporting Requirements*. See *Appendix A* or summary sheet for emergency numbers.

## **2. CREW SAFETY**

- Issue appropriate personal protective equipment to all crew.
- Determine whether there are any injuries or missing persons.
- Prepare serious injuries for immediate evacuation.
- Advise Master on crew status and head count.
- Consider whether to stop air intake to accommodation areas and non-essential air intake to the engine room.

## **3. ASSESS DAMAGES SUSTAINED**

- Test stability, trim, handling, propulsion, navigation, and communications capabilities.
- Follow standard confined space entry procedures before entering enclosed spaces.
- Check hull compartments / engine rooms for damage and flooding.
- Conduct visual assessment of damage sustained in the grounding if possible to do so safely.
  - o Is the vessel firmly grounded or stable ?
  - o What is the extent of grounding - partial or full length?
  - o Are hulls damaged or holed at any point?
  - o Is oil leaking into the water (i.e., fuel tank pierced)?
- Take soundings around the vessel/barge to determine nature of bottom ground.
- Determine the likely affect of tide, current, and weather forecast conditions on the vessel's position and stability.
- Sound all tanks and compartments adjacent to the hull to consider to the hull to consider ballasting possibilities - do NOT open ullage plugs indiscriminately as a loss of buoyancy or additional spillage could occur.

#### **4. SECURE / STABILIZE THE VESSEL**

- Calculate buoyancy required to refloat, and determine current and potential drafts, trim, list, and stability for the vessel.
- Determine whether attempting to refloat the vessel on its own, versus waiting for assistance poses a lower or higher risk to the crew, vessel, and environment.
- Weigh advantages of flood loading vessel firmly in position versus attempting to refloat.
- Consider use of anchors/excavators to maintain position and prevent unexpected movement or shifting.

#### **5. CONTAIN / CONTROL SPILLED OIL**

- Ensure all responders are wearing appropriate personal protective equipment.
- Continue to minimize risk of fire / explosion.
- Contain / recover material spilled on deck using absorbent materials if possible to do so safely.
- Consider transferring of fuel to an undamaged slack tank.
- If necessary, install the Oil Spill Containment Boom around the tug/barge

#### **6. UPDATE / CONSULT WITH THE AUTHORITIES AND ERT**

- Report detailed damage assessment findings to **Canadian or US Coast Guard** and **ERT**.
- Provide regular situation updates as required.
- Identify type of assistance required (i.e., salvage, divers, towboats, oil spill response).
- Consult with ERT Vessel Response Officer and Naval Architect to review potential action steps for freeing the vessel (on its own or with assistance).

***IF THE VESSEL CANNOT BE REFLOATED OR FREED WITHOUT ASSISTANCE:***

**7. STABILIZE THE PRESENT AND LIKELY POSITION OF THE VESSEL USING ALL AVAILABLE MEANS TO MINIMIZE MOVEMENT UNTIL ASSISTANCE ARRIVES ON THE SCENE.**

- Use anchors/excavators if possible and practicable
- Take on ballast in slack or empty tanks - verify hull stress factors before action.
- Ensure all deck equipment is fully tied down or secure.
- If oil has spilled around the vessel, continue to avoid the use of potential sources of ignition, monitor regularly and install the Oil Spill Containment Boom around the tug/barge.

**3.2.2 FIRE / EXPLOSION**

The following procedures are only to serve as a guide to the actions to be taken in the event of an accident. The order in which they are laid out is not necessarily chronological and the circumstances at hand may dictate an alternative order of response actions.

A fire or explosion involving the vessel can be in the deck area, engine room, accommodation area, and may involve the dock. In the event of a fire / explosion situation the following steps / measures should be considered and taken.

**1. IMMEDIATE ACTIONS**

- Sound General Alarm and muster crew to Emergency Stations.
- Shut down ventilation systems and close fire barriers to contain the fire.
- Inform the local fire department.
- **Eliminate** all avoidable sources of ignitions.
- Fix exact position and complete notification responsibilities as outlined in *Section 2 - Reporting Requirements*. See *Appendix A* or summary sheet for emergency numbers.

## 2. CREW SAFETY

- Ensure appropriate personal protective equipment is worn by crew.
- Determine whether there are any injuries or missing personnel.
- Prepare serious injuries for immediate evacuation.
- Advise Master on crew status and head count.
- Follow standard confined space entry procedures before entering enclosed spaces.

## 3. FIRE CONTROL AND SUPPRESSION

- Inspect the fire location to assess immediately damage and risk.
- Use available conventional equipment to control or extinguish, if possible to do so safely.
- Quickly assess the danger to crew and the vessel, and advise the Master:
  - o What is the cause (i.e., electrical, fuel, other)?
  - o Can it be brought under control?
  - o Can it be isolated?
  - o Can it be extinguished?

### **If fire is in the engine room:**

- First attempt conventional firefighting methods.
- If conventional methods are unsuccessful, consider getting the vessel as close as possible to the shore, in order to be able to fight the fire with shore fire fighting personnel and equipment.

### **If the fire is in the bridge area:**

- First attempt conventional firefighting methods.
- If conventional methods are unsuccessful, consider getting the vessel as close as possible to the shore, in order to be able to fight the fire with shore fire fighting personnel and equipment.

**If fire is on deck:**

- Confirm the nature and risk of material(s) on fire.
- Use appropriate personal protective equipment.
- Use portable extinguishers or fire hose to extinguish fire, depending on size and severity.
- Position vessel to minimize wind exposure to the fire area.
- If conventional methods are unsuccessful, consider getting the vessel as close as possible to the shore, in order to be able to fight the fire with shore fire fighting personnel and equipment.

**4. DAMAGE ASSESSMENT**

- Test stability, trim, handling, propulsion, navigation, and communications capabilities.
- Evaluate immediate threats such as potential hull damage, loss of stability, oil pollution, etc., in connection with fire / explosion.
- Report status of fire to **Canadian** or **US Coast Guard** and **ERT**.
- If there is a spill of oil in connection with the fire or explosion, advise **ERT** and **Canadian Coast Guard** or **US Coast Guard** and request oil spill response contractor assistance and install the Oil Spill Containment Boom around the tug/barge.

***IF THE FIRE DOES NOT POSE AN IMMEDIATE RISK TO CREW MEMBERS AND THE VESSEL CAN BE SAFELY MOVED TO A SUITABLE SHORE LOCATION OR ANCHORAGE:***

**5. PROCEED TO ANCHORAGE OR SHORE AND CONTINUE FIRE FIGHTING ACTION**

If the vessel is able to proceed under its own power:

- Confer with McKeil Marine **ERT** (i.e., Incident Commander / Vessel Casualty Officer / Response Planning and Operations) and **Coast Guard** to discuss vessel movement options.

- Identify shore support requirements - e.g., medical aid, firefighting, equipment, personnel.
- Proceed to the nearest anchorage or shore and continue efforts to control and extinguish the fire with assistance of shore equipment and personnel.
- Be prepared to vacate anchorage/shore if fire threatens local area.

### 3.2.3 COLLISION

The following procedures are only to serve as a guide to the actions to be taken in the event of an incident. The order in which they are laid out is not necessarily chronological, and the circumstances at hand may dictate an alternative order of response actions.

If the vessel is involved in a collision with another vessel during its route crossing, the following steps / measures should be considered and taken:

#### 1. IMMEDIATE ACTIONS

- Stop or slow propulsion and maintain essential services appropriate to the severity of the situation.
- Maintain vessel in position of least danger.
- Sound General Alarm - muster crew to Emergency Stations.
- **Eliminate** all avoidable sources of ignition where flammable vapors could be present (e.g. naked lights, unprotected light bulbs, electric hand tools, etc.).
- Fix exact position and complete notification responsibilities as outlined in *Section 2 - Reporting Requirements*. See *Appendix A* or summary sheet for emergency numbers.

#### 2. ENSURE CREW SAFETY

- Muster the crew to determine whether there are injuries or missing personnel.
- Ensure personal protective equipment is worn by all crew.
- Prepare serious injuries for immediate evacuation.

- Advise Master on crew status and head count.
- Consider whether to stop air intake to accommodation area, and non-essential air intake to the engine rooms.

### **3. ASSESS DAMAGE SUSTAINED**

- Test stability, trim, handling, propulsion, navigation, and communications capabilities.
- Follow standard confined space entry procedures before entering enclosed spaces.
- Conduct visual assessment of damage sustained in the collision.
  - o Is the hull damaged or holed at any point?
  - o Is oil leaking into the water (i.e., fuel tank pierced)?
  - o Are the vessels still joined from the collision?
  - o Can vessel proceed under its own power?
  - o Is vessel stability / trim effected?
  - o What is the condition of the other vessel (e.g., ensure there is no risk of fire or explosion on the other vessel)?
- If vessels are joined, determine whether separation is (a) possible, and (b) desirable.
- Contact other vessel Master to review damage assessment and options as required.
- Offer assistance to other vessel if required and if possible to do so safely without endangering the crew or vessel.
- Request other ship to eliminate all avoidable sources of ignition.
- Determine the likely affects of tide, current, weather forecast, conditions on the vessels' position and stability.

### **4. UPDATE THE AUTHORITIES AND MANAGEMENT RESPONSE TEAM**

- Report damage assessment findings to **Canadian Coast Guard** or **US Coast Guard** and **ERT** on an ongoing basis.



**5. SECURE AND STABILIZE THE VESSEL**

- Ensure all spaces are kept closed including accommodation, stores, or ballast spaces to establish fire and vapors barriers and help maintain buoyancy.
- Close all openings to fuel and ballast tanks tight, including vent lines to conserve buoyancy.
- Consider trimming / listing vessel to control inflow or outflow from compartments - DO NOT change trim / list attitude if hull is severely damaged.
- If hull damage is severe and vessels remain engaged, consider remaining as is.
- If oil is leaking, limit further spillage by isolating penetrated tanks or transferring oil into empty or slack tank.
- Disengage vessels if required and if safe to do so without endangering either vessel, or risking spillage / or further spillage.

**6. CONTAIN / CONTROL SPILLED OIL**

- Ensure all responders are wearing appropriate personal protective equipment.
- Continue to minimize risk of fire, explosion.
- Contain / recover material spilled on deck using sorbent materials if possible to do so safely.
- Consider transferring of fuel to an undamaged slack tank.
- If necessary, install the Oil Spill Containment Boom around the tug/barge

**7. IF ABLE TO SEPARATE VESSELS AND PROCEED SAFELY UNDER OWN POWER, PROCEED TO THE NEAREST SAFE ANCHORAGE OR SHORE TO UNDERTAKE FURTHER ASSESSMENT AND/OR REPAIRS.**

**IF UNABLE TO PROCEED UNDER POWER, STABILIZE VESSEL POSITION SECURELY AND WAIT FOR ASSISTANCE.**

- Consult with ERT, Coast Guard, and other qualified experts.
- Maintain emergency readiness level appropriate to the prevailing circumstances.

### 3.2.4 HULL FAILURE

The following procedures are only to serve as a guide to the actions to be taken in the event of an incident. The order in which they are laid out is not necessarily chronological and circumstances at hand may dictate an alternative order of response actions.

In the event that oil is observed leaking from the vessel while underway for no immediately obvious reason or cause (e.g., collision, grounding), the following steps / measures should be considered and taken:

#### 1. IMMEDIATE ACTIONS

- Stop or slow engines depending on the circumstances and conditions.
- Sound General Alarm and muster crew to Emergency Stations.
- **Eliminate** all avoidable sources of ignition where flammable vapors could be present (e.g., naked lights, unprotected light bulbs, electric hand tools, etc.).
- Ensure appropriate personal protective equipment is worn by crew.
- Fix exact position and complete notification responsibilities as outlined in *Section 2 - Reporting Requirement*. See *Appendix A* or summary sheet for emergency numbers.

#### 2. LOCATE AND SECURE THE SOURCE OF DISCHARGE

- Consider whether to stop air intake into accommodation areas and non-essential air intake to engine room.
- Follow standard confined space entry procedures before entering enclosed spaces.
- Conduct a visual assessment of the hull to determine type, location and extent of hull failure.
- If visual inspection is not possible, carefully sound all tanks in the vicinity of the spill - **DO NOT** open ullage plugs indiscriminately as loss of buoyancy, or additional spillage could occur.

- Evaluate immediate threats including loss of buoyancy and/or stability, pollution risk, fire or explosion.
- Consider reducing the level in the leaking tank by transferring product to a slack tank(s).
- Consider the possibility of pumping water into the leaking tank to create a water cushion to prevent further loss.
- If necessary, install the Oil Spill Containment Boom around the tug/barge

### **3. UPDATE AUTHORITIES AND ERT**

- Report all relevant information to **Canadian or US Coast Guard** and **ERT** including:
  - o type, location and extent of hull damage
  - o exact location of the spill
  - o type and quantity of product spilled
  - o likely spilled movement based on wind, tide, and current
  - o condition of the vessel and spill status

### **4. IF DISCHARGE IS CONTAINED WITHOUT FURTHER SPILLAGE**

- The vessel may remain with and monitor the slick (staying upwind of it) until Coast Guard and a response contractor has arrived and the situation is under control.

**NOTE:**

**NO ATTEMPT WILL BE MADE BY THE CREW TO CONTAIN OR RECOVER OIL SPILLED ON THE WATER WHILE UNDERWAY.**

**THE EXACT LOCATION, TYPE, SIZE AND POTENTIAL MOVEMENT OF THE SPILL WILL BE REPORTED TO THE AUTHORITIES AND McKEIL MARINME MANAGEMENT, SO THAT THE APPROPRIATE SPILL RESPONSE EQUIPMENT WILL BE DISPATCHED TO THE SPILL SITE AS REQUIRED.**

### 3.2.5 EXCESSIVE LIST

The following procedures are only to serve as a guide to the actions to be taken in the event of an incident. The order in which they are laid out is not necessarily chronological and the circumstances at hand may dictate an alternative order of response actions.

If excessive list occurs rapidly and unexpectedly it may be the result of grounding, fire / explosion, collision, hull failure, flooding, or incorrect operational procedures. If the vessel develops an excessive list while underway, the following steps / measures should be considered and taken.

#### 1. IMMEDIATE ACTIONS

- Stop any cargo, bunkering, or ballast operations in progress.
- Sound General Alarm - muster crew to Emergency Stations.
- If underway slow or stop engines depending on the circumstances and conditions.
- **Eliminate** all avoidable sources of ignition where flammable vapors could be present (e.g., naked lights, unprotected light bulbs, electric hand tools, etc.).
- Fix exact position and complete notification responsibilities as outlined in *Section 2 - Reporting Requirements*. See *Appendix A* or summary sheet for emergency numbers.
- Issue appropriate personal protective equipment to crew.

#### 2. IDENTIFY THE CAUSE OF STABILITY LOSS

- Identify and isolate the cause or source of listing.
- Assess the present and likely future risk to the vessel.
  - o Is the cause identifiable?
  - o Can it be controlled or stabilized?
  - o Will it worsen?
  - o Oil Spilled? Necessary to jettison oil to maintain stability?
  - o Can stability be restored without placing undue stress on hull?
  - o Is the vessel at risk of foundering or sinking?

- o Can vessel proceed safely with present list, and no further worsening or change?
- Report all findings to **Canadian** or **US Coast Guard** and **ERT**.
- If the cause of the listing is identified as being due to grounding, fire / explosion, collision, or hull failure, consult the appropriate section of this Plan dealing more specifically with the cause of the excessive list.

3.2.1	Grounding .....	3-11
3.2.2	Fire / Explosion .....	3-14
3.2.3	Collision .....	3-17
3.2.4	Hull Failure .....	3.20

### **3. IF POSSIBLE, TAKE CORRECTIVE ACTION TO RECTIFY SITUATION**

#### **3.2.6 ROLE OF THE ERT DURING CASUALTY SITUATION**

The **Emergency Response Team's (ERT)** role is to support the crew as effectively as possible, to provide tactical planning assistance, and to manage vital shore-based aspects of the response effort. ERT actions include:

- Arrange whatever outside or contractor assistance is requested by the Master:
  - o air transportation
  - o medical assistance or evacuation
  - o towing
  - o oil spill response
  - o damage assessment (i.e., Naval Architect)
- Verify notification of key governmental / regulatory agencies and contractors (i.e., salvage, towing, oil spill clean up).
- Contact crew members families as required to appraise of the situation.
- Set up and secure the primary McKeil Marine Command Centre.
- Consider setting up a remote Command Centre closer to the site of the incident if desirable.

- Set up an Emergency Information Centre for responding to media and public inquiries.
- Assemble a back-up crew (i.e., Master / Chief Engineer) plus Vessel Casualty Officer for deployment to the vessel to assist the crew and assess damages if required.
- Develop a Vessel Movement / Salvage Plan based on situation assessment, condition of the vessel, local winds, wave, current, and tide conditions.
- Consult with the Master regularly on the status of response actions and the vessel.
- Work with senior Canadian or US Coast Guard officials under a unified command structure to coordinate response efforts and resources.
- Issue appropriate news / information releases and deal with media representatives as required.
- Keep senior management updated on the status and progress of the response.

#### **4. NATIONAL AND LOCAL COORDINATION**

##### **4.1. RESPONSIBILITY OF THE VESSEL MASTER**

The **Master** is designated as the **Vessel Response Team (VRT) Leader** (see *Appendix C - Vessel Response Team Organization*). Immediately following an emergency incident or spill he is responsible for:

- ( **ensuring the safety of crew members and the vessel**
- ( **notifying the proper authorities and McKeil Marine response personnel**
- ( **directing crew members in performing their emergency duties**
- ( **working with the appropriate authorities (i.e., Canadian or US Coast Guard) to coordinate response actions until relieved by management**

The Master will be the point of contact on the ship for coordinating shipboard activities with national and local authorities, and will be responsible for

overseeing the action of the salvage or spill contractors employed until such time as he is formally advised by the Company that he has been relieved of these responsibilities.

#### **4.2 RESPONSIBILITY OF THE McKEIL MARINE INCIDENT COMMANDER**

The Vice President, Operations, is the designated McKeil Marine **Incident Commander** for all marine emergencies and oil spills. (1) Upon being notified by the Vessel Master, the Incident Commander will proceed immediately to the McKeil Marine Command Centre.

- 1.) The President of McKeil Marine may take over Incident Commander responsibility for a Level 3 or potentially catastrophic incident. The Vice President of Engineering is the designated alternate Incident Commanders.**

Upon arriving at the Command Centre, the Incident Commander will assume responsibility for coordination of McKeil Marine's response activities with those of the local and national government authorities. The Vessel Master will continue to direct the crew and shipboard response activities.

#### **4.3 UNIFIED COMMAND ORGANIZATION**

The McKeil Marine **Incident Commander** and response personnel will work within a unified command structure in cooperation with the On-scene Commander (OSC) of the Lead Government Agency for marine emergency incidents in Canada and US waters. The unified command structure is illustrated in the Management Plan.

The Canadian Coast Guard is the designated agency for any incident involving a ship in Canadian waters, except within the ports limits of Corporation Ports and Commission Ports. The US Coast Guard is the Lead Agency in US water. The governments of Ontario, and bordering States may be represented on the Unified Command Team depending on the threat to near shore or foreshore areas.

McKeil Marine response team members (i.e., **Vessel Response Team (VRT)** and **Emergency Response Team (ERT)**) will work with their counterparts from the Lead and other government agencies to ensure maximum coordination of planning and resources.

McKeil Marine's Incident Commander retains control of the response effort and the unified command team unless officially relieved by the Lead Agency (OSC).

The roles of the Lead Agency and other governmental agencies that may be involved in a marine emergency incident response are described in greater detail in the Management Plan.

#### **4.4 PLAN ACTIVATION / INITIATING THE RESPONSE**

This Plan can be activated by any McKeil Marine employee who detects or observes an oil spill originating from the **tug GRETA V** or the barge **LE C. F. COLOMBIER**. The procedures for plan activation (i.e., notification, mobilization, deployment of necessary response personnel, and resources) are clearly laid out in *Section 2 - Reporting Requirements*.

Once activated, the following McKeil Marine personnel have authority under the Plan to commit whatever resources and expenditures are necessary to mount an effective response effort (see *Appendix A* for individual contact numbers).

- ( **GRETA V - Vessel Master and or Shore Superintendant**
- ( **President**
- ( **Vice President - Operations**
- ( **Director of Operations**
- ( **Operations Manager**

Plan activation includes the authority to:

- ( **call out some or all designated McKeil Marine Emergency Response Team (ERT)**
- ( **mobilize outside contractors (e.g., GLRC) and suppliers necessary to support the response**
- ( **approve expenditures related to the response effort**
- ( **act on behalf of and represent the interests of McKeil Marine Limited (until relieved by more senior company official)**



#### 4.4.1 EMERGENCY RESPONSE PRIORITIES

All marine oil spill response activities described in this Plan will be carried out in accordance with the following overall priorities:

- ( PROTECTION OF LIFE (i.e., crew, public)
- ( SECURING THE SAFETY OF THE VESSEL AND PROTECTION OF PROPERTY
- ( PROTECTION OF THE ENVIRONMENT (i.e., spill response)

In the case of an oil spill from a McKeil Marine vessel while underway or due to a casualty incident, the first priority of company vessel and shore personnel will be to ensure the safety and security of the crew and the vessel. Response to the spill will be a lower priority until the primary objectives are fully achieved.

Under these circumstances, McKeil Marine will mainly rely on its designated oil spill response contractor, **Great Lakes Response Corporation (GLRC)** or **Eastern Canada Response Corporation (ECRC)** to contain, recover, and clean up any spilled oil on its behalf. Great Lakes Response Corporation will be immediately mobilized by McKeil Marine Emergency Response Team following any reported oil spill incident involving one of its vessels or facility.

#### 4.4.2 SMALL SPILLS

In the event of a small operational spill during fuel transfer, or while berthed at a McKeil Marine facility where crew members and the vessel are not placed at risk, vessel / shore personnel will take immediate action to:

- \ **Detect and eliminate the source of discharge.**
- \ **Control the spill on the vessel deck and prevent it from entering the water.**
- \ **Notify the proper authorities**
- \ **Contain and recover the spilled oil**
- \ **Contact outside assistance and secure the necessary response personnel and equipment.**

#### 4.4.3 LARGE SPILLS

In the case of larger spills, or spills resulting from a casualty all of the crew's efforts will be directed at protecting life and securing the vessel. The spill **response organization (RO)**, such as Great Lakes Response Corporation (GLRC) will be required to deal with any oil spilled on the water as a result of the casualty on its own until the vessel and barge have been fully stabilized and secured.

The McKeil Marine **Emergency Response Team** will be mobilized to direct the overall response effort under the Incident Commander, to protect the crew, secure the vessel, and work with the spill response organization.

The RO will provide a **Spill Response Manager** to oversee the oil spill response and direct their personnel and equipment. The Spill Response Manager will report directly to the McKeil Marine Incident Commander during the response operation.

## **A CONTACT LISTING**

This Appendix provides the names and telephone numbers of persons and/or organizations that might be contacted in the event of a marine emergency or oil spill involving the **SALVOR**. It includes:

- \* **Emergency Response Team (ERT) .....A-2 to A-3**
- \* **Federal Agencies (Canadian) .....A-4**
- \* **Corporation / Commission Ports - Can. ....A-5**
- \* **Provincial Agencies .....A-6**
- \* **US Contacts .....A-8 to A-10**
- \* **Media Contacts .....A-10**

**McKEIL MARINE LTD - EMERGENCY RESPONSE TEAM**

<b>POSITION</b>	<b>NAME(S)</b>	<b>OFFICE</b>	<b>HOME</b>	<b>CELL.</b>
<b>INCIDENT COMMANDER and Alternates (a)</b>				
President	Blair McKeil	(905) 528-4780	(905) 945-0813	(905) 317-5383
Vice President - Oper.	Bill Duffy	(905) 528-4780	(905) 583-1103	(905) 572-5515
Dir. Operations	Dave Bush	(905) 528-4780	(905) 687-4925	(905) 517-4161

**COMMAND STAFF**

Media/Public Relations

Government Liaison

Health and Safety

Response Historian

P & I

**VESSEL RESPONSE STAFF**

Section Chief

Alternates

Naval Architect

**McKEIL MARINE LTD - EMERGENCY RESPONSE TEAM** Cont...

<b>POSITION</b>	<b>NAME(S)</b>	<b>OFFICE</b>	<b>HOME</b>	<b>CELL.</b>
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**RESPONSE PLANNING / OPERATION STAFF**

Section Chief

Alternates

**LOGISTICS / FINANCE STAFF**

Section Chief

Alternates

**OUTSIDE SOURCES**

<b>COMPANY</b>	<b>NAME(S)</b>	<b>OFFICE</b>	<b>HOME</b>	<b>FAX</b>
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Legal Council:

Insurance Company:

*AON Reed Stenhouse Inc*

Ron Eldridge

(416) 868-5500

(416) 868-5580

Marine Surveyor:

<b>FEDERAL AGENCIES - Canadian</b>	<b>Business</b>	<b>Emergency</b>
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### COAST GUARD

#### Canadian Coast Guard

(Initial reports can be made to a Vessel Traffic Service Centre (VTS), or any other Canadian Coast Guard Radio Station (CGRS), on frequencies listed in the Radio Aids to Marine Navigation (RAMN).

24 Hour Operations Centre Reporting a Spill to a PPO Ottawa, Ontario	(613) 990-5600	<i>same</i>
Rescue and Environmental Response Inquiries relating to pollution Response	(613) 990-3110	<i>same</i>

### SHIP SAFETY OFFICES

* Collingwood, ON	(705) 445-3320
* Kingston, ON	(613) 548-4451
* Sarnia, ON	(519) 336-8130
* St. Catharines, ON	(905) 688-4360
* Thunder Bay, ON	(807) 345-6953
* Toronto, ON	(416) 231-8890
* Baie Comeau, PQ	(418) 296-3526
* Gaspé, PQ	(418) 368-2444
* Montreal, PQ	(514) 238-7056
* Port Cartier, PQ	(418) 766-2758
* Quebec City, PQ	(418) 648-3234
* Rimouski, PQ	(418) 722-3041
* Sept Isle, PQ	(418) 968-4991
* Sorel, PQ	(514) 743-1259
* Three Rivers, PQ	(819) 379-5971
* Bathurst, NB	(506) 548-7491
* St. John, NB	(506) 636-4748
* Charlottetown, PEI	(902) 566-7987
* Halifax/Dartmouth, NS	(902) 426-7843
* Port Hawkesbury, NS	(902) 625-0803
* Sydney, NS	(902) 564-7002
* St. Johns, NFLD	(709) 772-5167
* MARITIME OIL SPILL HOTLINE	1-800-565-1633 or (902) 426-6030

<b>FEDERAL AGENCIES - Canadian</b>	<b>Business</b>	<b>Emergency</b>
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**DANGEROUS GOODS**

<b>CANUTEC</b>	<b>1-613-992-4642 (information)</b>	<b>1-613-996-6666</b>
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**Transportation of Dangerous Goods**

**ENVIRONMENT CANADA**

<b>Environmental Spill Reporting 24 Hours (Spill Action Centre) Ministry of Environment Ontario</b>	<b>1-800-268-6060</b>	
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<b>Ministry of Environment - Quebec</b>	<b>1-418-643-4595</b>	
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**CANADA COAST GUARD**

<b>Central Region</b>	<b>1-800-265-0237 1-519-337-6360</b>	
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**ST. LAWRENCE SEAWAY**

<b>St. Catharines, Ontario Welland Canal - Western Region</b>	<b>(905) 641-1932</b>	
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<b>Cornwall, Ontario</b>	<b>(613) 932-5170</b>	
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<b>St. Lambert, Quebec</b>	<b>(514) 672-4270</b>	
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**FISHERIES & OCEAN**

<b>Canada Centre of Inland Waters</b>	<b>(905) 336-4648</b>	
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**HAMILTON HARBOUR COMMISSION**

<b>Port of Hamilton</b>	<b>(905) 525-3412</b>	
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**U.S AGENCIES****Business****Emergency****U S COAST GUARD**

National Spill Response Center (Washington, D.C.)

(202) 267-2675

**MARINE SAFETY OFFICES**

Buffalo, NY (716) 843-9570

Chicago, IL (630) 986-2155

Cleveland, OH (216) 522-4405

Detroit, MI (313) 568-9580

Duluth, MN (218) 720-5286

Messena, NY (315) 764-3284

Milwaukee, WI (414) 747-7155

Sault Ste. Marie, MI (906) 635-3214

Sturgeon Bay, WI (920) 743-9448

Toledo, OH (419) 259-6372

USCG 9th DISTRICT OIL SPILL HOTLINE

(216) 902-6001

**ST. LAWRENCE SEAWAY DEVELOPMENT CORP**

Messena, New York

(315) 764-3233

**NEW YORK STATE**

Spill Response and Remediation Division

(518) 457-7363

## **TRANSPORTATION EMERGENCY ASSISTANCE PLAN (TEAP) CHEMICAL SPILL EMERGENCY CONTACTS**

In the event of a *transportation emergency involving chemicals* telephone advisory assistance is available from the nearest of the following 24 hour a day emergency numbers.

Valleyfield, Quebec	<b>Allied Chemical Canada Ltd</b>	(519) 373-8330
Maitland, Ontario	<b>DuPont Canada Inc.</b>	(613) 348-3616
Niagara Falls, Ontario	<b>Cyanamid Canada Inc.</b>	(905) 356-8310
Sarnia, Ontario	<b>Dow Chemical of Canada Ltd.</b>	(519) 339-3711
Copper Cliff, Ontario	<b>C-I-L Inc.</b>	(705) 682-2881
Edmonton, Alberta	<b>Celanese Canada Ltd.</b>	(403) 477-8339
Vancouver, B.C.	<b>Industrial Chemicals Division of Canadian Occidental Petroleum Ltd.</b>	(604) 929-3441

Information on the hazards of chemicals involved in a transportation accident can also be secured by telephoning **CANUTECH (Transport Canada)** (613) 996-6666

TEAP is the Transportation Emergency Assistance Plan administered as a public service by the Canadian Chemical Producers' Association through the cooperation of the member companies who operate the Regional Control Centres (RCC's).

TEAP provides immediate advice to those responding to a transportation emergency involving chemicals. TEAP establishes contact with the shipper of the chemicals involved in order to obtain the best possible assistance and follow-up. If the shipper cannot be contacted, on-site assistance MAY be provided from the Regional Control Centre.

It is important to understand that TEAP is not intended and is not equipped to function as a general information source. By design it is intended to deal only with chemical transportation.

## **B VESSEL-SPECIFIC APPENDIX**

This Appendix is intended to provide vital information about the **GRETA V** that may be useful to response personnel in the event of a casualty or oil spill response.

### **B.1 GENERAL DESCRIPTION**

The **GRETA V** is a 500 HP tug that is utilized for towing and working operations throughout the Great Lakes, St. Lawrence Seaway and Eastern Seaboard.

<b>REGISTERED OWNERS:</b>	<b>McKeil Work Boats Limited</b>
<b>PORT OF REGISTRY:</b>	<b>Montreal, QUEBEC</b>
<b>OFFICIAL NUMBER:</b>	<b>190 436</b>
<b>PLACE BUILT:</b>	<b>Owen Sound, ONTARIO</b>
<b>YEAR BUILT:</b>	<b>1951</b>
<b>REGISTERED TONNAGE:</b>	<b>Gross: 13,97      Net: 9,50</b>
<b>DIMENSIONS:</b>	<b>Length overall: 13,53 m Breadth molded: 3,72 m Depth molded: 1,49 m</b>
<b>CONSTRUCTION:</b>	<b>Welded Steel</b>
<b>MAIN ENGINES:</b>	<b>2 X GM 6-71 Marine Diesel</b>
<b>HORSEPOWER:</b>	<b>500 BHP total</b>
<b>SPEED:</b>	<b>10 Knots</b>

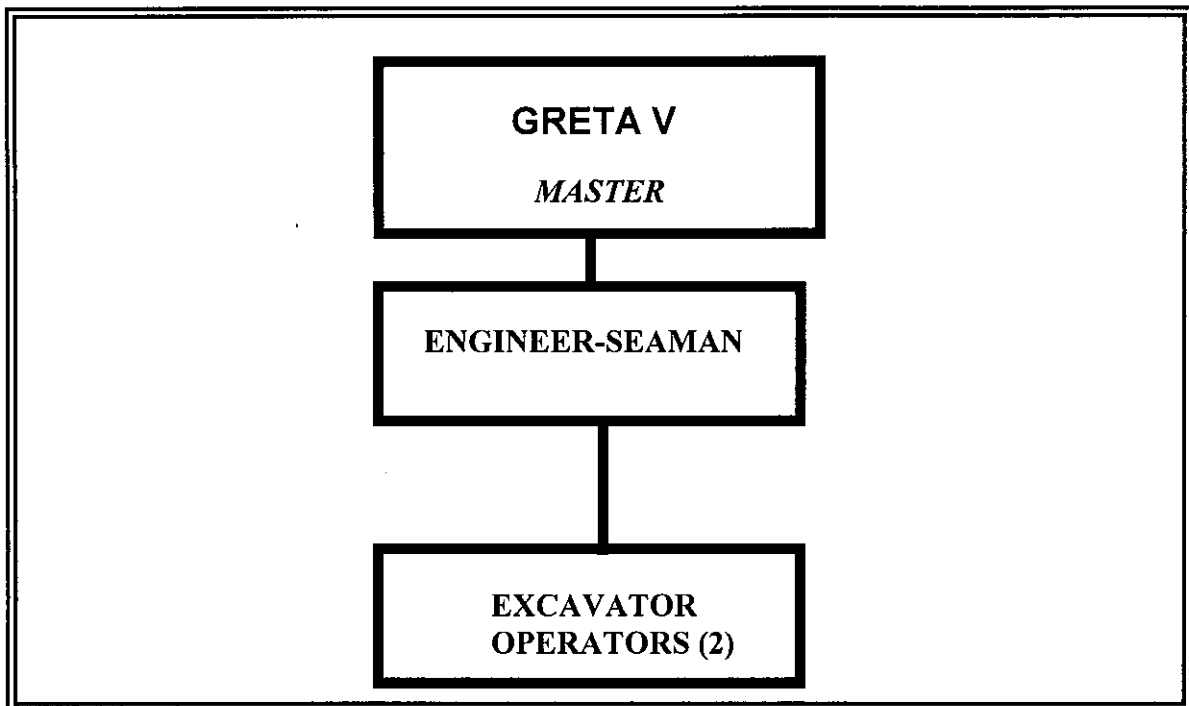
**Figure B.1 - Key Specifications**

## C VESSEL RESPONSE TEAM

### C.1 VESSEL RESPONSE TEAM (VRT)

The Vessel Response Team (VRT) is made up of the Captain and crew of the **GRETA V** and barge **LE C. F. COLOMBIER** - see *Figure C-1* below. The **Master** is automatically designated as the **VRT Leader**. The Engineer-Seaman is the designated alternate if the Master is unable to perform his duties.

**The Shore Superintendant can take charge of the overall operations when he arrives on site**



**Figure C.1 - Vessel Response Team (VRT) Organization  
( GRETA V )**

## **VRT Emergency Priorities**

The VRT's immediate priorities are to:

- ( eliminate all safety hazards to the crew and public (e.g., risk of fire or explosion, issue safety equipment)**
- ( stabilize the vessel to assess damage, undertake repairs, or proceed to the nearest safe haven**
- ( notify / alert the proper authorities and the McKeil Marine Emergency Response Team (ERT) to secure immediate assistance for vessel casualty and/or spill response.**

## **VRT Shipboard Duties**

The overall roles and duties of all crew members is describe in *Figure C.2* on the following page.

### **C.2 McKEIL MARINE EMERGENCY RESPONSE TEAM (ERT)**

The Emergency Response Team's role is to provide immediate assistance to the VRT as dictated by the circumstances of the incident, and to manage the overall McKeil Marine response effort.

A detailed description of the ERT is located in the McKeil Management Plan.

## McKeil Marine Vessel Response Team (VRT) SHIPBOARD EMERGENCY DUTIES

The role descriptions provided below describe the overall roles and duties of shipboard personnel during an emergency response and do not limit the Master's authority to take whatever action he deems necessary to protect the crew or vessel. Specific tasks and priorities will be determined by the circumstances of each incident and the conditions prevailing at the time.

### MASTER (VRT LEADER)

**Role:** In charge of the overall response. Responsible for the safety of the crew and the vessel at all times.

**Key Duties:**

- \* Informs authorities of incident / spill.
- \* Notifies the appropriate governmental authorities and regulatory agencies.
- \* Alerts McKeil ERT and activates emergency plan.
- \* Calls for necessary resources, personnel and assistance.
- \* Consults with officers, Lead Agency senior representative (i.e., CCG) and emergency responders on all matters pertaining to crew or vessel safety.

### ENGINEER-SEAMAN

**Role:** Responsible for all operations and response activities on deck including personnel safety.

**Key Duties:**

- \* Replaces Master as VRT Leader if Master is unable to perform his duties.
- \* Ensures all personnel are present and accounted for (head count).
- \* Directs containment, control and cleanup of oil spilled on deck.
- \* Initiates emergency actions to control incident and prevent worsening on deck.
- \* Keeps Master regularly updated on status and progress of response action taken.
- \* Works with other response personnel.

### EXC. OPERATORS

**Role:** Implement appropriate emergency actions as directed by Captain or Eng.-Seaman.

**Key Duties:**

- \* Execute officer's directions quickly and SAFELY.
- \* Observe all necessary safety precautions.

Figure C.2 – GRETA V Vessel Response Team Shipboard Emergency Duties

**D RECORD OF OIL POLLUTION/EMERGENCY DRILLS**

<b>Date</b>	<b>Type of Oil Pollution Drill</b>	<b>Location</b>	<b>Remarks Master's Signature</b>

- AA/** Name of ship, sign and flag
- BB/** Date and time of incident: a 6-digit group giving day of month (first two digits), hours and minutes (last four digits)
- CC/** Ship's position giving latitude: 4 digit group in degrees and minutes suffixed with N (North) or S (South); and longitude: a 5-digit group in degrees and minutes suffixed with E (East) or W (West):
- or
- DD/** Ships Position by true bearing (first 3 digits) and distance (stated) from a clearly identified landmark.
- EE/** True course ( as a 3-digit group)
- FF/** Speed (in knots and tenths of a knot as a 3-digit group)
- LL/** Route information - details of intended track.
- MM/** Full details of radio stations and frequencies being guarded.
- NN/** Time of next report (a 6-digit group as in B)
- PP/** Types and quantities of cargo and bunkers onboard
- QQ/** Brief details of actual pollution. These should include the type of oil, an estimate of the quantity discharged, whether the discharge is continuing, the cause of the discharge and, if possible, an estimate of the movement of the slick.
- SS/** Weather and sea condition, including wind force and direction, and relevant tidal or current details.
- TT/** Name, address, telex, facsimile, and telephone numbers of the ship's owner or representative (manager or operator of the ship, or their agents)
- UU//** Details of length, breadth, tonnage, and type of ship.
- XX//**
- Brief details of incident
  - Names of other ships involved
  - Action taken with regard to discharge and movement of the ship
  - Personnel injuries sustained
  - Whether medical assistance is required



Appendix H

Alcoa Standards

A copy of all applicable standards is available  
upon request.

## ALCOA H&S AND ENGINEERING STANDARDS AND POLICIES

- 15.1 Material Handling Slings
- 15.2 Wire Rope for Hoists
- 17.10.1 Low-Velocity Powder Activated Tools
- 18.1.1 Respiratory Protection
- 18.1.2 Entering and Working in Confined Spaces
- 18.2 Overview of Fall Control
- 18.2.1 Fall Control
- 18.3 Overview of Tagout/Lockout/Verification Procedures
- 18.3.1 Tagout/Lockout/Verification Procedures
- 18.6.2 Handling Flammable Liquids Safely
- 18.17 Project Safety Review
- 18.17.1 Equipment and Process Safety Evaluation Worksheet
- 18.17.2 Process Safety Management Worksheet
- 18.22 Performing Hot Work Safely
- 18.24 Driving Safety
- 18.24.1 Improving Driving Safety
- 18.25 Loss Control Objectives
- 18.25.1 Loss Control
- 18.26 Fire Protection and Detection
- 18.28 Overview of Personal Protective Equipment
- 18.28.1 Personal Protective Equipment
- 18.29 Environment Health and Safety Risk Management
- 18.32.1 Real Time EHS Incident Management System Recordkeeping and Reporting
- 18.32.1.1 Injury/Illness/Injury Free Event Form and Instructions For Completion
- 18.32.2 Health and Safety Incident Classification
- 18.32.2.1 Health and Safety Incident Classification -- Frequently Asked Questions
- 18.32.3 EHS Major Incident Investigation Procedures.
- 18.32.3.1 Major Incident Investigation Manual
- 30.3.1 Noise Control Specifications
- 30.3.2 Sound Level Requirements for Purchased, Leased, or Rented Vehicles
- 30.3.3 Preparation of the Noise Control Worksheet (SF-4887)
- 30.36 Overview of Mobile Equipment Safety
- 30.36.1 Mobile Equipment Safety
- 32.60 Electrical High Voltage Safety
- 32.60.1 Electrical High Voltage Maintenance and Design Safety Practices
- 32.60.1.1 Electrical High Voltage Safety Assessment Tool
- 32.66 Appendix 6.3 – Deleterious Effects of Electric Shock
- 32.69 Overview of Low Voltage Electrical Safety
- 32.69.1 Low Voltage Electrical Safety
- 32.70 Overview of Safety Practices and Requirements for Electric Arc Flash Hazard Protection
- 32.70.1 Safety Practices for Electrical Arc Flash Hazard Protection
- 33.051 Contractor, Subcontractor, and Contracted Services Environment Health and Safety Process
- 33.051.1 Government Regulatory Agency Project Inspection Guidelines
- 33.052 Supplemental Contractor, Subcontractor, and contracted Services Environment Health and Safety Process
- 33.052.1 Safety and Evaluation of Outside Contractors and Subcontractors
- 33.052.4 Application of OSHA Hazard Communication Standard for Outside Contractors

33.052.5	Application of OSHA Process Safety Management of Highly Hazardous Chemicals Specification for Outside Contractors
33.055	Foreword to Contracted Services Pre-Qualification Questionnaire
33.055.1	Contracted Services Pre-Qualification Questionnaire
33.055.1	(PDF) Contracted Services Pre-Qualification Questionnaire – PDF Form To Be Completed
35.4.5	Fire Resistant Hydraulic Fluid Usage
60.9	Emergency Response Plans
60.9.5	Release Prevention Control & Countermeasures Plan Manual – Example Inspection Forms
60.9.6	Release Prevention Control & Countermeasures Plan Manual – Example Reports and Records
60.9.7	Release Prevention Control & Countermeasures Plan Manual – List of Chemicals
60.9.10	Release Prevention Control & Countermeasures Plan Manual – Selected RPCC Plan Examples
60.9.11	Release Prevention Control & Countermeasures Plan Manual – Stormwater Pollution Prevention BMP Flow Chart
60.12	Environmental Management Systems
60.17	Pollution Prevention
60.17.1	The Alcoa Eight Step Pollution Prevention and Waste Minimization Process
60.22	Surface Water Discharge
60.29	Used Oil
60.29.1	RCRA Used Oil Regulations
60.30	Corporate Outline for Release Prevention, Control and Countermeasure (RPCC) Plans
61.5	Energy Conservation
61.7	Environmental Labeling
61.8	Fresh Water
61.9	Groundwater Contamination
61.16	Soil Contamination
70.51	Total and Respirable Dust Medical Surveillance
70.51.1	Supplemental Total and Respirable Dust Medical Surveillance
71.2	Occupational Exposure to Bloodborne Pathogens
71.2.1	Occupational Exposure to Bloodborne Pathogens Supplemental Document
71.4	Community Emergency Medical Response
71.6	Ergonomics
71.6.1	Ergonomics Planning and Implementation Guide
71.6.2	Ergonomic Design and Analysis Guidelines
71.9	Hearing Conservation and Engineering Noise Control
71.9.1	Hearing Conservation and Engineering Noise Control Guidance for Compliance
71.10	Heat Stress
71.10.1	Supplemental Heat Stress
71.11	Industrial Hygiene
71.11.1	Supplemental Industrial Hygiene
71.11.2	Supplemental Hazard Materials Management In-House Labeling Formats
71.14	Life-Threatening and Transmittable Diseases
71.15	Management of Chronic Illness in the Workplace
71.16	Management of Occupational Health Records and Medical Information

71.16.1	Supplemental Management of Occupational Health Records and Medical Information
71.18	Medical Surveillance and Biological Monitoring
71.19	Mobile Equipment Operator Medical Evaluation
71.19.1	Supplemental Mobile Equipment Operator Medical Evaluation
71.21.1	Contact Lens Use
71.26	Standardization of Medical Records
71.27	Work-Site Emergency Medical Response
71.27.1	Supplemental Work-Site Emergency Medical Response
71.27.2	Supplemental Work-Site Emergency Medical Response – Automated External Defibrillators
71.27.3	Supplemental Work-Site Emergency Medical Response
71.27.3.1	Supplemental Work-Site Emergency Medical Response – Automated External Defibrillators
71.27.4	Fire Brigades and Emergency Response Teams
71.31	Substance Abuse
71.32	Substance Abuse Testing Programs
74.0	EHS Policy and Principles Implementation Plan Standard
74.1	Environment, Health and Safety Value, Policy and Principles