

Section 4 – PREPAREDNESS

4.1 Overview

Oil spill preparedness is defined by the advanced planning used to create systems to effectively and efficiently combat the range of spills likely to be encountered.

In Central and Arctic Region, preparedness involves:

- The development of regional procedures to be followed in the event of an incident, coordinated by the Planning section.
- The implementation, training and maintenance of the Response Management System (RMS) to manage and combat the incident.
- The identification of priorities, development of strategies, logistics and tactics necessary to fulfill those priorities, lead by the Planning section.
- The liaising with internal and external partners, clients and resources that may be involved in pollution response activities, lead by the Planning section.
- The training and continued maintenance and upgrading of skills, coordinated through the Training specialist.
- The exercising and quality assurance activities required to continuously reinforce the training and contingency planning activities, facilitated through the Exercise specialist.
- The asset management including the acquisition, lifecycle maintenance, operational readiness and storage of equipment lead by the Operations section and Inventory specialist.
- The integration of other Canadian Coast Guard Assets and Human Resources, when necessary, through the Training and Exercising processes.

The Memorandum of Understanding (MOU) between the Director General/Maritime Services (MS) and the Director General/Integrated Technical Support (ITS) of the Canadian Coast Guard (March 2004) specifies that the ITS Directorate will be the single CCG focus for the life cycle management of all CCG physical assets and for the development of all technical solutions. It is unknown when ITS will assume the services of design, procurement, in-service support and disposal of all equipment and systems required to satisfy ER's mandate. In the interim, ER will remain the focal point.

4.2 Response Management System (RMS)

The Canadian Coast Guard uses the Response Management System (RMS) as its emergency management system. It is based on, and operates under the same principles as the Incident Command System (ICS) which was developed in the U.S. to coordinate multi-agency responses to large forest fires. The system was adjusted to reflect the current marine oil spill response regime and Canadian law. The Canadian Coast Guard does not implement the ICS principle of unified command, but will participate in any command structure used by the Polluter or Other Lead Agency.

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The RMS uses a “management by objectives” approach. It outlines the roles and responsibilities of individual positions, identifies the reporting structure, establishes a common set of terminology and uses standardized forms and paperwork. The central document in the RMS process is the Incident Action Plan, which documents the existing conditions and outlines objectives and strategies for recovery and response.

The system structure is designed to expand or contract to best fit the specific circumstances of the incident. Not all positions within the system will be staffed for every incident; in those cases the supervising position shall be responsible for all subordinate tasks/roles. Regional staff members have been designated as members of the Regional Response Team and may be called upon to fill specified roles in this management system (see Figure 4.1 for a fully expanded system design).

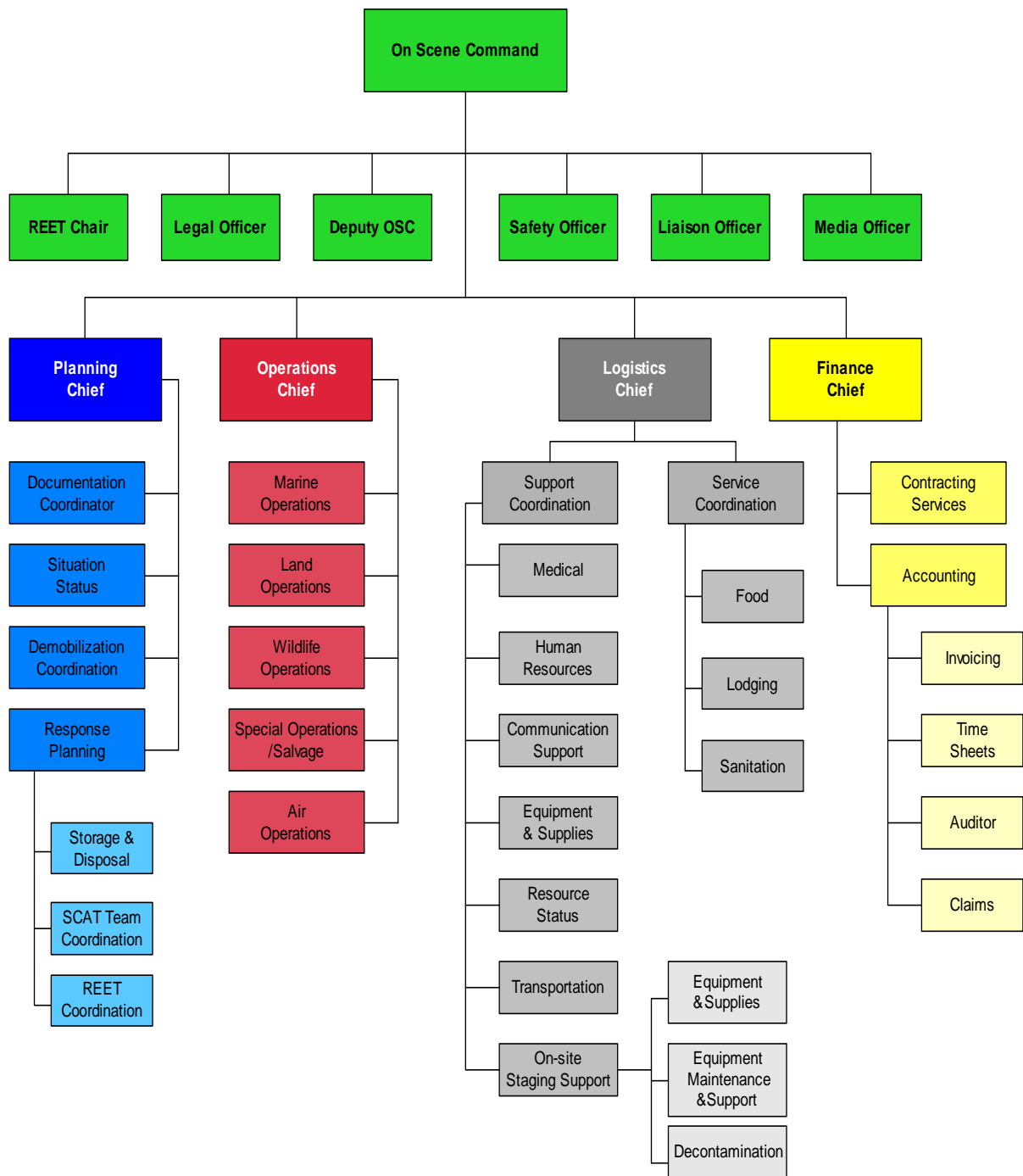
The system also contains management tools that can be used by the On Scene Commander and response personnel to better manage the system and the spill incident. These tools include a field operations guidebook, forms, reports, established meeting schedules and agendas. The RMS will also be used by the Federal Monitoring Officer and their Incident Monitoring Team while monitoring the Polluter’s response to an incident.

The detailed RMS process is contained in a separate document referenced in Section 9.1 of this plan (Response Management Systems User’s Guide, Version 3.0 (May 2006)).

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Figure 4.1 - CCG RMS Command Structure



4.3 Planning

Area Plans

To facilitate an effective and efficient response, Canadian Coast Guard administers 16 area plans as an annex to the Central & Arctic Regional Response Plan. They are Keewatin, Baffin, Beaufort Sea & Amundsen Gulf, Great Slave Lake, Hudson & James Bay, Kitikmeot, Mackenzie River & Delta, Inland Waters S of 60, Lake Erie, Lake Huron, Lake of the Woods, Lake Ontario, Lake Superior, St. Lawrence, St. Mary's and St. Clair & Detroit areas. These plans incorporate detailed response information for specific manageable geographic areas or response communities. The normal operating period for an area plan is the first 12-24 hours of a spill response.

They are developed and maintained as follows:

1) Risk Analysis

The risk analysis determines which communities or areas are most likely to be endangered by a potential oil spill and why, their associated environmental sensitivities, plus the typical type of spill that could be expected. When considering the environmental sensitivities, the focus is on what is most likely to be impacted and to consider as many factors as are applicable. A single factor discovered in the risk assessment is just one of many layers in the decision to make a site a priority.

2) Priority Identification/Verification

Current priorities are discussed with members of the Regional Environmental Emergencies Team (REET) at planning meetings. It provides the opportunity for additions, deletions or modifications. Where there are no REET meetings held, community consultations are organized by the Planning section.

3) Strategy and Tactics Development

Canadian Coast Guard determines RMS objectives for the agreed upon priorities. Strategies are designed, that name the activities relative to those objectives. Those activities may be response actions to be implemented, or may be the type of resources that could be affected by the spill. For area plan development, tactics provide the detail for implementing the selected strategies. Tactics then specify the resources, both human and equipment, to facilitate, to install or to maintain the strategy.

4) Updating

Area plans are reviewed and updated annually.

Regional Procedure Development

Regional procedures for notification, verification, activation and cost recovery of a response are all described in the *Central & Arctic Regional Response Plan* of the *Canadian Coast Guard National Response Plan*. Supporting documentation in the

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form of Standard Operating Procedures and supplementary plans (e.g. Health & Safety Plan and Media Relations Plan) are not included in the Regional Response Plan but are referenced in Section 9.

Liaison with External and Internal Partners, Clients and Resources

To ensure that all partners, clients and resources are aware of the Canadian Coast Guard's mandate and responsibilities as they pertain to pollution preparedness and response, the Environmental Response Planning Section takes the initiative to:

- Work with Internal Partners within Fisheries & Oceans to communicate the branch's needs in the event of a pollution incident.
Exception: Coordination of the Duty Officer (DO) function between Environmental Response (ER) and the Regional Operations Centre (ROC) is coordinated by the Regional Emergency Operations Officer (REOO).
- Work with other government departments that have a mandate for pollution response within their jurisdiction to communicate the role that Canadian Coast Guard plays in marine and freshwater pollution incidents and to share what resources Canadian Coast Guard maintains for pollution response activities and the mechanism to access these resources in the event that another Lead Agency may require them for a non-CCG mandated spill or other type of emergency.
- Liaise with potential clients (oil handling facilities, shipping companies and other operators) so that CCG expectations in the event of an incident are understood.
- Provide copies of area plans to CCG vessels that are relevant to their area of operations. CCG ER will brief Operations at the pre and post season conferences on any changes to the plans and/or to the captain and/or crew's responsibilities.
- Maintain a network of contractors that can provide services to Canadian Coast Guard in the event of a pollution incident that exceeds the resource capability of the region.
- Upon request of the Regional Advisory Councils (RACs) or Secretariat (Transport Canada) on Marine Oil Spill Response, provide information on Central & Arctic Region's preparedness and spill response activities.

Arctic Community Emergency Plans

The Canadian Coast Guard is committed to assisting Arctic communities in the development of the marine pollution component of their Community Emergency Plans. This commitment was made in 1999 when the CCG Arctic Response Strategy (ARS) was published. The Arctic Response Strategy has since been re-assessed and viable components have been incorporated into the text of this Plan.

4.4 Training Program and Curriculum

Introduction

The Training Curriculum of the Environmental Response Branch is focused on providing the necessary skills and knowledge for responders to function effectively during a spill response operation. As the competencies required for an effective spill response are described and organized within the Response Management System (RMS), so too can the training curriculum be described in the context of RMS.

With RMS as the framework for spill response, all response team members will be trained in theory and application of RMS. The level of training complexity will vary by level of individual responsibility, but all members will have fundamental knowledge of the structure and processes that drive the RMS.

In addition to the training curriculum described in this section, it is understood that there are competencies and certifications required that are not specific to ER or spill response. These would include driver's licenses, radio operator's licenses, and familiarity with basic electronic equipment such as phones, fax machines, cell phones and laptop computers.

Training Curriculum

Command Staff

During a spill response operation, the command staff will vary depending on the size and complexity of the spill.

On a smaller spill, senior ER staff members may be appointed to command positions with few subordinate or supporting positions.

On larger scale spills, the OSC may be the Director of Maritime Services, or Assistant Commissioner Canadian Coast Guard, with multiple support positions from ER staff, CG fleet, base personnel and contractors.

To adequately prepare personnel for the management functions of spill response, the following curriculum has been identified:

On Scene Command Course (OSC)

This course trains participants in all aspects of spill response including planning, implementation, and supervision. Other topics include legislation, legal issues, financial responsibilities, and media relations. Prerequisites include BOSRC, MSROC, PPO designation, media relations and management training.

Response Management System Course (RMS)

The current RMS curriculum is an introductory two-day course on the system and its user's guide. It is anticipated that future development will include multiple levels of training which will include organizational structure and

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responsibilities, as well as in-depth requirements of each position within this emergency management structure.

Federal Monitoring Course (FMO) - Proposed

Subject to national development, this course will augment the On Scene Command Course to provide those persons designated as Canadian Coast Guard Federal Monitoring Officers the necessary skills and knowledge to perform FMO duties.

Operations Section

During a spill response operation, the operations section of the RMS may be populated by regional ER staff, CCG fleet officers and crew, CCG/DFO base personnel or contractors. The resident knowledge of this group will vary, and a comprehensive ER training program exists to train responders in spill response operations. Training for members of the CCG Regional Response Team (RRT) personnel is offered in the following three areas:

- (a) Safety Training
- (b) Operational Training
- (c) Specialty Training

(a) Safety Training

Health and Safety training is required to ensure compliance with federal and provincial legislation with the ultimate goal of ensuring the health and safety of response personnel. Additional video and printed reference material is available through the Canadian Coast Guard ER Training Officer.

Site Safety Course

The Site Safety Course is designed for response personnel prior to commencing work on a response site. Topics include employer and employee responsibilities, classification and hazards of petroleum products, and the safety practices and considerations associated with both water-based and shore-based operations. Site safety training is mandatory for Regional Response Team members and all volunteers or short time workers who may be employed during a response.

Workplace Hazardous Materials Information System (WHMIS)

This 3-hour course is provided to Canadian Coast Guard employees to ensure compliance with appropriate worker safety legislation. It was developed to ensure workers have the necessary information to work safely with hazardous materials in their workplace.

First Aid/CPR

This 16 hour course provides the participants with the skills and knowledge to successfully obtain the St. John Ambulance Standard First Aid Certificate. The primary focus of this 14-hour course is to provide adequate knowledge

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and level of skill to persons in positions of responsibility to provide for persons suffering from respiratory and circulatory arrest. Preventative measures are discussed.

Small Non-Pleasure Vessel Basic Safety Course - MED A3

The 8-hour MED A3 course is *required by regulation* for crewmembers of small non-pleasure vessels of not more than 150 GT operating not more than 20 miles offshore. Topics include marine hazards and emergencies, marine firefighting, lifesaving appliances and abandonment and survival and rescue skills.

Transportation of Dangerous Goods (TDG)

This 6-hour course provides personnel with the responsibility for the transportation of dangerous goods to be aware of and comply with safety measures and appropriate legislation concerning TDG.

(b) Operational Training

There are various levels of oil spill response courses designed for response team members, ships crews and other responders who may be expected to assist with marine oil spill response. Operational training related to the assessment and response to petroleum spills is delivered by ER while training for response to hazardous and noxious materials spills is obtained outside of the Branch.

First Responder Oil Spill Training (FROST)

This 1 day course is designed specifically for CCG personnel in Central & Arctic Region who are designated custodians of First Response Units (FRUs), and may be tasked with deployment of the pollution countermeasures equipment. It has also been adapted for use in communities north of 60° where Arctic Community packs function as first response units.

It teaches First Responders to:

- assess an oil spill according to its extent, possible source and likely behavior
- deploy boom for containment and protection purposes and in support of response activities
- work safely at the spill site

Basic Oil Spill Response Course (BOSRC)

This 20 hour course instructs First Responders how to:

- assess an oil spill according to its extent, possible source and likely behavior
- deploy boom for containment and protection purposes and in support of response activities
- operate oil recovery equipment
- undertake basic shoreline cleanup operations
- work safely at the spill site

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Marine Spill Response Operations Course (MSROC)

This 40-hour course will enable trained and experienced personnel to coordinate and supervise the response operations of a marine oil spill. It is intended to train individuals to be On Scene Commander (OSC) for small (tier 1) spills, or operations section chief on larger spills. Topics include legislative framework, safety, equipment suites and strategies, media relations, RMS, shoreline assessment and cleanup techniques, and disposal. Prerequisites include BOSRC, a Radio Operator License and current or future deployment to a spill response team.

Environmental Response Duty Officer (ERDO) Training

This 15 hour course is a prerequisite for duty officers for the ER branch and the regional operations centre. It introduces the participant to CCG mandate, lead agency responsibilities and introductory spill assessment techniques. It also integrates delivery of training on the Marine Pollution Incident Reporting System (MPIRS), the database used to capture spill report and response information.

Pollution Response Officer (PRO) Training

This three day course is currently provided by the Environmental Response Branch of the Canadian Coast Guard and is required training for all Environmental Response personnel. Participants who successfully complete this course earn the designation of Pollution Response Officer under Part 8 of the Canada Shipping Act (2001). This course examines the powers of a PRO, specific procedures related to vessel directions and detentions and the legal framework and implications surrounding the execution of those powers. Course participants also learn sampling procedures and gain an understanding of the role of other government agencies involved in a marine pollution incident.

Pollution Prevention Officer (PPO) Training

This 40 hour course is currently provided by the Marine Safety Branch of Transport Canada. It is a prerequisite for any officer of the Canadian Coast Guard to be delegated Pollution Prevention Officer (PPO) powers under the *Arctic Waters Pollution Prevention Act*. Participants learn the existing pollution prevention and response regime, the powers of a PPO and the specific tasks of prevention, control, investigation and prosecution.

Small Vessel Operator Proficiency

This 21-hour course meets the training needs of the small vessel master. This course is required by regulation (for vessels less than 5GT on sheltered and near coastal voyages) and teaches participants to effectively manage safety of those on board, protect the vessel from damage and protect the marine environment.

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Basic Barge Operator Training

This course was developed and is delivered by regional ER staff. Through both classroom and practical sessions, the course introduces participants to safe boating practices and procedures, rules of the road, collision regulations, load plans for pollution response vessels, safe deployment of oil spill response equipment and basic trailer towing and maneuvering.

Single Side Sweep System

The single side sweep is an equipment suite designed to allow one vessel to perform oil containment and recovery, and allow for temporary storage. This two day training session is provided to some ER staff and crews of Canadian Coast Guard vessels that can support this equipment. This training typically is conducted with crews who have previously completed BOSRC.

HAZMAT Awareness

This 6-hour course is intended for First Responders on the scene of a hazardous materials incident and shows how to assess the incident. Topics include; First Responder's role and responsibilities, scene safety, recognizing and identifying hazardous materials, incident management, and sources of assistance.

HAZMAT Technicians Level

This 40-hour course is designed for responders to releases or potential releases of hazardous substances. The focus is on recognizing and evaluating a hazardous materials incident, organizing the response team, protecting response personnel, identifying and using response resources, implementing basic control measures, decision-making, and protecting the public and environment. Emphasis is on hands-on use of equipment practically applying lecture information through exercises. Participants will wear fully encapsulating suits.

Prerequisite: Hazmat Awareness.

(c) Specialty Training

Specialty training includes training that only select members of the Regional Response Team (RRT) will have to apply.

Shoreline Clean up and Assessment (SCAT)

This 24-hour course covers how oil impacts the shoreline. Specific topics include shoreline types and effects of oil, wind, waves and ice on shorelines. Shoreline protection and cleanup methods are described in depth. Field exercises are conducted as part of the training.

Media Training

This 16-hour course is designed to provide participants with the skills and knowledge to communicate effectively and proficiently with various forms of media. Topics include; developing and disseminating incident information to

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news media, incident personnel, other appropriate agencies and organizations.

Communications System Training

This 8 hours hands-on course provides participants with the knowledge and skills to provide communications in support of a spill response. Topics include; mobile telephone, fax, and intercom set up, preparing communication plans, and internal/external spill response communications.

Wildlife Rehabilitation

The capture and treatment of oiled wildlife is typically assigned to the trained experts at Canadian Wildlife Service (CWS). This CWS training is periodically made available to outside agencies, and some ER staff may participate to facilitate a better understanding of each others' role at the time of a spill.

Financial Management

This training is provided by the Public Service Commission (PSC) and teaches government spending and cost accounting principles. It is imperative that any response team member who may have to purchase assets or manage contracts be familiar with these practices and procedures.

Planning Section

During a spill response operation, the planning section of the RMS will likely be populated with ER staff whose substantive positions are as Planning Officers within the branch. Therefore, the planning skills and training required to effectively and efficiently perform these tasks should be resident within our branch staff.

Should additional personnel be required to fulfill these roles, they would require training in RMS, as well as Site Safety (as required by OSH regulation). The required planning skills and spill response knowledge may be acquired through various training or experience factors, and would be assessed prior to assignment on the response team. In addition to planning skills, preferred training might include SCAT, FROST and/or BOSRC, and MSROC.

Logistics Section

During a spill response operation, the logistics section of the RMS will likely be populated with ER staff whose substantive position involves the tracking of spill response equipment inventory and human resources within the region. Therefore, the skills and training required to efficiently and effectively perform the logistics function should be resident within our regional ER staff.

Should additional personnel be required to fulfill these roles, they would require training in RMS, as well as Site Safety (as required by OSH regulation). The required logistical skills may be acquired through various training or experience factors (knowledge of IRCMS and TMA, BOSRC training) and would be assessed prior to assignment on the response team.

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Finance Section

During a spill response operation, the finance section of the RMS will likely be populated by regional finance staff whose substantive positions involve government expenditure and cost accounting knowledge and application. Therefore, the skills and knowledge required to effectively and efficiently perform the finance function should be resident within regional Canadian Coast Guard staff. These personnel will require RMS and Site Safety training prior to deployment on a spill response team.

Training Records

Records for personnel trained in spill response and/or emergency management are maintained by the Region.

4.5 Exercise Program

Introduction

Under the guidelines of the National Exercise Program (NEP), the Environmental Response Branch will implement a Regional Exercise Program. This program will be conducted over a three-year cycle. Coordination of the program will be the responsibility of the Regional Exercise Officer (RXO) of the Environmental Response Branch. Exercises will be designed and conducted in coordination with departmental staff, CCG base staff and CCG vessels on a regular basis. The purpose of the Regional Exercise Program is to validate environmental response training and regional emergency preparedness standards, policies and procedures.

Canadian Coast Guard will, through regional and area-specific exercising, ensure high priority initiatives such as exercising complex equipment (i.e. Lori Brush skimmers, sweep systems and command/communications facilities) are undertaken and will use industry and private sources of personnel where possible and/or appropriate.

Exercise Planning Matrix

The matrix below represents a typical three year exercising cycle followed by Canadian Coast Guard. The program cycle is designed to test all 17-response functions as outlined under NEP as well as including the different types of exercises. It includes internal, external (with other government departments as well as private sector organizations) and international exercises.

Table 4.1 - Central & Arctic Region Exercise Matrix

EXERCISE TYPE	YEAR1	YEAR2	YEAR3
Notification	Quarterly	Quarterly	Quarterly
Management	2	2	2
Operational drills	3	3	3
Combined Functional	1	1	1
Full Scale	0	1	0

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Notification exercises will test the regional call-out system. Some of these exercises will be internal to the branch, some will be a full regional call-out to all CCG and DFO staff as well as to external resources (eg: freight contractors to check their availability to move Marine Emergency Response Trailers (MERTs) or First Response Units (FRUs).

Management exercises will focus on the development of the spill through the Response Management System (RMS).

Operational Drills will focus on equipment deployments in packages (i.e. a First Response Unit, NOFI V-Sweep).

Combined Functional exercises will be an equipment deployment (operational drill) with the goal of implementing a tactic designed in one of the Region's Area Plan Annexes.

A Full Scale exercise will incorporate a management-type exercise with the concurrent deployment of a spill countermeasure system (system = pollution containment, recovery, primary and secondary storage devices)

Exercising Partnership

Canadian Coast Guard will endeavor to participate, by request and on a situation by situation basis, in exercises lead by Oil Handling Facilities (OHFs), certified Response Organizations (ROs) and other government agencies throughout the Region.

Central and Arctic Region is a part of the Canadian Coast Guard response community and as such is also part of the International Response Community. Canadian Coast Guard's regional boundaries are in such close proximity with our United States neighboring response communities that joint exercising is a high priority. Specifically this region conducts joint exercises in the geographic areas of the Great Lakes and the Beaufort Sea with the United States Coast Guard's (USCG) (9th) ninth (Great Lakes) and (17th) seventeenth (Alaska) districts, respectively.

Exercise Evaluation and Shared Learnings

An important part of the National Exercise Program is the evaluation and use of subsequent findings. Four types of information can be learned from an exercise, all of which lead to improvement of overall response capability.

- 1) Contingency planning
- 2) Response techniques
- 3) Response training
- 4) Exercise program development

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The primary sources of the information and learning will be the formal exercise evaluation report that is produced for every exercise by the evaluation team. This formal exercise report will follow the format laid out in Section 11 of the *Canadian Coast Guard National Exercise Program Planning and Evaluation Guide*.

4.6 Inventory Management, Maintenance and Infrastructure

Inventory Response Control Management System

To ensure that a nationally consistent and effective state of preparedness is maintained, an Inventory Response Control & Management System (IRCMS) has been implemented which utilizes The Management Authority database as its main tool. CCG HQ administers this system in concert with regional IRCMS Officers. In this region the program is administered by the Logistics and Statistics Officer in the Operations Section.

This system has been developed to:

- Maintain a real time record of the location and quantity of resources;
- Maintain a proper state of readiness through a pro-active approach using work orders and preventative maintenance;
- Assist in keeping response managers informed about Environmental Response's state of preparedness;
- Assist in the tracking of National Response Team personnel or equipment assigned to National or International incidents

Pre-positioned Equipment Caches and Depots

Central and Arctic Region covers an extremely large geographical and culturally diverse portion of Canada. There are, in essence, two zones of operation which are entrenched in the *Canada Shipping Act*. These are:

- the Arctic Zone, or all areas of Canadian jurisdiction north of 60° North Latitude; and
- the Central Zone, dominated in a marine transportation sense by the Great Lakes, but which include the southern portions of Hudson and James Bay, along with the major waterways and watersheds of Lake Winnipeg, Winnipegosis, Lake of the Woods, and Lake Athabasca.

The Environmental Response (ER) Branch has pre-positioned equipment to facilitate and maintain an effective response operation. Response strategies in each of the two zones (Central or Arctic) are based upon identification of local and regional response. This means that the equipment generally required for such a spill size is contained within the Region. This capacity is supplemented by nationally available resources, which would be "cascaded" from/to other regions when and if required. Preparedness capacities in other regions are identified in their respective Regional Response Plans.

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Arctic Zone

Arctic Community Packs (ACPs) are placed in northern communities for rapid (local) initial response. Canadian Coast Guard provides initial response training to members of the communities so that they may effectively deploy equipment in the ACPs in the event of a spill. Access (keys) for the ACPs have been given to an official in each community in most cases. The Senior Response Officer (ER-Hay River) maintains the current key holder listing.

The inventory for each Canadian Coast Guard Arctic Community Pack location is listed in Table 4-2. The program has received funding under the Health of the Oceans Initiative to proceed with placing Arctic Community Packs in additional sites. The equipment profiles at the existing Arctic Community Pack sites will be changed to reflect characteristics of the community. The inventory at all communities will be "site specific" and will coincide with response strategies designed by the ER planning group. The locations for the proposed additional Arctic Community Packs are: Baker Lake, Broughton Island (Qikiqtarjuaq), Chesterfield Inlet, Churchill, Hall Beach, Kimmirut, Iqaluit, Pangnirtung, Tuktoyaktuk and Yellowknife.

The main base of operations with Environmental Response dedicated personnel is located in Hay River, Northwest Territories. This base is home to a Rapid Air Transportable (RAT) cache of equipment known as the "RAT150". The RAT150T used in conjunction with the "Delta" (Δ) 1000T meets planning standards for a 1000 tonne (T) response. The selection of equipment for the RAT150 must meet pumping rates / capacities of 1000T thresholds and be complimentary² to the equipment held in the Δ 1000T depots.

The response package, warehoused in Hay River, will be maintained in 100% readiness during the shipping season. The equipment will be broken down and be containerized such that it will fit through the smallest cargo door of any of the selected aircraft. Equipment will be TDG compliant, be palletized as appropriate, and labelled for ease of selection and loading.

² The logistics of moving large bulky items (ISO containers) in the arctic necessitates a LCM, deck barge, cargo vessel, icebreakers or any combination thereof. Consequently it is estimated that the 1000T design capacity would be available staged on-scene in 5 - 7 days. Following the doctrine *something sooner rather than everything later* having 150T of the 1000T equipment suite air-lifted within 48 hours is preferable to having nothing until the entire 1000T capacity arrives a week later.

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Table 4-2 - Canadian Coast Guard Arctic Community Pack Locations

LOCATION	EQUIPMENT SUMMARY			
	Boom (24")	Skimmers	Boats	Storage
Arctic Bay (Ikpiarjuk)	3,650'	TDS-118	16' Aluminum	Open top Tank
Cambridge Bay (Ikaluktutiak)	1,350'	TDS-118	16' Aluminum	Open top Tank
Cape Dorset (Kinngait)	1500'	TDS-118	16' Aluminum	Open top Tank
Clyde River (Kangiqtugaapik)	4,500'	TDS-118	16' Aluminum	Open top Tank
Coppermine (Kugluktuk)	1,350'	TDS-118	16' Aluminum	Open top Tank
Coral Harbour (Salliq)	1,500'	TDS-118	16' Aluminum	Open top Tank
Gjoa Haven (Uqsuqtuuq)	1,350'	TDS-118	16' Aluminum	Open top Tank
Holman (Ulukhaktok)	1,500'	TDS-118	16' Aluminum	Open top Tank
Rankin Inlet (Kangiqtuniq)	2,200'	TDS-118	16' Aluminum	Open top Tank
Resolute (Qausuittuq)	1,350'	TDS-118	16' Aluminum	Open top Tank
Hay River FRU +	1,000'	-	37' Seatruck 42' Cutter	-

In combination with the RAT150T, equipment found in the Δ1000T depots will be at a 1000T capacity. Hence, the delta or “Δ” is the difference between the RAT150T and a full 1000T. The Δ1000T depots will have containerized heavier equipment (not suitable for air transport to smaller communities) augmenting the RAT150T to a 1000T capacity, ready to be loaded on deck barge, Canadian Coast Guard icebreaker or freighter. While response personnel cascade in to the spill site pre-identified local, CCG base and available ER personnel will mobilize to the centres and load the equipment on suitable marine transport.

Three Δ1000T depots are strategically located in the northern communities of Tuktoyaktuk (NorthWest Territories), Iqaluit (Nunavut), and in Churchill (Manitoba). For the purposes of response in Central & Arctic Region, Churchill is included in the Arctic Zone of operations despite it being south of 60° North Latitude due to the similarities in response characteristics that it shares with locations north of 60° North Latitude.

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Table 4-3 - Canadian Coast Guard Arctic Design Inventory³

PCM equipment	Description	Hay River RAT150T	Tuk Δ1000T	Iqaluit Δ1000T	Churchill Δ1000T
Skimmers	Light to medium product /disk type	3	1	1	1
	Heavy product /weir type	0	2	2	2
Boom	24" river type	0	10000'	10000'	10000'
	24" lay-flat type	5000'	0	0	0
Land storage	4T Open top tank	0	0	0	0
	8T Open top tank	7	3	3	3
	45T shore bladders	3	0	0	0
O/w storage	Total (in 5-25T Seaslugs)	50	250T	250T	250T
Pumps	2" low pres / volume style	4	1	1	1
	4" trash	5	1	1	1
	3" positive displacement	6	1	1	1
Vessels	"Car-topper" + 9.9hp	0	0	0	0
	Seatruck	0	2	2	2
	RAT RHI	2	0	0	0
Generators	5KW gas	7	2	2	2
Pressure washer	Larger hot water type	1	1	1	1
	Small cold water type	3	1	1	1
Incinerator	Sorbent	2	0	0	0
	Liquid waste	2	0	0	0

Central Zone

The Central zone is dominated by the Great Lakes and has well defined road transportation infrastructure.

Local / first response inventories have been established at all regional Canadian Coast Guard shore-side facilities that have fleet assets or a significant number of program vessels and that have operational personnel to deploy the equipment. Standardized inventory consists of a 20-24' trailer with a 1000' (nominal) of 24" boom and related accessories.

The 2500T Rapid Road Transportable cache is centred around the St. Mary's River and from time to time in major CCG facilities in Ontario. The response package warehoused in a series of 45' transport trailers will be maintained in 100% readiness during the shipping season. The primary purpose of the RRT 2500T system is significant containment of resources; shoreline, sheltered, and off-shore sweep and recovery ability; and staging and storage transfer area equipment.

³ Inventories in Tuktoyaktuk and Iqaluit are at 95% completion. The Churchill Depot is at about 50% (pending the construction of a new and adequate facility) with the bulk of the inventory in storage at the Thundar Bay Coast Guard base. The RAT 150 needs an evaluation of the command and control component as well as storage for the second Saccke burner.

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Table 4-4 Canadian Coast Guard RRT 2500T Design Inventory

PCM equipment	Description	BOOMERT #1-5 (each)	SKIMMERT #1 and #2 ⁴	Softside
Skimmers	Light to medium product/ disk type	-	3	
	Heavy product/ weir type	-	1	1
Boom	24" river type	4000'		
Sweep	36" Nofi V-sweep	-		1
Land storage	4T Open top tank	-	7	1
O/w storage	25T Towable bladders	-	4	4
Pumps	3" positive displacement	-	4	1
Generators	5KW gas	-	2	

Table 4-5 Canadian Coast Guard locations for First Response Units (FRUs)

Location	Relevant Area Plan(s)	Primary custodian	Secondary custodian
Amherstburg	Lake Erie/St. Clair-Detroit	SAR crew	ITS field services
Cobourg	Lake Ontario	SAR crew	
Gimli	Lake Winnipeg	SAR crew	
Goderich	Lake Huron	SAR crew	
Kenora	Lake of the Woods	ITS field services	
Kingston	Lake Ontario	SAR crew	
Meaford	Lake Huron	SAR crew	
Parry Sound	Lake Huron	ER personnel	ITS field services
Port Dover	Lake Erie	SAR crew	
Port Weller	Lake Ontario	SAR crew	
Prescott	St. Lawrence River	ER personnel	ITS field services
Selkirk	Lake Winnipeg	ITS field services	
Thunder Bay	Lake Superior	SAR crew	ITS field services
Tobermory	Lake Huron	SAR crew	
Hay River	Mackenzie River & Delta	ER personnel	ITS field services

⁴ An additional SkimMERT is being added this year to accommodate additional hoses. The exact configuration of each SKIMMERT is not known yet so the inventories will remain listed together for this year.

Section 5 - RESPONSE OPERATIONS

5.1 Pattern of Response

Based upon the principles outlined in the *National Response Plan*, (Sections 1.3, 1.5 & 4.4), Central and Arctic Region assesses, notifies relevant parties, and initiates the tasking/deployment of necessary resources. This is based upon the determination of CCG's role as Lead or Resource Agency and the appropriate CCG Posture. The Duty Officer (DO) is tasked with this initial assessment, which is then verified by the Superintendent, Environmental Response. The appropriate response is activated by the Superintendent who in turn assigns an On-scene Commander (OSC) or Federal Monitoring Officer (FMO) and notifies Canadian Coast Guard (CCG) Management. Upon termination of the incident cost recovery actions are undertaken. To illustrate the generic process see Figure 5-1-Typical Sequence of Events and Table 5-1-Typical Functions Descriptions has been provided.

CCG Expectations of Ships for Response

In most instances when a spill occurs the initial report will trigger the mobilization of local response organizations. It is not normally practical for ship personnel to be directly involved in the clean up activities.

Small Spills

Ships are expected to take whatever actions listed in their Shipboard Oil Pollution Emergency Plan (SOPEP) that are reasonable and necessary to prevent the oil from escaping over the side and having done so, to take action to clean-up the oil contained on deck. Spilled oil should not be washed overboard, nor should degreasers or dispersants be used on spilled oil in the water. Once the oil is in the water, the ship's ability to respond in a practical manner is greatly reduced. It is Canadian Coast Guard's expectation that a response organization or other competent contractor be called upon to provide operational response capability at the discretion of the Polluter.

Where there is no availability of local response contractors or where there is a delay in response activation, the Master of the vessel should consider the use of available materials to contain and clean up the spilled oil by, for example, using ship-stocked absorbent material or utilizing mooring ropes or air filled hoses as makeshift booms.

Large Spills

The ship is restricted as to what action it can take to respond to a major spill. In the case of a casualty the safety of the ship and crew take priority. Therefore the ship's actions will be limited to reporting the incident details

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to the appropriate authorities and to ensure that a response is initiated. In large spills it is Canadian Coast Guard's expectation that the Polluter appoint an On-Scene Commander (OSC) which may be a representative of the company that owns the ship or the ship's insurer.

Canadian Coast Guard needs to be kept informed as to the escalating response costs accrued by the Polluter during a response in order to prepare for the possibility that the Polluter will cease their response activities once their Limit of Liability is reached.

CCG expectations of Oil Handling Facilities (OHF) for Response

In most instances when a spill occurs, the initial report will trigger the mobilization of the facility response team. It is normal, in most cases, for the oil handling facility personnel to be the initial responders when a spill occurs.

Small Spills

For the purpose of this plan, a small spill will be defined based on the maximum oil transfer rate of the oil handling facility (i.e. what Level it is assigned under the *Canada Shipping Act, 2001*), which directly links to the minimum spill size to which it must be prepared to respond to within one hour. Oil handling facilities are required to have the resources on site to contain a spill of a minimum size within one hour and have the resources required to recover, or where the oil cannot be recovered the resources to control a spill of a minimum spill size within six hours. Response organizations may be called upon to provide additional operational response capability at the discretion of the Polluter.

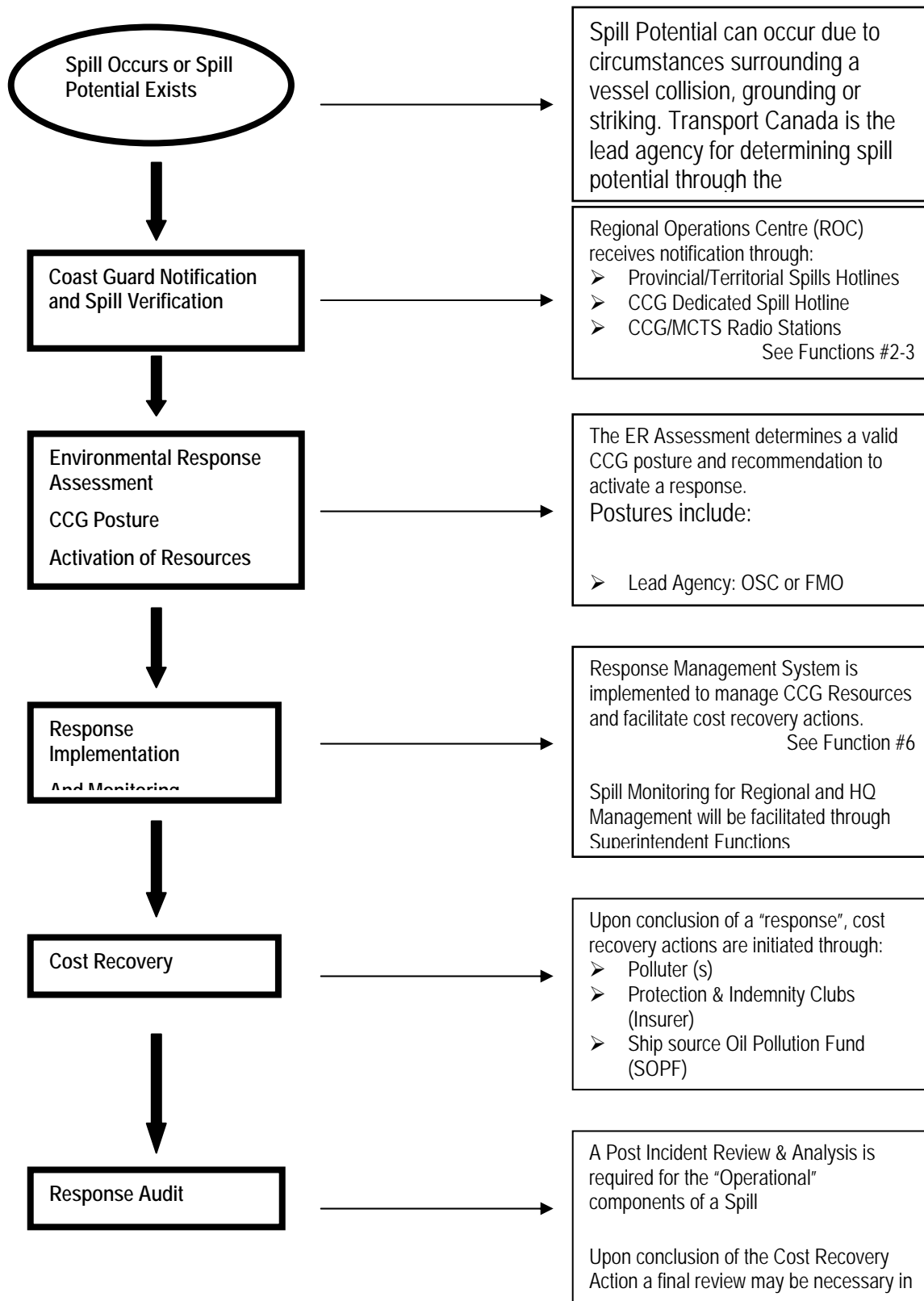
Large Spills

For the purposes of this plan, any spill above the facility's minimum spill size will be characterized as a large spill. Oil handling facility personnel are still expected to deploy their on-site equipment. Response organizations will likely be called upon to provide additional operational response capability at the discretion of the Polluter.

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Figure 5-1 - Pattern of Response – Typical Sequence of Events



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Table 5-1 - Pattern of Response – Function Descriptions

Function		Description
1	Responsible Party/Third Party Functions (<i>Spill occurs or sufficient potential risk exists</i>)	<ul style="list-style-type: none"> • Spill is sighted/reported. Spill reports originate from source (to regulatory body) or by third party (to various emergency or dedicated pollution hotlines) • Transport Canada is responsible for determining potential risk
2	Spills Hotline Functions (<i>Canadian Coast Guard Notification</i>)	<ul style="list-style-type: none"> • Assessment for dissemination • Dissemination (fan out according to applicable procedures) to relevant parties, calls from other spill hotlines are received by CCG-ROC.
3	CCG-ROC Duty Officer Functions (<i>Canadian Coast Guard Spill Verification</i>)	<ul style="list-style-type: none"> • Spill Assessment-pollution verification <ul style="list-style-type: none"> ➢ Mandate Confirmation ➢ Pollution Verification ➢ Source Credibility • Notification to ERDO • Dissemination • Initiation of MPIRS
4	ER Duty Officer Functions (<i>Environmental Response Assessment – CCG Posture</i>)	<ul style="list-style-type: none"> • Spill Assessment-response analysis • Source Control/Mitigation • Safety Issues • Tactical & Logistical Issues • Recommendation to Superintendent of likely Response Posture • Documentation – MPIRS
5	Superintendent Functions (<i>Environmental Response Assessment – Activation of CCG Resources</i>)	<ul style="list-style-type: none"> • Response Posture Evaluation <ul style="list-style-type: none"> ➢ Potential Risk to CCG Personnel and Equipment ➢ Propriety of request ➢ International Implications • Identification of OSC/FMO • Obtain an Order-In-Council (Arctic) • Obtain a Finance Code & Regional File Number • Notification of Senior Management and ongoing monitoring • MPIRS documentation • Obtain AC CCG sign off on MPIRS situation report
6	OSC/FMO Functions (<i>Response Implementation</i>)	<ul style="list-style-type: none"> • Management or monitoring of response using the Response Management System (RMS). Escalation or de-escalation in accordance with needs of the incident. • Consolidation of all documentation upon conclusion of the response for Cost Recovery purposes. • Coordinate final debrief to facilitate future improvements to the systems and processes in place.
7	Chief Financial Officer Function (<i>Cost Recovery</i>)	<ul style="list-style-type: none"> • Utilizing CCG Ship-source and Marine Pollution Response Costing Principles and Documentation Standards (DFO 6332) compile pollution response costs recovery claim.

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8.	Internal Review Team Functions <i>(Audit)</i>	<ul style="list-style-type: none">Utilizing the National Exercise Program Planning and Evaluation Guide, a Team is selected to complete the Post-Incident Review of an incident.Improvements & corrective actions are to be documented
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5.2 Spill Potential or Pollution Risk Assessment

Given an actual spill (i.e. pollutant in the water), the activities specified in this plan are rather obvious. However, in the event of vessel grounding, striking or collision that does not immediately result in a release, the responsibility for determining the risk of pollution rests with a Pollution Prevention Officer (PPO) within the Marine Safety (MS) branch of Transport Canada (TC). Should TC-MS be unable to make that determination, the Canadian Coast Guard (CCG), Environmental Response Duty Officer (ERDO) will complete that requirement. In some cases this may involve engaging a marine architect as no accredited expertise for vessel stability assessment resides within the ER section.

For all other areas where Canadian Coast Guard is the Lead Agency, this activity shall be considered the responsibility of the Canadian Coast Guard, Environmental Response Duty Officer.

5.3 Notification

To facilitate the notification of Canadian Coast Guard, and in addition to the existing Marine Communications system, a series of call-out or “Spill Hotline” agreements with the Province of Ontario, Nunavut and Northwest Territories and other Federal Departments within the Region have been implemented.

In addition, Central and Arctic Region, provides a 24 hr public access spills hotline:

**24 hour toll free - Spills Hotline:
1-800-265-0237**

Notification may occur through various mechanisms, depending upon the manner in which the spill (incident) occurs.

5.4 Verification

In all cases, spill information is initially processed and verified through the Regional Operations Centre (ROC) located in Sarnia, Ontario (See Section 3.3 – Organization). The ROC Officer on duty:

1. Determines whether the pollution is within Canadian Coast Guard’s mandate as Lead Agency or as a potential Resource Agency
2. Establishes the credibility of the source

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3. Identifies the following:
 - Incident name (nature of incident)
 - Time of call (local / UTC)
 - Time of spill (local/UTC) (*if available*)
 - Reported by / call back particulars
 - Source determination
 - Incident background and description of clean-up activities (if any)
 - On-scene environmental/atmospheric conditions
 - Pollutant type and quantity
 - Verifying party contact information (as applicable)
4. Initiates an MPIRS entry for the following cases:
 - Originally pursuing verification as Canadian Coast Guard mandate but additional information about source changes lead to another agency
 - Canadian Coast Guard mandate and verified no pollution
 - Canadian Coast Guard mandate and verified pollution
 - Likely to impact on / impacting on foreign waters
 - Significant impact on region, though not falling under Canadian Coast Guard mandate.
 - Request for Canadian Coast Guard as a resource agency.
5. Enters information into MPIRS (indicated in #3 above) as well as name of paged ERDO.

This information is then relayed to the Environmental Response Duty Officer to determine Canadian Coast Guard posture. It should be noted that all spill incidents, irrespective of CCG's mandate, may require Canadian Coast Guard resources if requested (see Resource Agency Role in Section 1.5 of the *National Response Plan*).

By agreement, spill verification will be completed by the Regional Operations Centre (ROC) Duty Officer. The verification will be complete when the ER Duty Officer is advised where Canadian Coast Guard is Lead Agency. (see Figure 5.2 Pollution Verification Process and Figure 5.3 Response Analysis Process)

5.5 Spill Assessment – Environmental Response Duty Officer

To facilitate the requirement for efficient and rapid notification and assessment of incidents, Central and Arctic Region, in accordance with the *National Response Plan*, Section 4.4, has instituted a 24-hr year round monitoring regime integrated with the Regional Operations Centre (ROC). The following sections identify the context in which this activity is carried out.

Coordination

The coordination of the ER Duty Officer is the responsibility of the ER Regional Emergency Operations Officer (REOO). These duties include assigning shifts in an equitable manner, keeping records of the duty officer schedules, maintaining equipment required to perform ER Duty Officer functions, reviewing individual ER Duty Officer performance, reviewing ER Duty Officer procedures, and liaising with the ROC and National HQ.

Performance

The ER Duty Officer function shall be performed by the following positions provided sufficient experience, appropriate training, and at the discretion of the Superintendent ER:

- ✓ Senior Officers
- ✓ Those in capacity to act for Senior Officer.

Review

The ER Duty Officer procedures shall be reviewed in reaction to:

- Changes at the Regional Operations Centre (ROC) affecting the ER Duty Officer function
- Changes in Canadian Coast Guard (CCG) policy on the response to ship source pollution
- In consideration of accepted recommendations stemming from exercises and operational responses.

The individual officer performance shall be reviewed in context of their execution of a spill assessment.

Responsibilities

At the beginning of the ER Duty Officer's shift the following are required:

- Functioning communication equipment (pager, cell phone/Blackberry);
- The necessary analytical tools (e.g. spill assessment forms, Greenwood's Guide to Great Lakes Shipping, Area Plans, Oil Spill Response Field Guide, OSH reference tools, and the CANUTEC Emergency Response Guide book.)

During the ER Duty Officers shift the following are required to be complete:

- MPIRS cases for any spill reports that required ER Duty Officer analysis by noon of the next business day;
- Extra Duty Reports;
- Notification of the next ER Duty Officer and the ER Regional Emergency Operations Officer of any on-going cases.

Availability

The availability of the ER Duty Officer is 24 hours/7 days a week. Pages must be responded to within 10 minutes of notification. Should the ER Duty Officer (DO) be unable to fulfill their duties at any time during the shift, they are required to

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notify the ER Regional Emergency Operations Officer (REOO) immediately who will notify the ROC of any changes immediately. The following activities conflict with the performance of the ER Duty Officer function:

- travel out of country / region / pager range;
- inability to respond immediately due to performance of other job functions (instructing a course, running an exercise, delivering a presentation, involved in a maintenance run that would be too difficult to reschedule, chairing a meeting, or participating in any activity that requires attendance or would be inappropriate to leave);
- inability to respond immediately due to personal reasons (vacation, sickness, etc.).

Should an individual become unavailable for a significant portion of the shift for reasons noted above, that shift may be assigned to another officer at the discretion of the ER Regional Emergency Operations Officer.

Function

The primary function of the ER Duty Officer is to complete an initial incident assessment and analysis, making a recommendation to the Superintendent of ER as to the appropriate course of action. **

The initial assessment will be complete for the following cases:

- Canadian Coast Guard mandate and verified pollution
- Likely to impact on / impacting on foreign waters
- Significant impact on region, though not falling under Canadian Coast Guard mandate.
- Request for Canadian Coast Guard as a resource agency.

The analysis function is complete when the Superintendent ER is informed and advised of the recommended course of action that will consider the following (see flow chart):

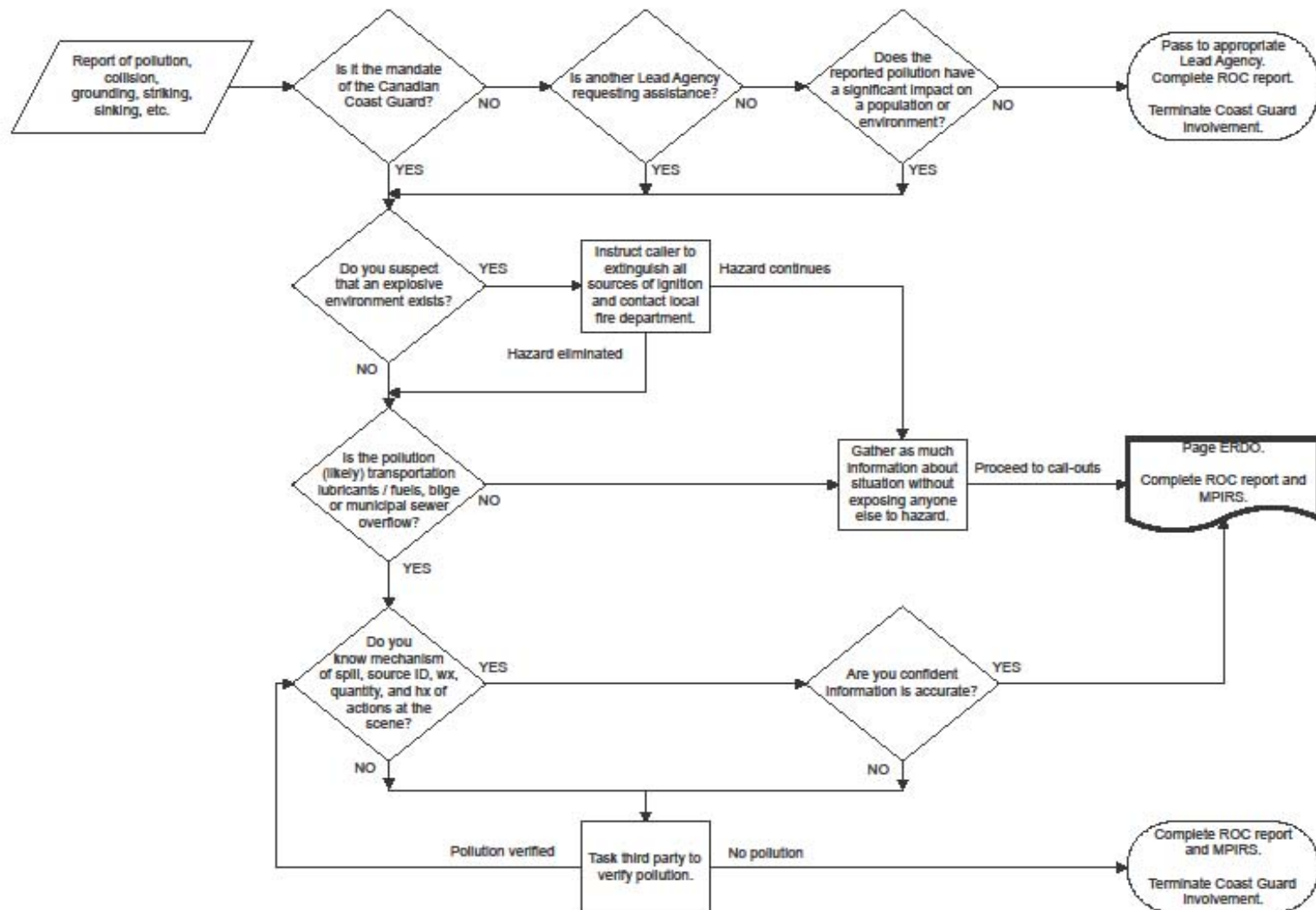
- polluter's actions and intentions (if applicable);
- safety concerns, tactical, logistical, and environmental feasibility of any response.

** The ER Duty Officer does not need to notify the Superintendent of any incidents that require "no activation" of CCG resources (assets/personnel) in monitoring/clean-up activity.

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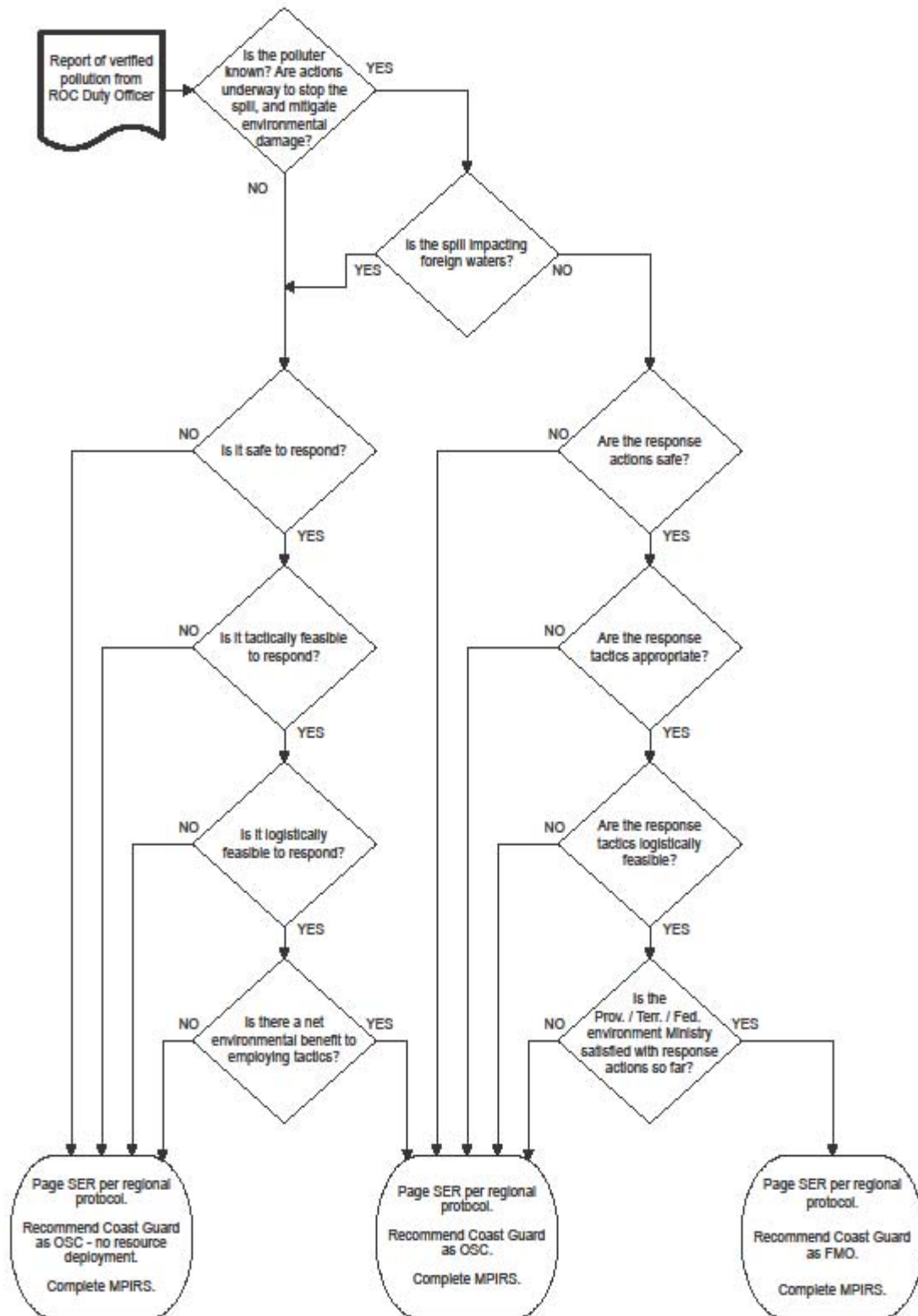
Spill assessment: pollution verification process



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Spill assessment: response analysis process



5.6 Activation of Canadian Coast Guard Response Resources

In the event of small (0-150 T) to medium size (150-1000 T) spill incidents, the Superintendent, Environmental Response, acting upon the assessment provided by the Duty Officer, initiates/activates the appropriate response. This entails, but is not limited to, the following activities:

- Identification of overall health and safety risks to response personnel.
- Establishing the propriety of the recommended response posture. This includes the verification of international issues in border areas.
- Verification of Canadian Coast Guard capability to respond, impact on normal regional operations and, if necessary, the potential requirement for the notification and activation of the National Response Team.
- Assignment of the designated On-Scene Commander (OSC) or Federal Monitoring Officer (FMO). SROs are typically assigned as FMO/OSC for incidents occurring within their geographic area.
- Obtaining the necessary Order-in-Council, for spills in Arctic Waters
- Obtaining the financial project code, and forwarding it to the OSC/FMO.
- Signing a contract with the Response Organization (RO) in accordance with PWGSC contracting rules.
- Creation and dissemination of initial situation report to Regional and National management in accordance with the *Safety and Environmental Response Systems (SERS) – Incident Notification Guidelines*.
- Completion of MPIRS to document above activities.

For significantly larger spill incidents (1000T and above) the Superintendent, Environmental Response shall immediately assume the OSC/FMO role, notify Regional and National management of the situation and initiate the Response Management System (RMS) (and activation of the National Response Team, if necessary) in addition to the above activities. Upon stabilization of the immediate emergency, the Assistant Commissioner, Canadian Coast Guard, Central and Arctic Region and/or Director General, Canadian Coast Guard shall assess the requirement for assigning a new OSC/FMO.

5.7 Response Implementation

As stated previously (Section 4 - Preparedness), the Canadian Coast Guard will employ the Response Management System (RMS) as its primary management and operational tool. At the heart of this system is the development of clear obtainable objectives and the implementation of the supporting tactical deployment. This is achieved through the creation of incident action plans spanning specified operational time periods. For small spills these plans can be rather informal. As spill size and impacts increase, so to will the complexity of

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operational assignments and hence a need for greater formalization of the Incident Action Plan.

All operations shall be carried out in accordance with the Guiding Principles set out in *Section 1.3* of the *National Response Plan* and the *Oil Spill Response Field Guide* (ISBN 0-660-16112-5).

Central and Arctic Region covers an extremely large geographical and culturally diverse portion of Canada. There are, in essence, two zones of operation which are entrenched in the *Canada Shipping Act*.

These are the:

- Arctic zone, or all areas of Canadian jurisdiction north of 60° N Latitude;
- Central zone, dominated in a marine transportation sense by the Great Lakes, but which include the southern portions of Hudson, James and Ungava Bay, along with the major waterways and watersheds of Lake Winnipeg, Winnipegosis, Lake of the Woods, and Lake Athabasca.

Arctic zone – first response

The highest risk of pollution in the arctic is during a ship fuel transfer to facilities in Canada's northern communities. Should pollution occur, the vessel and oil handling facility have responsibilities to implement their Oil Pollution Emergency Plans (OPEP) that deal with source control. The next step would be for the community to respond using its response plan, protecting the identified priority area(s) and employing the response equipment in an Arctic Community Pack, if so equipped.

Arctic zone – escalation

If the pollution is beyond the ship, facility, and community response then the Rapid Air Transportable (RAT)150T will be the first line Canadian Coast Guard ER response (Arctic icebreakers or Special River Nav-aid Tenders may have been on-scene first). Upon activation of the RAT150T, standing offers with aviation contractors will be called up. Closest ER personnel will be dispatched to the community to assess, plan, assemble (and train) responders, while preparing to stage the in-coming equipment. The Hay River base personnel will transport the pallets to the airport where they will be loaded into the awaiting airframe. Upon arrival the pallets will be unloaded and a trailer tongue and wheels affixed to the pallet to facilitate movement (by ATV if necessary) to a forward staging area and ultimately to a beach site. The timeframe for full forward staged capacity with personnel at any community with suitable runways is under 48 hours.

The hospitality industry of Arctic communities can be rapidly overwhelmed with the influx of as little as 10 people. Experience has shown that these communities could only support 10-15 additional personnel and only offer 10-15 community responders. Consequently, the RAT was designed considering the amount and type of equipment that is most easily handled by a combination of trained

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Canadian Coast Guard personnel and community responders. The RAT150T response is predicated on an in-community response with the following positions identified in the table below:

Table 5-2 *Anticipated personnel usage for the RAT150T in an Arctic community*

Position	Canadian Coast Guard responder	Community responder
OSC	X	
OSC support		X
Chief Ops & Planning	X	
Logs – services	X	X
Logs – support	X	X
Ops skimming (A)	X	X
Ops skimming (B)	X	X
Ops shoreline (A)	X	X X X X
Ops shoreline (B)	X	X X X X
Ops booming vessel (A)	X	X
Ops booming vessel (B)	X	X
Transfer / disposal	X	X
Totals	11	16

Upon escalating beyond a RAT150T response, the Δ1000T will be stood up. Standing offers / arrangements with local contractors will be activated to move the containers / seatrucks to a location where they can be transferred to a ship / barge. If required, closest Canadian Coast Guard base personnel will be dispatched to the depot to assist. The closest suitable marine transportation asset will also be contracted to move the equipment to the spill site. The timeframe for full forward staged capacity with personnel is estimated at one week.

As the 150T response is predicated on an in-community response a larger spill would have to be supported by a Canadian Coast Guard icebreaker, rented camp barge, or flown in from surrounding communities.

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Table 5-3 Anticipated personnel usage for the 1000T in an Arctic community.

Position	Canadian Coast Guard ER responder	CCG Fleet or professional contractor	Community responder
OSC	X		
OSC support		X	X
Chief of Planning	X		
Plan – response	X		
Plan – demobilization	X		
Chief of Logs	X		
Logs – services		X	X
Logs – support	X X	X X X	
Chief of Ops	X		
Air Ops		X	
Ops on-water	X X	X X X X	
Ops shoreline	X X		X X X X X X X X X X
Ops booming	X X	X X X X	
Transfer / disposal	X	X	X
Totals	14	13	13

Central Zone – first response

The highest risk of pollution occurring in the region is found in the Great Lakes. Statistically the areas in the Great Lakes of highest risk are the connecting channels due to volumes, numbers of transits, and convergence factors (existing VTS / navigational aid systems recognize this). Areas with traditionally high pleasure craft and small commercial craft traffic experience frequent (though low in volume) pollution incidents.

If the pollution is in the local vicinity of a Canadian Coast Guard Search and Rescue (SAR) station or facility with operational staff, a First Response Unit (FRU) may be deployed as an initial attempt at containment. If more equipment sweeps systems or recovery units are required then the Rapid Road Transportable (RRT) 2500T will be activated.

Transfer of Lead Agency

Transfer of Lead from CCG

Should an incident initially appear to fall within the jurisdiction of the Canadian Coast Guard yet later is determined to be another government agency's

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responsibility, the CCG-appointed OSC or FMO will verbally acknowledge the transfer of Lead Agency responsibility followed by written confirmation on the terms of the transfer (this may require time for termination of a response contract with CCG and the establishment of a response contract with the appropriate Lead Agency.) When the Lead is transferred from CCG to another Lead Agency, CCG will submit an invoice of its response costs to the Lead Agency for response activities undertaken up to the time of transfer recognition.

Should the Lead Agency wish to retain CCG as a Resource Agency, the criteria in Section 7 of the *National Response Plan* of the *CCG National Marine Spills Response Plan* will apply.

Transfer of Lead to CCG

When the Lead is transferred to Canadian Coast Guard from another agency, the Canadian Coast Guard will incorporate the appropriate costs borne by the other agency in the initial stages of the spill into its claim to the Polluter or to the Ship Source Oil Pollution Fund, (SOPF) as the case may be.

Safety Procedures and Considerations

All petroleum cargoes are considered hazardous substances. Canadian Coast Guard command, clean-up, monitoring and verification personnel have protective equipment and training available to them up to Level “D”. All Environmental Response branch staff have been issued with a variety of personal protective equipment (PPE) and are expected to deploy to a spill site (includes exercises and training) with all appropriate gear. Safety glasses and rain suits with rubber boots and gloves are appropriate for Canadian Coast Guard's traditional verification of and response to oil pollution.

Bulk chemical carriers, rail cars, road trailers, sour (H₂S) petroleum products or BTX (benzene, toluene, xylene) carried on oil tankers are all sources of substances for which Canadian Coast Guard personnel are not readily equipped for. In most cases where the pollutant reported is suspected to be from one of these sources Canadian Coast Guard assets should not be tasked to verify. If it falls within Canadian Coast Guard mandate the ER program personnel will get directly involved in the verification, likely looking to other government departments or contractors to continue with the assessment and response.

When the pollution is reported to the ROC by a member of the public, or by a credible professional as a mystery spill, closer examination of the circumstances or probable cause of the pollution will occur as part of spill verification. During the conversation with the individual reporting the incident the ROC Duty Officer will want to find out what it is that they observed. These are:

- Colour [typical petroleum silvery to rainbow to dark purple / brown or is it frothy, green organic matter, rusty, etc.]
- Odour [does it smell like gas, diesel, rotten eggs, no odour]
- Proximity to any likely source [vessel, industrial outfall, municipal outfall, midlake, mid channel, washed up industrial storage drum]

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- Volumes [football field sized, shopping mall parking lot big, or a thin ribbon]
- Other factors [heavy rainfall in last 12 hours; seasonal conditions / times / areas known for algae blooms; fish or animal kills].

By picking up on any "flags" during an assessment it can be reasonably determined whether the pollution should not/should be classified as a hazardous substance (for which CCG personnel are unable to respond to). The ER duty officer will consult with experts in Environment Canada (EC), Spills Action Centre (SAC), and CANUTEC, as appropriate to determine the safety for personnel.

Alternative countermeasures

Alternative countermeasures are those non-mechanical techniques utilized in oil spill response operations such as in-situ burning, dispersant application, and shoreline cleaner application.

Central Zone

The likelihood of approval of in-situ burning operations on the Great Lakes or in connecting channels or inland lakes is minimal. The use of dispersants in the Great Lakes, connecting channels or in inland waterways will not be considered. Shoreline cleaner agents approved by Environment Canada may be considered.

Arctic Zone

In view of the difficulties associated with mounting an effective response in the Arctic, the CCG has recommended that further research be done in the areas of in-situ burning, the use of dispersants (reference Quebec paper) and other oil in ice recovery methods. This research should be operational R&D and assume that the product spilled is Arctic diesel and that the spill occurs during the Arctic shipping season.

5.8 Summary Report and Post Incident Review

It is regional policy to provide a Summary Report and/or conduct a formal Post Incident Review for incidents deemed noteworthy or valuable by the OSC/FMO or Assistant Commissioner, Canadian Coast Guard.

Summary Report

The summary report shall contain at minimum the following, but can include any information deemed relevant by the OSC/FMO.

Summary Incident Report Format

- (a) Overview of Crisis Event

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- spill source (not cause), initial environmental conditions and assessment of situation
- (b) Spill chronology
 - spill response activities and climate/wind /sea condition data
 - key response objectives (success and failures in implementation), major shifts in tactics, other agencies involvement
- (c) Costs and cost recovery issues
 - total estimated cost summary
 - identification of Cost Recovery requirements and options
- (d) References
 - Situation Reports

Post Incident Review

The main objective of a Post Incident Review is the evaluation of the incident to ultimately improve Canadian Coast Guard's effectiveness at spill response. To that end, this requirement is essentially similar to the principles of exercise evaluation. Therefore, when required, the review shall be conducted in accordance with the principles contained in the *National Exercise Program – Evaluation guidelines, Chapter 11*.

This entails six distinct tasks:

- 1) Brief the Evaluation Team
- 2) Brief the Response Team
- 3) Evaluate the Incident
- 4) Prepare a Preliminary Summary of Key Observations
- 5) Hold an Incident Debriefing Session
- 6) Prepare an Official Post Incident Evaluation Report

Post Incident Evaluation Report Format

- (a) Executive Summary -Summarizes overall findings and observations
- (b) Overview of Incident Objectives -Briefly describes the key objectives, environmental conditions and initial situation assessment
- (c) Evaluation Techniques and Criteria - Describes the technique(s) (i.e. self, peer or independent evaluation) and the major evaluation criteria used
- (d) Assessment of Key Incident Objectives - This provides a critical appraisal of the incident objectives or major shifts in tactics. Each key objective assessment will include the following:
 - Findings* – A summary statement describing key positive and negative findings.
 - Specific Observations* - Observed decisions and tasks noted during the incident by responders, management and interested parties.
 - Conclusions* - Assessment of the impact of the finding on overall achievement of the incident objective(s)

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Recommendations – A description of potential corrective or follow-up action required to implement the findings to improve overall marine spill response preparedness.

(e) Appendices or Attachments - May or may not be required

Section 6 – CLAIMS & COST RECOVERY

6.1 Purpose

The purpose of this section of the *Regional Response Plan* is to outline the requirements and regional processes to assist in the creation of a claim to the relevant fund or directly to a polluter.

The ability of Canadian Coast Guard to recover or pursue recovery of response expenses or costs associated with monitoring activities is set out in the *Marine Liability Act, Part 6, “Liability and Compensation for Pollution”*. This ability to recover costs is seen as the embodiment of the polluter-pay-principle set out in the *National Response Plan, Guiding Principles, Section 1.3*.

Note: That at this time there is no mechanism to recover monitoring costs from an oil handling facility.

In addition to the above and recognizing the potential financial risks and impacts to Canada, Canadian legislation also provides for the creation and maintenance of a Ship-Source Oil Pollution Fund, (SOPF). This fund, in addition to the International Oil Pollution Compensation Fund (IOPCF) and the Protection & Indemnity (P&I) Clubs, provides for the assessment of claims/loss against member ships and/or shipping companies. Neither of these funds hinder nor otherwise limit Canadian Coast Guard’s ability to lay claims directly against a Polluter. However, the Polluter is only required to reimburse a claim up to its Limit of Liability. This limit is calculated using the guidelines established in the *Convention on Limitation of Liability for Maritime Claims (LLMC), 1976*.

6.2 Policy Guidelines

The following points serve as regional guidelines for pursuing cost recovery activities:

- The decision to seek cost recovery should be made based on common sense and in consultation with other operational and finance team members.

- Cost recovery should be avoided in situations where the administrative costs of recovery action exceed the dollars expected to be recovered.

- Cost recovery embodies the “Polluter Pays” principle.

- Costs incurred while acting as a resource agency must be recovered from the lead agency.

- Costs incurred while acting as OSC/FMO are recoverable from either the polluter, its P&I Club, the Ship-Source Oil Pollution Fund or from the International Oil Pollution Compensation Fund.

6.3 Responsibilities

On-Scene Commander/Federal Monitoring Officer (OSC/FMO)

The OSC/FMO is responsible for ensuring that complete and accurate documentation is provided for a timely and effective cost recovery process. The OSC/FMO is responsible for preparing all documentation necessary to initiate cost recovery.

Regional Finance Staff

Response, monitoring and administrative costs must be calculated in accordance with national financial accounting and recording practices. Senior administrative officers within Maritime Services may be called upon to provide expert advice as required. It is recommended that a regional finance representative be on-scene as soon as possible to help establish procedures, to safeguard documentation, and to ensure the integrity of the costing process.

Environmental Response Headquarters

The Environmental Response Senior Advisor for Cost Recovery and Claims will submit those claims that are intended for the Ship-Source Oil Pollution Fund and to International Fund Conventions in accordance with the guidelines specified by each. The Advisor will also issue equipment charge-out rates periodically for use by all regions.

6.4 Process

The Response Management System (RMS) documentation (field notes, Incident Action Plans, Minutes and meeting records, time sheets and any and all expense records, invoices/requisitions etc.) shall form the basis of data for the Cost Recovery action.

The Region will initiate cost recovery actions against the Polluter. Should the Polluter be unable or unwilling to pay the costs, the Region will forward the claim to HQ Senior Advisor for Cost Recovery and Claims for submission to the Ship-Source Oil Pollution Fund. Should the costs of the response exceed the Limit of Liability of the Polluter, reimbursement of costs will be through the SOPF and then through the IOPCF. Claims associated with mystery spills will be submitted directly to HQ for a claim against the SOPF.

6.5 Documentation

Proper documentation alleviates the need to reconstruct the incident after the fact, reduces the volume of questions, and adds credence to the claim. The key source of information that enables various parties to determine the degree of reasonableness of the actions taken and the costs claimed is the part of the cost recovery summary known as a “narrative”. That justification is considered to be a critical component to successful and timely claims.

Central & Arctic Regional Response Plan

Section 6 — Claims & Cost Recovery

The regional guideline for producing cost summaries and documentation handling is as follows:

Incidents of minimum complexity and limited expenditures (under \$15K)

- Expenditures may be summarized within the body of the Final Report, including any description of “calculated” values (i.e. administration costs)
- Original invoices shall be kept on the dedicated spill file.

Incidents of medium complexity and moderate expenditures (up to \$50K)

- Expenditures will be summarized in a single table by Cost Element within the body of the Final Report.
- A supporting cost summary document or appendix shall be created to provide a detailed cost summary by date. Copies of the expenditure documentation will be included.
- Original invoices shall be kept on the dedicated spill file organized by date.

Incidents of high complexity and significant expenditures (\$50K plus)

- Expenditures will be summarized in a single table by Cost Element within the body of the Final Report. (similar to medium complexity incidents)
- A supporting cost summary document will be created summarizing the daily expenditures by individual cost element, followed by a cumulative summary of each cost element (spreadsheet of all daily summaries). The sum total of all cost elements will then be summarized for use in the final report.
- Due to the volume of transactions, copies of the expenditure documents will not be provided in the supporting cost summary document.
- Original invoices will be kept in their original state, filed by date and archived when feasible to a dedicated file.

Table 6.1 Sample Cost Element Table

Cost Element	Description
Personnel	Includes hourly regular and overtime costs associated with CCG Staff (includes EBP)
Equipment	Includes cost of all CCG assets, based upon established charge out rates
Purchases/Expendables	Includes expendables such as office supplies and PPE
Travel	Includes meals and accommodation costs incurred by CCG staff accordance with TB travel directive.
Contractors	Includes the costs of all private sector contractor/goods and services.
Administration	Includes the cost of CCG administration.
Total Estimated Cost	

6.6 References

- CCG Ship Source and Marine Pollution Response Costing Principles and Documentation Standards DFO2004-6332
- Cost Recovery of Ship Source and Marine Pollution Response Directive # D-4010-2001-01
- Cost Recovery Related Policies, Memorandum dated October 26, 1998, File AWE 1001-5-2-1 (AWEA)

6.7 Third Party Claims

While monitoring or responding to an incident, Canadian Coast Guard will refer all inquiries regarding third party claims to the Polluter. In the case of a mystery spill, the Canadian Coast Guard will encourage claimants to submit a claim directly to the Ship Source Oil Pollution Fund.

Section 7 - PLAN MAINTENANCE AND CUSTODIANS

7.1 *Maintenance Process*

Responsibility

The *Regional Response Plan* of the *Canadian Coast Guard Marine Spills Response Plan* for Central & Arctic Region is the responsibility of:

Assistant Commissioner, Canadian Coast Guard
Central & Arctic Region
520 Exmouth Street
Sarnia, Ontario
N7T 8B1
fax (519) 383-1991

Revision Requests

All requests or suggestions for revision to this plan should be forwarded, in writing, to the above noted address and should include the following information:

- Originator (including return address and telephone number)
- Date
- Subject (i.e. request for revision)
- Suggested change (including section and page number references)
- Reason for revision

All formally received requests will be acknowledged in writing and assessed for inclusion into the plan. Upon approval the revision will be distributed accordingly.

Revision Record

Upon receiving a revision transmittal, recipients are requested to ensure that its number is next in sequence to the previous issue, process the amendments according to the transmittal instructions and complete the revision record in this section.

Should there be any discrepancies or questions, the recipient should contact the Canadian Coast Guard, Assistant Commissioner, Central & Arctic Region at the above address.

The onus is on the plan holder to maintain a current plan.

7.2 *Canadian Coast Guard Custodians*

This document is structured to reflect the fundamental phases of Environmental Response (ER) activities and hence reflects the co-operative nature of each

Central & Arctic Regional Response Plan

Section 7 — Plan Maintenance and Custodians

aspect of the Central and Arctic Region Environmental Response organization. In conjunction with this, each component has been assigned to a specific section within the branch (e.g. training is the responsibility of the Training Officer). The Assistant Commissioner – Canadian Coast Guard, Central and Arctic Region retains the overall responsibility for the document's implementation. The Emergency Plan Development Officer (EPDO) facilitates the physical management and co-ordination of this document.

These custodial relationships herein are designed to facilitate the annual review and maintenance of the *Regional Response Plan*.

Letter of Promulgation	Emergency Plan Development Officer
Record of Revision	Plan Holders
Section 1 – Introduction	Emergency Plan Development Officer
Section 2 - Agreements & Memoranda of Understanding	Emergency Plan Development Officer
Section 3 – Organization	Emergency Plan Development Officer
Section 4 – Preparedness	
4.2 RMS	Regional Training Officer
4.3 Planning	Emergency Plan Development Officer
4.4 Training	Regional Training Officer
4.5 Exercising	Regional Exercise Officer
4.6 Inventory Maintenance & Management	Regional Emergency Operations Officer
Section 5 – Response Operations	Regional Emergency Operations Officer
Section 6 – Claims & Cost Recovery	TBD
Section 7 - Plan Maintenance & Custodians	Emergency Plan Development Officer
Section 8 – Contacts	Emergency Plan Development Officer
Section 9 – References & Annexes	Responsibility for each annex is assigned in each Annex.

All unassigned sections shall be considered the responsibility of the Emergency Plan Development Officer unless otherwise indicated.

7.3 Plan Distribution

The *Regional Response Plan* shall be distributed to all holders of the *Canadian Coast Guard Marine Spills Response Plan*, in accordance with the Area of Responsibility set in Section 1 - Introduction. This includes the relevant Federal and Provincial Lead Agencies as described in the National Response Plan Section 1, sub-section 1.5; all Canadian Coast Guard Management; Facilities and Vessels; all Oil Handling Facilities and relevant certified Response Organizations by request and in accordance with Transport Canada-Marine

Central & Arctic Regional Response Plan
Section 7 — Plan Maintenance and Custodians

Safety, Compliance and Enforcement division. All subsequent revisions will be automatically distributed to these plan holders.

Any member of the general public wishing to obtain a copy may do so through the Fisheries and Oceans, Canadian Coast Guard, National Headquarters. These plan holders will not be advised of revisions.

Section 8 – CONTACTS

8.1 Pollution Reports for Canadian Coast Guard, Central & Arctic Region

To report a pollution emergency anywhere within Central & Arctic Region telephone the Canadian Coast Guard, Regional Operations Centre (ROC) toll free at:

1-800-265-0237

or report via

Marine Radio on VHF, Channel 16.

8.2 Other Lead Agencies that Maintain Spill Report Lines

- Ontario Ministry of the Environment - Spills Action Centre: 1-800-268-6060
- Territorial Spills Line – Arctic Alarm: 1-867-920-8130
- Manitoba Conservation: 1-204-944-4888
- Saskatchewan Environment - Saskatchewan Spill Centre: 1-800-667-7525
- Alberta Environment: 1-800-222-6514

8.3 Canadian Coast Guard, Environmental Response Branch (CCG/ER) Phone List – Regular Office Hours

Regional Office, Canadian Coast Guard 520 Exmouth Street Sarnia, ON N7T 8B1	
Title	Telephone
Superintendent, Environmental Response	519-383-1954
Emergency Plan Development Officer	519-464-5126
Assistant Contingency Planning Officer	519-383-1953
Regional Exercise Officer	519-383-1978
Regional Emergency Operations Officer	519-383-1956
Environmental Training Officer	519-383-1957
Administrative Assistant	519-383-1951

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Section 8 — Contacts

Canadian Coast Guard Base 42037 McKenzie Highway Hay River, NT X0E 0R9	
Title	Telephone
Senior Response Officer	867-874-5557
Response Specialist	867-874-5558
Response Specialist	867-874-5559

Canadian Coast Guard Base PO Box 1000, 401 King Street Prescott, ON K0E 1T0	
Title	Telephone
Senior Response Officer	613-925-2865 x 157
Response Specialist (2)	613-925-2865 x 262
Logistics and Statistics Officer	613-925-2865 x 126

Canadian Coast Guard Base 28 Waubeek Street Parry Sound, ON P2A 1B9	
Title	Telephone
Senior Response Officer	705-746-2196 x 228
Response Specialist	705-746-2196 x 270
Response Specialist	705-746-2196 x 201

Section 9 – REFERENCES & ANNEXES

9.1 References

The following list includes those documents which supplement the Regional Response Plan.

Supplement	Custodian
Environmental Response Manual – Standard Operating Procedures and Directives	Canadian Coast Guard, Environmental Response, Headquarters
Response Management System User's Guide, version 3.0 (May 2006)	Canadian Coast Guard, Environmental Response, Headquarters
Environmental Response Superintendent's Manual	Superintendent, Environmental Response, Regional Office
Environmental Response Regional Health & Safety Plan	Environmental Response, Regional Emergency Operations Officer
National Exercise Program (NEP) Manual	Canadian Coast Guard, Environmental Response Headquarters
Inventory Control and Response Management System – TMA database	Regional Logistics and Statistics Officer, Environmental Response
DFO Crisis Communications Plan	DFO Corporate Services, Communications Branch

9.2 Annexes

The following Area Plans make up the Annexes to the Regional Chapter:

- 1) St. Lawrence River and Lake Francis
- 2) Lake Ontario
- 3) Lake Erie
- 4) St. Clair and Detroit River
- 5) Lake Huron, Georgian Bay and North Channel
- 6) St. Mary's River
- 7) Lake Superior
- 8) Lake of the Woods
- 9) Inland waters (South of 60°N Latitude)
- 10) Hudson and James Bay
- 11) Baffin Region
- 12) Keewatin Region
- 13) Kitikmeot Region
- 14) Great Slave Lake Region
- 15) Mackenzie River and Delta
- 16) Beaufort Sea and Amundsen Gulf

APPENDIX C - MSDS Jet-A and Diesel

DIESEL

Section 1. Identification

Common name: DIESEL

Product Code: 0210

Synonym: Ultra low sulfur Diesel (ULSD) A, Ultra low sulfur Diesel (ULSD) B, Colonial 62/67

Material uses: Fuel, Heating Oil

Supplier / Manufacturer:

Énergie Valero Inc.

1801 McGill College, 13e étage

Montréal

Québec, Canada, H3A 2N4

Phone: 800-295-0391

In case of emergency:

CANUTEC: (613) 996-6666

Quebec Poison Control Center: 800-463-5060

Ontario Regional Poison Information Center (Toronto): 416-813-5900

Ontario Regional Poison Information Center (toll-free): 800-268-9017

Newfoundland Poison Information Center: 709-722-1110

Nova Scotia / PEI Poison Control Center: 800-565-8161

Or call your local Emergency Health Services Center.

Section 2. Hazards identifications

Classification:



Flammable liquid, Category 3

Skin irritation, Category 2

Eye irritation, Category 2A

Carcinogenicity, Category 2

Reproductive toxicity, Category 2

Specific target organ toxicity - Single exposure, Category 1

Specific target organ toxicity - Repeated exposure, Category 2

Aspiration hazard, Category 1

Signal word: Danger

Hazard statements:

H226: Flammable liquid and vapor.

H304: May be fatal if swallowed and enters airways.

H315: Causes skin irritation.

H319: Causes serious eye irritation.

H351: Suspected of causing cancer.

H361: Suspected of damaging fertility or the unborn child.

H370: Causes damage to organs.

H373: May cause damage to organs through prolonged or repeated exposure.

Precautionary statements:

P201: Obtain special instructions before use.

P202: Do not handle until all safety precautions have been read and understood.

P210: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

P260: Do not breathe dust/fumes/gas/mist/vapors/spray.

P264: Wash exposed and/or contaminated area thoroughly after handling.

P270: Do not eat, drink or smoke when using this product.

P280: Wear protective gloves/protective clothing/eye protection/face protection.

P301+P310: IF SWALLOWED: Immediately call a POISON CENTER or a doctor.

P302+P352: IF ON SKIN: Wash with plenty of water and soap.

P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do – continue rinsing.

P308+P313: If exposed: Call a POISON CENTER or doctor/physician.

P314: Get medical advice/attention if you feel unwell.

P321: Move out of dangerous area. Consult a physician. Show this safety data sheet to the doctor in attendance.

P331: Do NOT induce vomiting.

P337+P313: If eye irritation persists get medical advice/attention.

P370+P378: In case of fire: See section 5 for extinguishing media.

P403+P235: Store in a well ventilated place. Keep cool.

P405: Store locked up.

P501: Dispose of contents / container by a local waste disposal company according to regional regulations.

Section 3. Composition and information on ingredients

Name	CAS	Concentration %
Fuels, diesel	68334-30-5	0 - 100
Fuels, diesel, C9-18-alkane branched and linear	1159170-26-9	0 - 30
Nonane	111-84-2	0 - 3
Octane	111-65-9	0 - 2
Toluene	108-88-3	0 - 1
Xylene	1330-20-7	0 - 1
Ethylbenzene	100-41-4	0 - 1

Note:

All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

Section 4. First aid measures**Description of first aid if required:**

Take off all contaminated clothing immediately. IF exposed or concerned: Get medical advice/attention. If you feel unwell, seek medical advice (show the label where possible). Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance.

Eye contact:

Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Seek medical attention if irritation develops and persists.

Skin contact:

Take off immediately all contaminated clothing. Rinse skin with water/shower. If skin irritation occurs: Seek medical advice/attention. Wash contaminated clothing before reuse.

Inhalation:

Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTRE or doctor/physician if you feel unwell.

Ingestion:

Call a physician or poison control centre immediately. Rinse mouth. DO NOT induce vomiting. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs.

Indication of immediate medical attention and special treatment needed, if necessary:

Provide general supportive measures and treat symptomatically. Thermal burns: Flush with water immediately. While flushing, remove clothes which do not adhere to affected area. Call an ambulance. Continue flushing during transport to hospital. Keep victim warm. Keep victim under observation. Symptoms may be delayed.

Most important acute symptoms and effects:

Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Skin irritation. May cause redness, pain and jaundice. Prolonged exposure may cause chronic effects.

Most important delayed symptoms and effects:

Aspiration may cause pulmonary oedema and pneumonitis.

Section 5. Firefighting measures

Flammability of the product:

Flammable liquid and vapor.

Flash point:

40°C / 104°F

Auto-ignition temperature:

> 220 °C / > 428 °F

Products of combustion:

Data not available

Special protective actions for firefighters:

Wear full protective clothing, including helmet, self-contained positive pressure or pressure demand breathing apparatus, protective clothing and face mask. Move away immediately if the whistling sound from the safety devices increases or the discoloration of the tanks caused by a fire. Fight fire from maximum distance or use unmanned hose holders or monitor nozzles. Move containers from fire area if you can do it without risk. In the event of fire, cool tanks with water spray. Cool containers exposed to flames with water until well after the fire is out. For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn. Vapors may form explosive air mixtures even at room temperature. Prevent buildup of vapors or gasses to explosive concentrations. Some of these materials, if spilled, may evaporate leaving a flammable residue. Water runoff can cause environmental damage. Use compatible foam to minimize vapor generation as needed. In the event of fire and/or explosion do not breathe fumes.

Suitable extinguishing media:

Water spray. Water fog. Foam. Dry chemical powder. Carbon dioxide (CO₂). Do not use a solid water stream as it may scatter and spread fire.

Specific hazard arising from the chemical:

Vapor may cause flash fire. Vapors can flow along surfaces to distant ignition source and cause flashback. Sensitive to static discharge.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures:

For non emergency personnel: Evacuate the area.

For emergency personnel: Keep unnecessary personnel away. Keep upwind. Keep out of low areas. Ventilate closed spaces before entering. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. See Section 8 for personal protective equipment. Local authorities should be advised according to applicable regulatory requirements.

Environmental precautions:

Avoid release to the environment. Inform appropriate managerial or supervisory personnel of all environmental releases. Prevent further leakage or spillage if safe to do so. Avoid discharge into drains, water courses or onto the ground.

Methods and material for containment and cleaning up:

Eliminate all sources of ignition (no cigarettes, torches, sparks or flames in the immediate area). Keep combustible materials (wood, paper, oil, etc.) away from the spilled product. Take precautionary measures against electrostatic discharge. Use tools that do not produce sparks. Prevent entry into waterways, sewers, basements or confined areas.

For large spills: Stop flow of substance if it can be done without risk. Dike spilled material, where possible. Use a non-combustible material such as vermiculite, sand or earth to absorb the product and place it in a container for later disposal. After collecting the product, rinse the area with water.

For small spills: Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal. Wipe up with absorbent material (eg, cloth, woolen). Clean the surface thoroughly to remove residual contamination.

Never put the spilled product back into its original container for reuse. Place the material in suitable, covered and labeled containers. For waste disposal, see section 13 of the safety data sheet.

Section 7. Handling and storage

Precautions in Handling:

Obtain instructions before use. Do not handle until you have read and understood all the safety precautions. Do not handle, store or open near an open flame, source of heat or other sources of ignition. Protect the product from direct sunlight. Do not smoke during use. Use local and general explosion-proof exhaust ventilation. Take precautionary measures against electrostatic discharge. All equipment used in handling this product must be earthed. Use non-sparking tools and explosion-proof equipment. Do not breathe mists or vapors. Avoid contact with eyes, skin and clothing. Avoid prolonged exposure. Should be handled in closed systems, if possible. Use only outdoors or in a well ventilated area. Wear appropriate personal protective equipment. Wash hands thoroughly after handling. Avoid release into the environment. Observe good industrial hygiene practices.

Precautions in Storage:

Storage of flammable liquids. Do not handle or store near an open flame, heat source or other sources of ignition. This product can accumulate static charges which can cause sparks and become a source of ignition. Pressure in sealed containers may increase under the influence of heat. Keep the container in a cool, well-ventilated place. Keep away from food, drink and animal feed. Keep out of the reach of children.

Section 8. Exposure Controls, Personal Protections

Control parameters:

Component	CAS	Value	Control parameters	Basis
Toluene	108-88-3	TWA	20 ppm	USA - ACGIH
		TWA	50 ppm	Canada - Alberta
		TWA	188 mg/m ³	Canada - Alberta
		TWA	20 ppm	Canada - British Columbia
		TWA	20 ppm	Canada - Manitoba
		TWA	20 ppm	Canada - Ontario
		TWA	188 mg/m ³	Canada - Québec
		TWA	50 ppm	Canada - Québec
		TWA	375 mg/m ³	USA - NIOSH
		TWA	100 ppm	USA - NIOSH

Control parameters (continued) :

Component	CAS	Value	Control parameters	Basis
Xylene	1330-20-7	STEL	150 ppm	USA - ACGIH
		TWA	100 ppm	USA - ACGIH
		STEL	651 mg/m ³	Canada - Alberta
		STEL	150 ppm	Canada - Alberta
		TWA	434 mg/m ³	Canada - Alberta
		TWA	100 ppm	Canada - Alberta
		STEL	150 ppm	Canada - British Columbia
		TWA	100 ppm	Canada - British Columbia
		STEL	150 ppm	Canada - Manitoba
		TWA	100 ppm	Canada - Manitoba
		STEL	150 ppm	Canada - Ontario
		TWA	100 ppm	Canada - Ontario
		STEL	651 mg/m ³	Canada - Québec
		STEL	150 ppm	Canada - Québec
		TWA	434 mg/m ³	Canada - Québec
		TWA	100 ppm	Canada - Québec
Octane	111-65-9	TWA	300 ppm	USA - ACGIH
		TWA	1400 mg/m ³	Canada - Alberta
		TWA	300 ppm	Canada - Alberta
		TWA	300 ppm	Canada - British Columbia
		TWA	300 ppm	Canada - Manitoba
		TWA	300 ppm	Canada - Ontario
		STEL	1750 mg/m ³	Canada - Québec
		STEL	375 ppm	Canada - Québec
		TWA	1400 mg/m ³	Canada - Québec
		TWA	300 ppm	Canada - Québec
Ethylbenzene	100-41-4	STEL	543 mg/m ³	Canada - Alberta
		STEL	125 ppm	Canada - Alberta
		TWA	434 mg/m ³	Canada - Alberta
		TWA	100 ppm	Canada - Alberta
		TWA	20 ppm	Canada - British Columbia
		TWA	20 ppm	Canada - Manitoba
		TWA	20 ppm	Canada - Ontario
		STEL	543 mg/m ³	Canada - Québec
		STEL	125 ppm	Canada - Québec
		TWA	434 mg/m ³	Canada - Québec
		TWA	100 ppm	Canada - Québec
		TWA	20 ppm	USA - ACGIH

Control parameters (continued) :

Component	CAS	Value	Control parameters	Basis
Nonane	111-84-2	TWA	200 ppm	Canada - Québec
		TWA	1050 mg/m ³	Canada - Québec
		TWA	200 ppm	Canada - Alberta
		TWA	1050 mg/m ³	Canada - Alberta
		TWA	200 ppm	Canada - British Columbia
		TWA	200 ppm	Canada - Manitoba
		TWA	200 ppm	Canada - Ontario
		TWA	200 ppm	USA - ACGIH
Fuels, diesel	68334-30-5	TWA	100 mg/m ³ (inhalable fraction)	USA - ACGIH
		TWA	100 mg/m ³	Canada - Alberta
		TWA	100 mg/m ³	Canada - British Columbia
		TWA	100 mg/m ³	Canada - Manitoba
		TWA	100 mg/m ³	Canada - Ontario

Engineering controls:

Provide adequate general and local exhaust ventilation. Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits. Use explosion-proof equipment.

Personal protective equipment:

Eyes: Wear safety glasses. If splash potential exists, wear full face shield or chemical goggles.

Skin/body: Wear chemical-resistant, impervious gloves. Full body suit and boots are recommended when handling large volumes or in emergency situations. Flame retardant protective clothing is recommended. Wear appropriate thermal protective clothing, when necessary.

Respiratory: Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator. If workplace exposure limits for product or components are exceeded, NIOSH approved equipment should be worn. Proper respirator selection should be determined by adequately trained personnel, based on the contaminants, the degree of potential exposure and published respiratory protection factors. This equipment should be available for nonroutine and emergency use.

Hands: Avoid exposure - obtain special instructions before use. Wear protective gloves.

Other: Consult supervisor for special handling instructions. Avoid contact with eyes. Avoid contact with skin. Keep away from food and drink. Wash hands before breaks and immediately after handling the product. Provide eyewash station and safety shower. Handle in accordance with good industrial hygiene and safety practices.

Section 9. Physical and chemical properties

Physical state: Liquid

Color: Clear, yellow

Odour: Not available

Melting point/Freezing point: Data not available

Boiling point: From 145°C / 293°F to 375°C / 707°F

Appearance: Liquid

Lower explosion limit: 0.7 %

Upper explosion limit: 5 %

Flash point: 40°C / 104°F

Auto-ignition temperature: 220°C / 428°F

pH: Data not available

Kinematic viscosity: 1.3 - 4.1 cSt (40 °C)

Solubility: Data not available

Vapor pressure: 0.27 kPa (15 °C)

Density: Data not available

Relative vapor density: 0.78 - 0.88 g/ml

Evaporation rate: 0.2 BuAc

Section 10. Stability and reactivity

Chemical reactivity: The product is non-reactive under normal conditions of use, storage and transport.

Chemical stability: Stable under normal temperature conditions and recommended use.

Possibility of hazardous reactions: Hazardous polymerisation does not occur.

Conditions to avoid: Heat, flames and sparks. Ignition sources. Contact with incompatible materials. Do not pressurize, cut, weld, braze, solder, drill, grind or expose empty containers to heat, flame, sparks, static electricity, or other sources of ignition; they may explode and cause injury or death.

Incompatible materials: Strong oxidising agents.

Hazardous decomposition products: No hazardous decomposition products are known.

Section 11. Toxicological information

Acute toxicity:

Component	CAS	Value
Nonane	111-84-2	CL ₅₀ Inhalation: Rat = 3200 ppm - 4h
Toluene	108-88-3	DL ₅₀ Oral: Rat = 636 mg/kg DL ₅₀ Cutaneous: Rat = 12200 mg/kg CL ₅₀ Inhalation: Rat = 28.1 mg/L - 4h
Xylene	1330-20-7	DL ₅₀ Oral: Rat = 3523 mg/kg DL ₅₀ Cutaneous: Rabbit = 5000 mg/kg CL ₅₀ Inhalation: Rat = 27.6 mg/L - 4h
Ethylbenzene	100-41-4	DL ₅₀ Oral: Rat = 3500 mg/kg DL ₅₀ Cutaneous: Rabbit > 15400 mg/kg CL ₅₀ Inhalation: Rat = 17.4 mg/L - 4h

Skin corrosion/irritation:

Fuels, diesel, C9-18-alkane branched and linear: Causes skin irritation.

Nonane: Causes skin irritation.

Octane: Causes skin irritation.

Toluene: Causes skin irritation.

Xylene: Causes skin irritation.

Ethylbenzene: Causes skin irritation

Serious eye damage/irritation:

Fuels, diesel, C9-18-alkane branched and linear: Causes serious eye irritation.

Respiratory or skin sensitisation:

Not applicable

Germ cell mutagenicity:

Not applicable

Carcinogenicity:

Fuels, diesel, C9-18-alkane branched and linear: Suspected of causing cancer.

Ethylbenzene: Suspected of causing cancer.

Reproductive toxicity:

Toluene: Suspected of damaging fertility or the unborn child.

Xylene: Suspected of damaging fertility or the unborn child.

STOT- Single exposure:

Fuels, diesel, C9-18-alkane branched and linear: Causes damage to organs.

Octane: May cause drowsiness or dizziness.

Toluene: May cause drowsiness or dizziness.

Xylene: May cause irritation to respiratory tract and may cause drowsiness or dizziness.

STOT- repeated exposure:

Toluene: May cause damage to organs through prolonged or repeated exposure cause the hazard.

Xylene: May cause damage to organs through prolonged or repeated exposure cause the hazard.

Aspiration hazard:

Fuels, diesel, C9-18-alkane branched and linear: May be fatal if swallowed and enters airways.

Nonane: May be fatal if swallowed and enters airways.

Octane: May be fatal if swallowed and enters airways.

Toluene: May be fatal if swallowed and enters airways.

Xylene: May be fatal if swallowed and enters airways.

Ethylbenzene: May be fatal if swallowed and enters airways.

Information on likely route of exposure:

Not applicable

Section 12. Ecological information**Ecological data for aquatic environments:**

Component	CAS	Value
Octane	111-65-9	CL ₅₀ - Fish 0.42 mg/L - 96h CE ₅₀ - Daphnia magna 0.38 mg/L - 48h
Toluene	108-88-3	CL ₅₀ - Oncorhynchus kisutch 5.5 mg/L - 96h CE ₅₀ - Daphnia magna 11.5 mg/L - 48h
Ethylbenzene	100-41-4	CE ₅₀ - Menidia menidia (atlantic silverside) 5.1 mg/L - 96h CL ₅₀ - Daphnia magna 1.8 mg/L - 48h CE ₅₀ - Skeletonema costatum 4.9 mg/L - 72h

Persistence and degradability:

Ethylbenzene: Easily biodegradable.

Bioaccumulative potential:

Data not available

Mobility in soil:

Data not available


Other adverse effects:


Data not available


Section 13. Disposal considerations**Waste disposal:**


Dispose of this material and its container to hazardous or special waste collection point. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose in accordance with all applicable regulations. Waste codes should be assigned by the user based on the application for which the product was used. Dispose of in accordance with local regulations. Offer rinsed packaging material to local recycling facilities.

Section 14. Transportation information

TDG		
UN #: UN1202	Proper shipping name: DIESEL FUEL	
Class: 3	Packing group: III	

DOT		
UN #: UN1202	Proper shipping name: DIESEL FUEL	
Class: 3	Packing group: III	

IMDG			
UN #: UN1202	Proper shipping name: DIESEL FUEL		
Class: 3	Packing group: III		
		EMS-No:	

IATA		
UN #: UN1202	Proper shipping name: DIESEL FUEL	
Class: 3	Packing group: III	

Section 15. Regulatory information

NFPA Classification:



Health : 1
Flammable : 2
Stability : 0
Special hazards : 0

Legend: 4: Severe, 3: High, 2: Moderate, 1: Slightly, 0: Not hazardous

General product information:

Canada: This product has been classified in accordance with the hazard criteria of the hazard product regulations and the safety data sheet contains all the information required by the hazard product regulations.

Section 16. Additional information

Date of issue:

2021-09-15

Version:

1.00

Elaborated by:

Toxyscan Inc.

Notice to reader:

To the best of our knowledge, the information contained in this document is accurate. However, neither Toxyscan Inc., nor the supplier, nor any of their affiliates can assume any responsibility for the accuracy or completeness of the information contained herein. All materials may present unknown hazards and should be used with caution. Although some hazards are described herein, we cannot guarantee that there are no other hazards. Valero Energy Inc. can not anticipate all conditions of use of this information and its product, or products of other manufacturers associated with its product. It is the responsibility of the user to ensure safe handling, storage and disposal of the product. The user is liable for any loss, injury, damage or expense caused by improper use.




SAFETY DATA SHEET

1. Identification

Product identifier	Jet Fuels
Other means of identification	
SDS number	104-GHS
Synonyms	Jet Fuel, Jet Fuel Stock, Jet A, Aviation Jet Fuel A, JP-5, JP-8, DERD See section 16 for complete information.
Recommended use	Refinery feedstock.
Recommended restrictions	None known.
Manufacturer/Importer/Supplier/Distributor information	
Manufacturer/Supplier	Valero Marketing & Supply Company and Affiliates One Valero Way San Antonio, TX 78269-6000 210-345-4593 CorpHSE@valero.com
General Assistance	210-345-4593
E-Mail	CorpHSE@valero.com
Contact Person	Industrial Hygienist
Emergency Telephone	24 Hour Emergency 866-565-5220 1-800-424-9300 (CHEMTREC USA)

2. Hazard(s) identification

Physical hazards	Flammable Liquids	Category 3
Health Hazards	Skin corrosion/irritation	Category 2
	Germ cell mutagenicity	Category 1B
	Carcinogenicity	Category 1B
	Reproductive toxicity	Category 2
	Specific Target Organ Toxicity, Single Exposure	Category 3 narcotic effects
	Aspiration hazard	Category 1
Environmental hazards	Hazardous to the aquatic environment, long-term hazard	Category 2
OSHA defined hazards	Not classified.	
Label elements		

Signal word Danger

Hazard statement Flammable liquid and vapor. Causes skin irritation. May cause genetic defects. May cause cancer. Suspected of damaging fertility or the unborn child. May cause drowsiness or dizziness. May be fatal if swallowed and enters airways.

Precautionary statement

Prevention

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wear protective gloves/protective clothing/eye protection/face protection. Keep away from heat/sparks/open flames and hot surfaces. No smoking. Keep container tightly closed. Ground/bond container and receiving equipment. Use explosion-proof electrical/ventilating/lighting equipment. Use only non-sparking tools. Take precautionary measures against static discharges. Wash thoroughly after handling. Avoid breathing dust/fume/gas/mist/vapors/spray. Use only outdoors or in a well-ventilated area.

Response	If exposed or concerned: Get medical advice/attention. If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. In case of fire: Use for extinction. If skin irritation or rash occurs: Get medical advice/attention. Take off contaminated clothing and wash before re-use. If inhaled: Remove person to fresh air and keep comfortable for breathing. Call a doctor if you feel unwell. If swallowed: Immediately call a poison center/doctor.
Storage	Store locked up. Store in a well-ventilated place. Keep container tightly closed. Keep cool.
Disposal	Dispose of contents/container in accordance with local/regional/national/international regulations.
Hazard(s) not otherwise classified (HNOC)	None known.

3. Composition/information on ingredients

Mixtures

Chemical name	CAS number	%
Kerosene	8008-20-6	0 - 100
Naphthalene	91-20-3	0 - 3
Xylene (o,m,p isomers)	1330-20-7	0 - 2
Benzene	71-43-2	0 - 1
Ethylbenzene	100-41-4	0 - 1
Toluene	108-88-3	0 - 1

4. First-aid measures

Inhalation	Move to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Get medical attention.
Skin contact	Remove contaminated clothing and shoes. Wash off immediately with soap and plenty of water. Get medical attention if irritation develops or persists. Wash clothing separately before reuse. Destroy or thoroughly clean contaminated shoes. If high pressure injection under the skin occurs, always seek medical attention.
Eye contact	Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention.
Ingestion	Rinse mouth thoroughly. Do not induce vomiting without advice from poison control center. Do not give mouth-to-mouth resuscitation. If vomiting occurs, keep head low so that stomach content does not get into the lungs. Never give anything by mouth to a victim who is unconscious or is having convulsions. Get medical attention immediately.
Most important symptoms/effects, acute and delayed	Irritation of nose and throat. Irritation of eyes and mucous membranes. Skin irritation. Unconsciousness. Corneal damage. Narcosis. Cyanosis (blue tissue condition, nails, lips, and/or skin). Decrease in motor functions. Behavioral changes. Edema. Liver enlargement. Jaundice. Conjunctivitis. Proteinuria. Defatting of the skin. Rash.
Indication of immediate medical attention and special treatment needed	In case of shortness of breath, give oxygen. Keep victim warm. Keep victim under observation. Symptoms may be delayed.
General information	If exposed or concerned: get medical attention/advice. Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance. Wash contaminated clothing before re-use.

5. Fire-fighting measures

Suitable extinguishing media	Water. Water fog. Foam. Dry chemical powder. Carbon dioxide (CO ₂).
Unsuitable extinguishing media	Do not use a solid water stream as it may scatter and spread fire.
Specific hazards arising from the chemical	Vapor may cause flash fire. Vapors can flow along surfaces to distant ignition source and flash back. Sensitive to static discharge.
Special protective equipment and precautions for firefighters	Wear full protective clothing, including helmet, self-contained positive pressure or pressure demand breathing apparatus, protective clothing and face mask.

Fire fighting equipment/instructions

Wear full protective clothing, including helmet, self-contained positive pressure or pressure demand breathing apparatus, protective clothing and face mask. Withdraw immediately in case of rising sound from venting safety devices or any discoloration of tanks due to fire. Fight fire from maximum distance or use unmanned hose holders or monitor nozzles. Move containers from fire area if you can do it without risk. In the event of fire, cool tanks with water spray. Cool containers exposed to flames with water until well after the fire is out. For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn. Vapors may form explosive air mixtures even at room temperature. Prevent buildup of vapors or gases to explosive concentrations. Some of these materials, if spilled, may evaporate leaving a flammable residue. Water runoff can cause environmental damage. Use compatible foam to minimize vapor generation as needed.

Specific methods

Use water spray to cool unopened containers.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Keep unnecessary personnel away. Local authorities should be advised if significant spills cannot be contained. Keep upwind. Keep out of low areas. Ventilate closed spaces before entering. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. See Section 8 of the SDS for Personal Protective Equipment.

Methods and materials for containment and cleaning up

Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Local authorities should be advised if significant spillages cannot be contained. Stop leak if you can do so without risk. This material is a water pollutant and should be prevented from contaminating soil or from entering sewage and drainage systems and bodies of water. Dike the spilled material, where this is possible. Prevent entry into waterways, sewers, basements or confined areas.

Use non-sparking tools and explosion-proof equipment.

Small Spills: Absorb spill with vermiculite or other inert material, then place in a container for chemical waste. Clean surface thoroughly to remove residual contamination. This material and its container must be disposed of as hazardous waste.

Large Spills: Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. Prevent product from entering drains. Do not allow material to contaminate ground water system. Should not be released into the environment.

Clean up in accordance with all applicable regulations.

Environmental precautions

If facility or operation has an "oil or hazardous substance contingency plan", activate its procedures. Stay upwind and away from spill. Wear appropriate protective equipment including respiratory protection as conditions warrant. Do not enter or stay in area unless monitoring indicates that it is safe to do so. Isolate hazard area and restrict entry to emergency crew. Flammable. Review Firefighting Measures, Section 5, before proceeding with clean up. Keep all sources of ignition (flames, smoking, flares, etc.) and hot surfaces away from release. Contain spill in smallest possible area. Recover as much product as possible (e.g. by vacuuming). Stop leak if it can be done without risk. Use water spray to disperse vapors. Use compatible foam to minimize vapor generation as needed. Spilled material may be absorbed by an appropriate absorbent, and then handled in accordance with environmental regulations. Prevent spilled material from entering sewers, storm drains, other unauthorized treatment or drainage systems and natural waterways. Contact fire authorities and appropriate federal, state and local agencies. If spill of any amount is made into or upon navigable waters, the contiguous zone, or adjoining shorelines, contact the National Response Center at 1-800-424-8802. For highway or railways spills, contact Chemtrec at 1-800-424-9300.

7. Handling and storage

Precautions for safe handling

Eliminate sources of ignition. Avoid spark promoters. Ground/bond container and equipment. These alone may be insufficient to remove static electricity. Wear personal protective equipment. Do not breathe dust/fume/gas/mist/vapors/spray. Avoid contact with eyes, skin, and clothing. Do not taste or swallow. Avoid prolonged exposure. Use only with adequate ventilation. Wash thoroughly after handling. The product is flammable, and heating may generate vapors which may form explosive vapor/air mixtures. DO NOT handle, store or open near an open flame, sources of heat or sources of ignition. Protect material from direct sunlight. Take precautionary measures against static discharges. All equipment used when handling the product must be grounded. Use non-sparking tools and explosion-proof equipment. When using, do not eat, drink or smoke. Avoid release to the environment.

Conditions for safe storage, including any incompatibilities

Flammable liquid storage. Do not handle or store near an open flame, heat or other sources of ignition. This material can accumulate static charge which may cause spark and become an ignition source. The pressure in sealed containers can increase under the influence of heat. Keep container tightly closed in a cool, well-ventilated place. Keep away from food, drink and animal feedings. Keep out of the reach of children.

8. Exposure controls/personal protection

Occupational exposure limits

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Components	Type	Value
Benzene (CAS 71-43-2)	STEL	5 ppm
	TWA	1 ppm

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components	Type	Value
Ethylbenzene (CAS 100-41-4)	PEL	435 mg/m3 100 ppm
Naphthalene (CAS 91-20-3)	PEL	50 mg/m3
		10 ppm
Xylene (o,m,p isomers) (CAS 1330-20-7)	PEL	435 mg/m3
		100 ppm

US. OSHA Table Z-2 (29 CFR 1910.1000)

Components	Type	Value
Benzene (CAS 71-43-2)	Ceiling	25 ppm
	TWA	10 ppm
Toluene (CAS 108-88-3)	Ceiling	300 ppm
	TWA	200 ppm

US. ACGIH Threshold Limit Values

Components	Type	Value	Form
Benzene (CAS 71-43-2)	STEL	2.5 ppm	Non-aerosol.
	TWA	0.5 ppm	
Ethylbenzene (CAS 100-41-4)	TWA	20 ppm	
Kerosene (CAS 8008-20-6)	TWA	200 mg/m3	
Naphthalene (CAS 91-20-3)	TWA	10 ppm	
Toluene (CAS 108-88-3)	TWA	20 ppm	
Xylene (o,m,p isomers) (CAS 1330-20-7)	STEL	150 ppm	
	TWA	100 ppm	

US. NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value
Benzene (CAS 71-43-2)	STEL	1 ppm
	TWA	0.1 ppm
Ethylbenzene (CAS 100-41-4)	STEL	545 mg/m3
	TWA	125 ppm
		435 mg/m3
		100 ppm
Kerosene (CAS 8008-20-6)	TWA	100 mg/m3
Naphthalene (CAS 91-20-3)	STEL	75 mg/m3
	TWA	15 ppm
		50 mg/m3
		10 ppm
Toluene (CAS 108-88-3)	STEL	560 mg/m3
	TWA	150 ppm
		375 mg/m3
		100 ppm
Xylene (o,m,p isomers) (CAS 1330-20-7)	STEL	655 mg/m3
		150 ppm

US. NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value
	TWA	435 mg/m3 100 ppm

Biological limit values

ACGIH Biological Exposure Indices

Components	Value	Determinant	Specimen	Sampling Time
Benzene (CAS 71-43-2)	25 µg/g	S-Phenylmercap- turic acid	Creatinine in urine	*
Ethylbenzene (CAS 100-41-4)	0.15 g/g	Sum of mandelic acid and phenylglyoxylic acid	Creatinine in urine	*
Toluene (CAS 108-88-3)	0.3 mg/g	o-Cresol, with hydrolysis	Creatinine in urine	*
	0.03 mg/l	Toluene	Urine	*
	0.02 mg/l	Toluene	Blood	*
Xylene (o,m,p isomers) (CAS 1330-20-7)	1.5 g/g	Methylhippuric acids	Creatinine in urine	*

* - For sampling details, please see the source document.

Exposure guidelines

US - California OELs: Skin designation

Benzene (CAS 71-43-2)	Can be absorbed through the skin.
Toluene (CAS 108-88-3)	Can be absorbed through the skin.

US - Minnesota Haz Subs: Skin designation applies

Toluene (CAS 108-88-3)	Skin designation applies.
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US ACGIH Threshold Limit Values: Skin designation

Benzene (CAS 71-43-2)	Can be absorbed through the skin.
Kerosene (CAS 8008-20-6)	Can be absorbed through the skin.
Naphthalene (CAS 91-20-3)	Can be absorbed through the skin.

Appropriate engineering controls	Provide adequate general and local exhaust ventilation. Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits. Use explosion-proof equipment.
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Individual protection measures, such as personal protective equipment

Eye/face protection	Wear safety glasses. If splash potential exists, wear full face shield or chemical goggles.
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Skin protection

Hand protection	Avoid exposure - obtain special instructions before use. Wear protective gloves. Protective gloves.
Other	Wear chemical-resistant, impervious gloves. Full body suit and boots are recommended when handling large volumes or in emergency situations. Flame retardant protective clothing is recommended.

Respiratory protection	Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator. If workplace exposure limits for product or components are exceeded, NIOSH approved equipment should be worn. Proper respirator selection should be determined by adequately trained personnel, based on the contaminants, the degree of potential exposure and published respiratory protection factors. This equipment should be available for nonroutine and emergency use.
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Thermal hazards	Wear appropriate thermal protective clothing, when necessary.
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General hygiene considerations	Avoid contact with eyes. Avoid contact with skin. Keep away from food and drink. Wash hands before breaks and immediately after handling the product. Provide eyewash station and safety shower. Handle in accordance with good industrial hygiene and safety practice.
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9. Physical and chemical properties

Appearance	Liquid (may be dyed red).
Physical state	Liquid.
Form	Liquid.
Color	Clear. Straw.

Jet Fuels

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Prepared by 3E Company

Odor	Kerosene (strong).
Odor threshold	Not available.
pH	Not available.
Melting point/freezing point	Not available.
Initial boiling point and boiling range	320 - 579.9 °F (160 - 304.39 °C)
Flash point	> 100.0 °F (> 37.8 °C) Closed Cup
Evaporation rate	< 0.1 (butyl acetate = 1)
Flammability (solid, gas)	Not available.
Upper/lower flammability or explosive limits	
Flammability limit - lower (%)	>= 0.7
Flammability limit - upper (%)	<= 7
Explosive limit - lower (%)	Not available.
Explosive limit - upper (%)	Not available.
Vapor pressure	< 2.7 kPa (<20mmHg) (at 20 °C)
Vapor density	3 (Air=1)
Relative density	79 - 0.84 (Water=1)
Solubility(ies)	
Solubility (water)	Not available.
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	399.9 °F (204.39 °C)
Decomposition temperature	Not available.
Viscosity	Not available.
Other information	
Percent volatile	Negligible.

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability	Stable under normal temperature conditions and recommended use.
Possibility of hazardous reactions	Hazardous polymerization does not occur.
Conditions to avoid	Heat, flames and sparks. Ignition sources. Contact with incompatible materials. Do not pressurize, cut, weld, braze, solder, drill, grind or expose empty containers to heat, flame, sparks, static electricity, or other sources of ignition; they may explode and cause injury or death.
Incompatible materials	Strong oxidizing agents.
Hazardous decomposition products	No hazardous decomposition products are known.

11. Toxicological information

Information on likely routes of exposure

Inhalation	In high concentrations, mists/vapors may irritate throat and respiratory system and cause coughing. May cause drowsiness or dizziness.
Skin contact	Causes skin irritation. Prolonged contact may cause dryness of the skin.
Eye contact	May cause eye irritation.
Ingestion	May be fatal if swallowed and enters airways.
Symptoms related to the physical, chemical and toxicological characteristics	Irritation of nose and throat. Irritation of eyes and mucous membranes. Skin irritation. Unconsciousness. Corneal damage. Narcosis. Cyanosis (blue tissue condition, nails, lips, and/or skin). Decrease in motor functions. Behavioral changes. Edema. Liver enlargement. Jaundice. Conjunctivitis. Proteinuria. Defatting of the skin. Rash.

Information on toxicological effects

Acute toxicity	May be fatal if swallowed and enters airways.
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Components	Species	Test Results
Benzene (CAS 71-43-2)		
Acute		
<i>Dermal</i>		
LD50	Guinea pig; Rabbit	> 9.4 ml/kg, 24 Hours
<i>Inhalation</i>		
LC50	Mouse	9980 ppm
		9980 ppm, 7 Hours
	Rat	43767 mg/m3, 4 Hours
		13700 ppm, 4 Hours
		10000 ppm, 7 Hours
<i>Oral</i>		
LD50	Rat	5970 mg/kg
Ethylbenzene (CAS 100-41-4)		
Acute		
<i>Dermal</i>		
LD50	Rabbit	> 5000 mg/kg
		17.8 ml/kg, 24 Hours
<i>Inhalation</i>		
LC50	Mouse	> 8000 ppm, 20 Minutes
	Rat	4000 ppm
<i>Oral</i>		
LD50	Rat	5.46 g/kg
<i>Other</i>		
LD50	Mouse	17.81 mm/kg
Kerosene (CAS 8008-20-6)		
Acute		
<i>Dermal</i>		
LD50	Rabbit	> 2000 mg/kg
<i>Inhalation</i>		
LC50	Rat	> 4.3 mg/l, 4 Hours
<i>Oral</i>		
LD50	Rat	> 5000 mg/kg
Naphthalene (CAS 91-20-3)		
Acute		
<i>Dermal</i>		
LD50	Rabbit	> 2 g/kg
<i>Oral</i>		
LD50	Rat	490 mg/kg
Toluene (CAS 108-88-3)		
Acute		
<i>Dermal</i>		
LD50	Rabbit	14.1 ml/kg
<i>Inhalation</i>		
LC50	Rat	49000 mg/m ³ , 4 Hours
<i>Oral</i>		
LD50	Rat	636 mg/kg
Xylene (o,m,p isomers) (CAS 1330-20-7)		
Acute		
<i>Dermal</i>		
LD50	Rabbit	12126 mg/kg, 24 Hours

Components	Species	Test Results
		> 5000 ml/kg, 4 Hours
<i>Inhalation</i>		
LC50	Mouse	5300 ppm, 6 Hours
	Rat	5922 ppm, 4 Hours
<i>Oral</i>		
LD50	Mouse	5251 mg/kg
	Rat	3523 mg/kg
		10 ml/kg
Skin corrosion/irritation	Causes skin irritation.	
Serious eye damage/eye irritation	Based on available data, the classification criteria are not met.	
Respiratory or skin sensitization		
Respiratory sensitization	Based on available data, the classification criteria are not met.	
Skin sensitization	Based on available data, the classification criteria are not met. This substance may have a potential for sensitization which may provoke an allergic reaction among sensitive individuals.	
Germ cell mutagenicity	May cause genetic defects. In in-vitro experiments, neither benzene, toluene nor xylene changed the number of sister-chromatid exchanges (SCEs) or the number of chromosomal aberrations in human lymphocytes. However, toluene and xylene caused a significant cell growth inhibition which was not observed with benzene in the same concentrations. In in-vivo experiments, toluene changed the number of sister-chromatid exchanges (SCEs) in human lymphocytes. Toluene may cause heritable genetic damage.	
Carcinogenicity	May cause cancer.	
IARC Monographs. Overall Evaluation of Carcinogenicity		
Benzene (CAS 71-43-2)	1 Carcinogenic to humans.	
Ethylbenzene (CAS 100-41-4)	2B Possibly carcinogenic to humans.	
Naphthalene (CAS 91-20-3)	2B Possibly carcinogenic to humans.	
Toluene (CAS 108-88-3)	3 Not classifiable as to carcinogenicity to humans.	
Xylene (o,m,p isomers) (CAS 1330-20-7)	3 Not classifiable as to carcinogenicity to humans.	
NTP Report on Carcinogens		
Benzene (CAS 71-43-2)	Known To Be Human Carcinogen.	
Naphthalene (CAS 91-20-3)	Reasonably Anticipated to be a Human Carcinogen.	
OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)		
Benzene (CAS 71-43-2)	Cancer	
Reproductive toxicity	Suspected of damaging fertility or the unborn child. Benzene, xylene and toluene have demonstrated animal effects of reproductive toxicity. Animal studies of benzene have shown testicular effects, alterations in reproductive cycles, chromosomal aberrations and embryo/fetotoxicity. Can cause adverse reproductive effects - such as birth defects, miscarriages, or infertility. Avoid exposure to women during early pregnancy. Avoid contact during pregnancy/while nursing.	
Specific target organ toxicity - single exposure	May cause drowsiness or dizziness.	
Specific target organ toxicity - repeated exposure	Based on available data, the classification criteria are not met.	
Aspiration hazard	May be fatal if swallowed and enters airways.	
Chronic effects	Cancer hazard. Can cause cancer. Contains a substance which may have a mutagenic effect. Suspected of damaging fertility or the unborn child. Frequent or prolonged contact may defat and dry the skin, leading to discomfort and dermatitis.	
Further information	Symptoms may be delayed.	
12. Ecological information		
Ecotoxicity	Toxic to aquatic life with long lasting effects.	

Components		Species	Test Results
Benzene (CAS 71-43-2)			
Aquatic			
Crustacea	EC50	Water flea (Daphnia magna)	8.76 - 15.6 mg/l, 48 hours
Fish	LC50	Rainbow trout,donaldson trout (Oncorhynchus mykiss)	5.3 mg/l, 96 hours
Ethylbenzene (CAS 100-41-4)			
Aquatic			
Crustacea	EC50	Water flea (Daphnia magna)	1 - 4 mg/l, 48 hours
Fish	LC50	Rainbow trout,donaldson trout (Oncorhynchus mykiss)	4 mg/l, 96 hours
Naphthalene (CAS 91-20-3)			
Aquatic			
Crustacea	EC50	Water flea (Daphnia magna)	1.09 - 3.4 mg/l, 48 hours
Fish	LC50	Pink salmon (Oncorhynchus gorbuscha)	0.95 - 1.62 mg/l, 96 hours
Toluene (CAS 108-88-3)			
Aquatic			
Crustacea	EC50	Water flea (Daphnia magna)	5.46 - 9.83 mg/l, 48 hours
Fish	LC50	Rainbow trout,donaldson trout (Oncorhynchus mykiss)	5.89 - 7.81 mg/l, 96 hours
Xylene (o,m,p isomers) (CAS 1330-20-7)			
Aquatic			
Fish	LC50	Rainbow trout,donaldson trout (Oncorhynchus mykiss)	8 mg/l, 96 Hours
Persistence and degradability	None known.		
Bioaccumulative potential	Not available.		
Partition coefficient n-octanol / water (log Kow)			
Benzene (CAS 71-43-2)	2.13		
Ethylbenzene (CAS 100-41-4)	3.15		
Toluene (CAS 108-88-3)	2.73		
Xylene (o,m,p isomers) (CAS 1330-20-7)	3.2		
Mobility in soil	Not available.		
Other adverse effects	Not available.		
13. Disposal considerations			
Disposal instructions	Dispose in accordance with all applicable regulations. This material and its container must be disposed of as hazardous waste. Dispose of this material and its container to hazardous or special waste collection point. Incinerate the material under controlled conditions in an approved incinerator. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container.		
Hazardous waste code	D001: Waste Flammable material with a flash point <140 °F D018: Waste Benzene		
US RCRA Hazardous Waste U List: Reference			
Benzene (CAS 71-43-2)	U019		
Naphthalene (CAS 91-20-3)	U165		
Toluene (CAS 108-88-3)	U220		
Xylene (o,m,p isomers) (CAS 1330-20-7)	U239		
Waste from residues / unused products	Dispose of in accordance with local regulations.		
Contaminated packaging	Offer rinsed packaging material to local recycling facilities.		
14. Transport information			
DOT			
UN number	UN1863		
UN proper shipping name	Fuel, aviation, turbine engine		

Transport hazard class(es)

Class	- Combustible Liquid
Subsidiary risk	-
Label(s)	3
Packing group	III
Environmental hazards	
Marine pollutant	Yes
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.
Special provisions	144, B1, IB3, T2, TP1
Packaging exceptions	150
Packaging non bulk	203
Packaging bulk	242

IATA

UN number	UN1863
UN proper shipping name	Fuel, aviation, turbine engine
Transport hazard class(es)	
Class	3
Subsidiary risk	-
Packing group	III
Environmental hazards	Yes
ERG Code	3L
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

IMDG

UN number	UN1863
UN proper shipping name	FUEL, AVIATION, TURBINE ENGINE
Transport hazard class(es)	
Class	3
Subsidiary risk	-
Packing group	III
Environmental hazards	
Marine pollutant	Yes
EmS	F-E, S-E
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not applicable. However, this product is a liquid and if transported in bulk covered under MARPOL 73/78, Annex I.

15. Regulatory information

US federal regulations This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.
All components are on the U.S. EPA TSCA Inventory List.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Benzene (CAS 71-43-2)	Cancer Central nervous system Blood Aspiration Skin Eye respiratory tract irritation Flammability
-----------------------	--

CERCLA Hazardous Substance List (40 CFR 302.4)

Benzene (CAS 71-43-2)	LISTED
Ethylbenzene (CAS 100-41-4)	LISTED
Naphthalene (CAS 91-20-3)	LISTED
Toluene (CAS 108-88-3)	LISTED
Xylene (o,m,p isomers) (CAS 1330-20-7)	LISTED

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories	Immediate Hazard - Yes
	Delayed Hazard - Yes
	Fire Hazard - Yes
	Pressure Hazard - No
	Reactivity Hazard - No

SARA 302 Extremely hazardous substance

Not listed.

SARA 311/312 Hazardous chemical Yes

SARA 313 (TRI reporting)

Chemical name	CAS number	% by wt.
Naphthalene	91-20-3	0 - 3
Xylene (o,m,p isomers)	1330-20-7	0 - 2
Benzene	71-43-2	0 - 1
Ethylbenzene	100-41-4	0 - 1

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Benzene (CAS 71-43-2)
Ethylbenzene (CAS 100-41-4)
Naphthalene (CAS 91-20-3)
Toluene (CAS 108-88-3)
Xylene (o,m,p isomers) (CAS 1330-20-7)

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated.

Safe Drinking Water Act (SDWA)	Not regulated.
---------------------------------------	----------------

Drug Enforcement Administration (DEA). List 2, Essential Chemicals (21 CFR 1310.02(b) and 1310.04(f)(2) and Chemical Code Number

Toluene (CAS 108-88-3) 6594

Drug Enforcement Administration (DEA). List 1 & 2 Exempt Chemical Mixtures (21 CFR 1310.12(c))

Toluene (CAS 108-88-3) 35 %WV

DEA Exempt Chemical Mixtures Code Number

Toluene (CAS 108-88-3) 594

US state regulations WARNING: This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

US. Massachusetts RTK - Substance List

Benzene (CAS 71-43-2)
Ethylbenzene (CAS 100-41-4)
Kerosene (CAS 8008-20-6)
Naphthalene (CAS 91-20-3)
Toluene (CAS 108-88-3)
Xylene (o,m,p isomers) (CAS 1330-20-7)

US. New Jersey Worker and Community Right-to-Know Act

Benzene (CAS 71-43-2)
Ethylbenzene (CAS 100-41-4)
Kerosene (CAS 8008-20-6)
Naphthalene (CAS 91-20-3)
Toluene (CAS 108-88-3)
Xylene (o,m,p isomers) (CAS 1330-20-7)

US. Pennsylvania Worker and Community Right-to-Know Law

Benzene (CAS 71-43-2)
Ethylbenzene (CAS 100-41-4)
Kerosene (CAS 8008-20-6)
Naphthalene (CAS 91-20-3)
Toluene (CAS 108-88-3)
Xylene (o,m,p isomers) (CAS 1330-20-7)

US. Rhode Island RTK

Benzene (CAS 71-43-2)
Ethylbenzene (CAS 100-41-4)

Naphthalene (CAS 91-20-3)
Toluene (CAS 108-88-3)
Xylene (o,m,p isomers) (CAS 1330-20-7)

US. California Proposition 65

US - California Proposition 65 - Carcinogens & Reproductive Toxicity (CRT): Listed substance

Benzene (CAS 71-43-2)
Ethylbenzene (CAS 100-41-4)
Naphthalene (CAS 91-20-3)
Toluene (CAS 108-88-3)

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	No
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates this product complies with the inventory requirements administered by the governing country(s).

A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information, including date of preparation or last revision

Issue date 27-June-2013
Revision date 03-September-2014
Version # 03
NFPA ratings



References

ACGIH
EPA: AQUIRE database
NLM: Hazardous Substances Data Base
US. IARC Monographs on Occupational Exposures to Chemical Agents
HSDB® - Hazardous Substances Data Bank
IARC Monographs. Overall Evaluation of Carcinogenicity
National Toxicology Program (NTP) Report on Carcinogens
ACGIH Documentation of the Threshold Limit Values and Biological Exposure Indices

Disclaimer

This material Safety Data Sheet (SDS) was prepared in accordance with 29 CFR 1910.1200 by Valero Marketing & Supply Co., ("VALERO"). VALERO does not assume any liability arising out of product use by others. The information, recommendations, and suggestions presented in this SDS are based upon test results and data believed to be reliable. The end user of the product has the responsibility for evaluating the adequacy of the data under the conditions of use, determining the safety, toxicity and suitability of the product under these conditions, and obtaining additional or clarifying information where uncertainty exists. No guarantee expressed or implied is made as to the effects of such use, the results to be obtained, or the safety and toxicity of the product in any specific application. Furthermore, the information herein is not represented as absolutely complete, since it is not practicable to provide all the scientific and study information in the format of this document, plus additional information may be necessary under exceptional conditions of use, or because of applicable laws or government regulations.

APPENDIX D 1.1– Agnico Eagle Pre-discharge and Spill Response Sea Can checklists

OHF / Ship to Shore Fuel Discharge



Agnico Eagle Mines: Meadowbank Division
Environment Department



Pre-discharge Checklist for AEM's Oil Handling Facility in Baker Lake

Date: _____ **Inspected By:** _____

Time: _____ **Vessel Unloading:** _____

Pre-Discharge Check List	Conform	Non-Conform	Comments
Is there two way communications between the OHF and the off-loading Vessel?			
Has a review of response material checklist been completed?			
Current Copy of OPEP and Declaration at the OHF.			
Prior to discharge have the certification of the transfer conduits been received?			
Has there been secondary containment placed underneath each connection of Conduit?			
Is lighting in place at the transfer flange to provide illumination during any transfers taking place during the low to no light hours.			
Prior to discharge has the Vessels Ship/Shore checklist been reviewed and a completed copy received by AEM.			
Prior to discharge inform H&S and Environment Departments that fuel transfer will commence.			
Has the emergency response equipment been reviewed with all personnel and contractors on shore.			

Comments/Recommendations: _____

Signature : _____

Agnico Eagle Mines: Meadowbank Division Environment Department



Inventory report for Spill Response Sea Can at AEM's Oil Handling Facility in Baker Lake

Date: _____

Inspected By: _____

Time: _____

Vessel Unloading: _____

Subject	Conform	Non-conform	Comments
Is the material and PPE stored in a manner that is <u>organized and accessible</u> in order to easily respond to spill?			
Are the sea cans is physically in good shape? Easy to open?			
Are the sea cans identified as "Environmental Emergency Sea Can"?			
Is all the spill material in place? Nothing Missing?			
3 x Empty drums (sealed)			
2 x Mini Berm 36"x 36"			
2 x 4 Drums Berm 4'x 8'			
4 x Tarp 20'x 30'			
4 x Tarp 30'x 50'			
20 x Oil Spill Absorbent Pads			
10 x Universal Absorbent Boom 5"x 10' (For Hydro-soluble Chemical)			
10 x Universal Absorbent Boom 8"x 10' (For Hydro-soluble Chemical)			
10 x Petroleum base Absorbent Boom 5"x 10' (for Petroleum product)			
8 x Maritime Barrier (Baffle)			
5 x ABS pipe: 10' long x 4" diameter			
2 x Cell-U-Sorb (Absorbent)			
2 x Amerisorb Peat moss (Absorbent)			

Agnico Eagle Mines: Meadowbank Division Environment Department



2 x Oil Gator Absorbent			
1 x Plug Patties			
4 x Quatrex bags			
2 x Fork Lift Crate			
4 x Hand Shovel			
1 x Cro Bar Chisel			
1 x Ice Breaker Chisel			
1 x Sledge hammer			
15 x Rod bar 4'			
1x ½ drum containment			
100 feet of rope			
Knife to cut rope			
Emergency Boat			
18ft Lund boat			
20 HP motor			
Fresh gasoline in jerry can			
Boat Safety Kit			
2 Mustang Suits			
2 Paddles			
Anchor with 30 feet of rope			
Additional 20 feet of rope			
Is all the PPE material in its place?			
6 x Rain gear -- Pants and Top (L & 2-XL)			
6 x Rubber boots (size 8, 10,12)			
12 x Rubber gloves			
6 x Goggles			
6 x Tyvex suits (L & 2 XL)			

Agnico Eagle Mines: Meadowbank Division Environment Department



6 x Safety glasses			
6 x Leather gloves			

Comments/Recommendations: _____

Signature: _____

APPENDIX D 1.2 – OHF Ship to Shore Fuel Discharge Procedure

OHF / Ship to Shore Fuel Discharge



PROCEDURE NUMBER: **MBK-ENV-0013 Rev. 2**

People concerned	<ul style="list-style-type: none"> • Environment • Site Services • Procurement and Logistics • Health and Safety 	Prepared by	Environment Department
		Authorized by	Jeffrey Pratt – Environment Coordinator
Effective :	July 8, 2015	<p><i>“Safety First, Safety Last ... Safety Always!”</i></p> <p><i>“No Repeats” – Our Stepping Stone to ZERO HARM</i></p>	

This procedure corresponds to the required minimum standard. Each and every one also have to comply with the rules and regulations of the Nunavut Government in terms of health and safety at work.

Objective:

- To ensure that prior to the discharge of any fuel into the Agnico Eagle Baker Lake Tank Farm or Agnico Eagle Baker Lake Oil Handling Facility (OHF) that all proper steps are in place to ensure compliance with Canadian Shipping Act, as well as Nunavut Water Board License and Nunavut Impact Review Board Certificate.

Concerned departments:



Environment



Health & Safety



Site Services



Procurement and Logistics

Risks/ Impacts Legend



Health & Safety



Process/quality









Legal Requirement









Environment

Prior to the beginning of the annual fuel discharge the following must be completed.

Procedure	Risks/ Impacts
<p>1. The Oil Pollution Emergency Plan (OPEP) must be reviewed on an annual basis and updated prior to the first annual discharge. This will include but not limited to:</p> <ul style="list-style-type: none"> a) Reviewing the Phone numbers for emergency's b) Updating maps c) Review and if necessary update equipment lists d) Review roles and responsibilities e) Update Declaration <p>This is the responsibility of the Environment department.</p>	
<p>2. Contact Canadian Coast Guard and Transport Canada Pollution Prevention and make them aware of plans for transferring of fuel into our OHF for that season.</p> <p>This is the responsibility of the Environment department.</p>	
<p>3. Complete <i>Inventory report for Spill Response Sea Can at AEM's Oil Handling Facility in Baker Lake</i>. (*Inventory Checklist found on Page 6)</p> <p>This is the responsibility of the Environment department.</p>	
<p>4. Ensure Woodward (Shipping Company) has provided Transfer Conduit Annual certification.</p> <p>This is the responsibility of Environment Department.</p>	
<p>5. All personnel who will be a part of the fuel transfer (including Baker Lake Supervisor and third part contractor Intertek) must review the OPEP and be familiar with preventive measures to take and with the steps to take in the case of a spill event while fueling.</p> <p>This is the responsibility of Procurement and Logistics</p>	
<p>6. Install secondary containment underneath each connection of conduit on land.</p> <p>This is the responsibility of Environment Department</p>	



OHF / Ship to Shore Fuel Discharge



<p>7. Monitor secondary containment underneath each connection of conduit on land.</p> <p>This is the responsibility of Procurement and Logistics</p>	
<p>8. Ensure there is two way functional communications between the OHF and the off-loading Vessel.</p> <p>This is the responsibility of Procurement and Logistics</p>	
<p>9. Ensure there is lighting in place at the transfer flange to provide illumination during any transfers taking place during the low to no light hours.</p> <p>This is the responsibility of Procurement and Logistics</p>	
<p>10. Prior to any discharge AEM must receive a copy of the Ship/Shore checklist completed by Woodward. And should verify this has been completed (as much as realistically possibly without boarding the ship).</p> <p>This is the responsibility of Procurement and Logistics</p>	
<p>11. Contact must be made with both the H&S and Environmental Departments prior to the discharge of fuels.</p> <p>Meadowbank Health & Safety meadowbank.healthandsafety@agnicoeagle.com</p> <p>Meadowbank Environment meadowbank.environment@agnicoeagle.com</p> <p>This is the responsibility of Procurement and Logistics</p>	
<p>12. The <i>Pre-discharge Checklist for AEM's Oil Handling Facility in Baker Lake</i> must be completed, signed and provided to the Environment department prior to discharge. (*Checklist found on Page 5)</p> <p>This must be done for each fuel tanker for each campaign.</p> <p>This is the responsibility of Procurement and Logistics</p>	
Transfer	
<p>1. Once the above points are completed, the ship to shore transfer can commence.</p>	
<p>2. Photos of the complete fuel transfer process should be taken, visually proving that all above procedures have been reached.</p> <p>This is the responsibility of Environment department and Procurement and Logistics.</p>	

OHF / Ship to Shore Fuel Discharge



<p>3. During the ship-to-shore transfer, AEM will have competent personnel on location at all times to monitor the fuel transfer and maintain contact with the tanker's crew.</p> <p>This is the responsibility of Procurement and Logistics.</p>	
<p>4. Monitor the fuel transfer at the beginning of each transfer and after that on an hourly basis checking the manifold, conduit, tank, and any connection points on land for spills and/or leaks. Communication between shore and ship should take place on an hourly basis.</p> <p>This is the responsibility of Procurement and Logistics.</p>	
<p>5. We are required by law to have a fuel spill scenario every two years. However, since we have shift work at Meadowbank, to ensure adequate training annually we will do mock spill/training and switch shifts each year. This way each shift completes every second year.</p> <p>This is the responsibility of Environment Department in conjunction with ERT to plan and execute.</p>	

APPENDIX D 1.3 – 2023 Mock Spill Minutes



Mock Spill – Post Exercise Report Baker Lake Fuel Farm Facility

July 2023

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SECTION 1 • PURPOSE

The annual mock spill is directed at operations where there is potential for either land-based or marine based spills to occur. The mock spill attempts to demonstrate using verbal instruction and a practical effective exercise which can be taken to prevent spills and/or reduce the damage that results from a potential spill. The mock spill also emphasizes the need to avoid situations that are a potential danger to human health and safety.

The mock spill attempts to capture the scenarios likely encountered by front line staff. Emphasis is placed on diesel and Jet-A as these products are transferred at Baker Lake. The 2023 mock spill exercise selected diesel as the product spilled during the simulation, but the response would have been the same if Jet-A was the selected product. A total of six (6) individuals participated, including two (2) Agnico Eagle Environment team members, two (2) Agnico Eagle Logistics team members, and two (2) representatives from Intertek on July 14, 2023.

SECTION 2 • SPILL MANAGEMENT

2.1 MOCK SPILL SCENARIO

On July 14, 2023, while inspecting the diesel pipeline at the Baker Lake Marshalling facility, an Intertek employee noticed a leak coming from the main flange on shore. Moments later, the Intertek employee is informed that a piece of equipment has reported contacting the fuel line near the lake resulting in another leak. This scenario simulates a spill with a high potential environmental impact to a water body, as well as a fire hazard. As the two spills will be discovered at the same time, the team will have to manage their resources and workforce to contain both leaks.

For the purpose of this scenario, two water totes of ~1000 L will be placed at different areas of the pipe acting as the diesel spill.

A representative of the environment department will take photos and document the spill scenario as well as act as the “Control Room” responder and the Baker Lake dispatch.

The Intertek employee(s) will be requested to:

- Assemble two orange curtains together on shore and deploy the curtains in the water along the shoreline;
- Manage both locations safely and efficiently with the resources available;
- Control and clean up the spill with available response equipment; and
- Ensure fire hazard control measures are put in place (identify any potential fire hazards and move them out of the line of fire).

2.2 ROLE AND RESPONSIBILITY

- Agnico Eagle Environmental department: Felix Quessy-Savard
 - Role and responsibility: Act as the dispatcher and control room team during the scenario. Provide recommendations to improve the process if deemed necessary.
 - Agnico Eagle Environmental department: Thomas Dahm
 - Role and responsibility: Monitored and documented the actions executed by the on-scene workers during the event in order to ensure protocols are followed and to give recommendations to improve the process if deemed necessary.
 - Agnico Eagle Logistics department: Vincent Gravel and Frederic Marcotte
 - Role and responsibility: Aid the Intertek crews upon their request to respond to the environmental emergency. Act as the loader operator that stuck and damaged the fuel line causing the major spill.
-

- Intertek: Derbin Tan and Naccour Arroah
 - Role and responsibility: Inspecting and monitoring the fuel transfer from the manifold through the permanent pipe up to the fuel farm. Respond to any environmental emergency.

2.3 RESPONSE

- **14:25** A leak coming out of the main flange was spotted by the Intertek team.
 1. Intertek personnel immediately contacted the vessel for them to stop the fuel discharge.
 2. Code 1 was called on the radio by Intertek personnel.
 3. Vincent Gravel (Agnico Eagle) was contacted by Intertek personnel for support.
 4. Confirmation given from fuel ship that the pumps were stopped. The three (3) check valves are closed on the line to prevent back flow from Agnico Eagle's tanks.
 - **14:30** Vincent and Frederic (Agnico Eagle) arrived on scene and observed that the leak was under control. As they arrive, Intertek receives another call saying that a truck has damaged the fuel line near the shore.
 1. They immediately asked the operator to move his equipment and shut it down.
 2. Intertek asked Vincent and Frederic to assist in containing the spill.
 3. Code 1 was called to Baker Lake Dispatch by Intertek personnel.
 - **14:32** Intertek representatives arrive at the spill scene with absorbent pads, absorbent boom, shovels, and PPE. One Intertek employee utilizes a shovel and the loose sand to build a berm to slow the flow of the diesel towards Baker Lake.
 1. Vincent was asked to deploy absorbent pads downstream of the contaminated area.
 2. One Intertek employee calls for Environment on the radio looking for support.
 - **14:40** Control room has assembled and is asking for an update on the spill situation from the Intertek employees.
 1. One Intertek representative advises the control room that diesel fuel is heading towards the lake.
 2. Control room advises Intertek to deploy marine barriers in the water to contain any fuel that may make it to the lake and to have an emergency boat in the water on standby. The boats already in the water from the ship are ready and waiting to help deploy booms in water as needed until emergency boat is ready.
 - **14:42** Both Intertek employees along with loader operator remove marine barriers and deploy them along the shore.
-

- **14:47** One Intertek employee heads to their truck to attach the boat and proceeds to back the boat in the water with the other employee acting as the spotter.
- **14:50** Boat was deployed and started.
- **14:52** Confirmation is given to the control room that no contamination has reached a water body. Photos are sent out via cell phone.
- **14:54** Spill matting pickup and requested the loader operator assist with collecting contaminated soil.
- **14:55** Mock spill is ended as the situation is under control.

2.4 DEBRIEFING

After the mock spill, Agnico Eagle and Intertek representatives conducted a debriefing about the mock spill and discussed ways to improve spill response. Overall, the participant's actions and response to the spill are deemed satisfactory.

- Quick reaction and response from Intertek representatives;
 - Organization of Environmental emergency seacans was adequate and Intertek representatives were easily able to gather the response material;
 - Suggestion from Intertek crew to have the vessel involved and test the response and awareness of their crew;
 - Suggestion to include more of the Agnico Eagle logistics team as well as third party contractor Arctic Fuel to increase their knowledge regarding spill response;and
 - Agnico Eagle advised Intertek and Logistics that any contaminated material from a spill at the Baker Lake Marshalling facility will need to be transported back to the MBK landfarm.
-

SECTION 3 • MOCK SPILL PHOTOS



Retrieving Spill Response material from the Emergency Seacan



Utilizing shovel to construct a berm, collecting, and slowing the flow of diesel.



Assembly of marine barriers



Deploying barriers from Emergency Seacan



Barrier ready to be deployed on the lake.

3.1 PRE-DISCHARGE AND MOCK SPILL ATTENDANCE SHEET



AGNICO EAGLE
MEADOWBANK

Pte Discharge

Meeting attendance sheet

Topic: Pre - Discharge Presentation, Mock spill)

Date:

Department:

Name (Print)

Felix Quessy (AEM)

Vincent Gravel

Frédéric Marcotte

DERBIN TAN (INTERTEK)

NAGEUR ALBOSSI (Intertek)

THOMAS DATTM (AEM)

Signature

Felix Quessy

Vincent Gravel

Frédéric Marcotte

DERBIN TAN

NAGEUR ALBOSSI

THOMAS DATTM

APPENDIX E–Woodward Checklist



ISGOTT Checks pre-arrival Ship/Shore Safety Checklist

Date and time: _____

Port and berth: _____

Tanker: _____

Terminal: _____

Product to be transferred: _____

Part 1A. Tanker: checks pre-arrival			
Item	Check	Status	Remarks
1	Pre-arrival information is exchanged (6.5, 21.2)	Yes / No	
2	International shore fire connection is available (5.5, 19.4.3.1)	Yes / No	
3	Transfer hoses are of suitable construction (18.2)	Yes / No	
4	Terminal information booklet reviewed (15.2.2)	Yes / No	
5	Pre-berthing information is exchanged (21.3, 22.3)	Yes / No	
6	Pressure/vacuum valves and/or high-velocity vents are operational (11.1.8)	Yes / No	
7	Fixed and portable oxygen analyzers are operational (2.4)	Yes / No	

Part 1B. Tanker: checks pre-arrival if using an inert gas system			
Item	Check	Status	Remarks
8	Inert gas system pressure and oxygen recorders are operational (11.1.5.2, 11.1.11)	Yes / No	
9	Inert gas system and associated equipment are operational (11.1.5.2, 11.1.11)	Yes / No	
10	Cargo tank atmospheres' oxygen content is less than 8% (11.1.3)	Yes / No	
11	Cargo tank atmospheres are at positive pressure (11.1.3)	Yes / No	



Part 2. Terminal: checks pre-arrival			
Item	Check	Status	Remarks
12	Pre-arrival information is exchanged (6.5, 21.2)	Yes / No	
13	International shore fire connection is available (5.5, 19.4.3.1, 19.4.3.5)	Yes / No	
14	Transfer equipment is of suitable construction (18.1, 18.2)	Yes / No	
15	Terminal information booklet transmitted to the tanker (15.2.2)	Yes / No	
16	Pre-berthing information is exchanged (21.3, 22.3)	Yes / No	



ISGOTT Checks after mooring Ship/Shore Safety Checklist

Part 3. Tanker: checks after mooring			
Item	Check (ISGOTT Reference)	Status (circle)	Remarks
17	Fendering is effective (22.4.1)	Yes / No	
18	Mooring arrangement is effective (22.2, 22.4.3)	Yes / No	
19	Access to and from the tanker is safe (16.4)	Yes / No	
20	Scuppers and savealls are plugged (23.7.4, 23.7.5)	Yes / No	
21	Cargo system sea connections and overboard discharges are secured (23.7.3)	Yes / No	
22	Very high frequency and ultra-high frequency transceivers are set to low power mode (4.11.6, 4.13.2.2)	Yes / No	
23	External openings in superstructures are controlled (23.1)	Yes / No	
24	Pumproom ventilation is effective (10.12.2)	Yes / No	
25	Medium frequency/high-frequency radio antennae are isolated (4.11.4, 4.13.2.1)	Yes / No	
26	Accommodation spaces are at positive pressure (23.2)	Yes / No	
27	Fire control plans are readily available (9.11.2.5)	Yes / No	

Part 4. Terminal: checks after mooring			
Item	Check	Status	Remarks
28	Fendering is effective (22.4.1)	Yes / No	
29	Tanker is moored according to the terminal mooring plan (22.2, 22.4.3)	Yes / No	
30	Access to and from the terminal is safe (16.4)	Yes / No	
31	Spill containment and sumps are secure (18.4.2, 18.4.3, 23.7.4, 23.7.5)	Yes / No	



ISGOTT Checks pre-transfer Ship/Shore Safety Checklist

Date and time: _____

Port and berth: _____

Tanker: _____

Terminal: _____

Product to be transferred: _____

Part 5A. Tanker and terminal: pre-transfer conference				
Item	Check	Tanker status	Terminal status	Remarks
32	Tanker is ready to move at the agreed notice period (9.11, 21.7.1.1, 22.5.4)	Yes	Yes	
33	Effective tanker and terminal communications are established (21.1.1, 21.1.2)	Yes	Yes	
34	Transfer equipment is in a safe condition (isolated, drained, and de-pressurized) (18.4.1)	Yes	Yes	
35	Operation supervision and watchkeeping is adequate (7.9, 23.11)	Yes	Yes	
36	There are sufficient personnel to deal with an emergency (9.11.2.2, 23.11)	Yes	Yes	
37	Smoking restrictions and designated smoking areas are established (4.10, 23.10)	Yes	Yes	
38	Naked light restrictions are established (4.10.1)	Yes	Yes	
39	Control of electrical and electronic devices is agreed (4.11, 4.12)	Yes	Yes	
40	Means of emergency escape from both tanker and terminal are established (20.5)	Yes	Yes	
41	Firefighting equipment is ready for use (5, 19.4, 23.8)	Yes	Yes	
42	Oil spill clean-up material is available (20.4)	Yes	Yes	
43	Manifolds are properly connected (23.6.1)	Yes	Yes	
44	Sampling and gauging protocols are agreed (23.5.3.2, 23.7.7.5)	Yes	Yes	
45	Procedures for cargo, bunkers, and ballast handling operations are agreed (21.4, 21.5, 21.6)	Yes	Yes	



Part 5A. Tanker and terminal: pre-transfer conference (cont.)				
Item	Check	Tanker status	Terminal status	Remarks
46	Cargo transfer management controls are agreed (12.1)	Yes	Yes	
47	Cargo tank cleaning requirements, including crude oil washing, are agreed (12.3, 12.5, 21.4.1)	Yes	Yes	See also parts 7B/7C as applicable
48	Cargo tank gas freeing arrangements agreed (12.4)	Yes	Yes	See also part 7C
49	Cargo and bunker slop handling requirements agreed (12.1, 21.2, 21.4)	Yes	Yes	See also part 7C
50	Routine for regular checks on cargo transferred are agreed (23.7.2)	Yes	Yes	
51	Emergency signals and shutdown procedures are agreed (12.1.6.3, 18.5, 21.1.2)	Yes	Yes	
52	Safety data sheets are available (1.4.4, 20.1, 21.4)	Yes	Yes	
53	Hazardous properties of the products to be transferred are discussed (1.2, 1.4)	Yes	Yes	
54	Electrical insulation of the tanker/terminal interface is effective (12.9.5, 17.4, 18.2.14)	Yes	Yes	
55	Tank venting system and closed operation procedures are agreed (11.3.3.1, 21.4, 21.5, 23.3.3)	Yes	Yes	
56	Vapour return line operational parameters are agreed (11.5, 18.3, 23.7.7)	Yes	Yes	
57	Measures to avoid back-filling are agreed (12.1.13.7)	Yes	Yes	
58	Status of unused cargo and bunker connections is satisfactory (23.7.1, 23.7.6)	Yes	Yes	
59	Portable very high frequency and ultra high frequency radios are intrinsically safe (4.12.4, 21.1.1)	Yes	Yes	
60	Procedures for receiving nitrogen from terminal to cargo tank are agreed (12.1.14.8)	Yes	Yes	



Additional for chemical tankers – Checks pre-transfer

Part 5B. Tanker and terminal: bulk liquid chemicals. Checks pre-transfer				
Item	Check	Tanker status	Terminal status	Remarks
61	Inhibition certificate received (if required) from manufacturer	Yes	Yes	
62	Appropriate personal protective equipment identified and available (4.8.1)	Yes	Yes	
63	Countermeasures against personal contact with cargo are agreed (1.4)	Yes	Yes	
64	Cargo handling rate and relationship with valve closure times and automatic shutdown systems is agreed (16.8, 21.4, 21.5, 21.6)	Yes	Yes	
65	Cargo system gauge operation and alarm set points are confirmed (12.1.6.6.1)	Yes	Yes	
66	Adequate portable vapour detection instruments are in use (2.4)	Yes	Yes	
67	Information on firefighting media and procedures is exchanged (5, 19)	Yes	Yes	
68	Transfer hoses confirmed suitable for the product being handled (18.2)	Yes	Yes	
69	Confirm cargo handling is only by a permanent installed pipeline system	Yes	Yes	
70	Procedures are in place to receive nitrogen from the terminal for inerting or purging (12.1.14.8)	Yes	Yes	



Part 6. Tanker and terminal: agreements pre-transfer				
Part 5 item	Agreement	Details	Tanker initials	Terminal initials
32	Tanker manoeuvring readiness	Notice period (maximum) for full readiness to manoeuvre: Period of disablement (if permitted):		
33	Security protocols	Security level: Local requirements:		
33	Effective tanker/terminal communications	Primary system: Backup system:		
35	Operational supervision and watchkeeping	Tanker: Terminal:		
37 38	Dedicated smoking areas and naked lights restrictions	Tanker: Terminal:		
45	Maximum wind, current and sea/swell criteria or other environmental factors	Stop cargo transfer: Disconnect: Unberth:		
45 46	Limits for cargo, bunkers and ballast handling	Maximum transfer rates: Topping-off rates: Maximum manifold pressure: Cargo temperature: Other limitations:		
45 46	Pressure surge control	Minimum number of cargo tanks open: Tank switching protocols:		



Part 6. Tanker and terminal: agreements pre-transfer (cont.)				
Part 5 item	Agreement	Details	Tanker initials	Terminal initials
		Minimum number of cargo tanks open: Tank switching protocols: Full load rate: Topping-off rate: Closing time of automatic valves:		
46	Cargo transfer management procedures	Action notice periods: Transfer stop protocols:		
50	Routine for regular checks on cargo transferred are agreed	Routine transferred quantity checks:		
51	Emergency signals	Tanker: Terminal:		
55	Tank venting system	Procedure:		
55	Closed operations	Requirements:		
56	Vapour return line	Operational parameters: Maximum flow rate:		
60	Nitrogen supply from terminal	Procedures to receive: Maximum pressure: Flow rate:		
XX	Exceptions and additions	Special issues that both parties should be aware of:		



Date and time: _____

Port and berth: _____

Tanker: _____

Terminal: _____

Product to be transferred: _____

Part 7A. General tanker: checks pre-transfer			
Item	Check	Status	Remarks
84	Portable drip trays are correctly positioned and empty (23.7.5)	Yes	
85	Individual cargo tank inert gas supply valves are secured for cargo plan (12.1.13.4)	Yes	
86	Inert gas system delivering inert gas with oxygen content not more than 5% (11.1.3)	Yes	
87	Cargo tank high-level alarms are operational (12.1.6.6.1)	Yes	
88	All cargo, ballast and bunker tanks openings are secured (23.3)	Yes	



ISGOTT Checks after pre-transfer conference Ship/Shore Safety Checklist

For tankers that will perform tank cleaning alongside and/or gas freeing alongside

Part 7C. Tanker: checks before tank cleaning and/or gas freeing			
Item	Check	Status	Remarks
91	Permission for tank cleaning operations is confirmed (21.2.3, 21.4, 25.4.3)	Yes	
92	Permission for gas freeing operations is confirmed (12.4.3)	Yes	
93	Tank cleaning procedures are agreed (12.3.2, 21.4, 21.6)	Yes	
94	If cargo tank entry is required, procedures for entry have been agreed with the terminal (10.5)	Yes	
95	Slop reception facilities and requirements are confirmed (12.1, 21.2, 21.4)	Yes	



Declaration

We, the undersigned, have checked the items in the applicable parts 1 to 7 as marked and signed below:

	Tanker	Terminal
Part 1A. Tanker: checks pre-arrival	<input type="checkbox"/>	<input type="checkbox"/>
Part 1B. Tanker: checks pre-arrival if using an inert gas system	<input type="checkbox"/>	<input type="checkbox"/>
Part 2. Terminal: checks pre-arrival	<input type="checkbox"/>	<input type="checkbox"/>
Part 3. Tanker: checks after mooring	<input type="checkbox"/>	<input type="checkbox"/>
Part 4. Terminal: checks after mooring	<input type="checkbox"/>	<input type="checkbox"/>
Part 5A. Tanker and terminal: pre-transfer conference	<input type="checkbox"/>	<input type="checkbox"/>
Part 5B. Tanker and terminal: bulk liquid chemicals. Checks pre-transfer	<input type="checkbox"/>	<input type="checkbox"/>
Part 6. Tanker and terminal: agreements pre-transfer	<input type="checkbox"/>	<input type="checkbox"/>
Part 7A. General tanker: checks pre-transfer	<input type="checkbox"/>	<input type="checkbox"/>
Part 7C. Tanker: checks before tank cleaning and/or gas freeing	<input type="checkbox"/>	<input type="checkbox"/>

In accordance with the guidance in chapter 25 of ISGOTT, we have satisfied ourselves that the entries we have made are correct to the best of our knowledge and that the tanker and terminal are in agreement to undertake the transfer operation.

We have also agreed to carry out the repetitive checks noted in parts 8 and 9 of the ISGOTT SSSCL, which should occur at intervals of not more than _____ hours for the tanker and not more than _____ hours for the terminal.

If, to our knowledge, the status of any item changes, we will immediately inform the other party.

Tanker	Terminal
Name	Name
Rank	Position
Signature	Signature
Date	Date
Time	Time



ISGOTT Checks during transfer Ship/Shore Safety Checklist

Repetitive checks

Part 8. Tanker: repetitive checks during and after transfer								
Item ref	Check	Time	Time	Time	Time	Time	Time	Remarks
Interval time: hrs								
8	Inert gas system pressure and oxygen recording operational	Yes	Yes	Yes	Yes	Yes	Yes	
9	Inert gas system and all associated equipment are operational	Yes	Yes	Yes	Yes	Yes	Yes	
11	Cargo tank atmospheres are at positive pressure	Yes	Yes	Yes	Yes	Yes	Yes	
18	Mooring arrangement is effective	Yes	Yes	Yes	Yes	Yes	Yes	
19	Access to and from the tanker is safe	Yes	Yes	Yes	Yes	Yes	Yes	
20	Scuppers and savealls are plugged	Yes	Yes	Yes	Yes	Yes	Yes	
23	External openings in superstructures are controlled	Yes	Yes	Yes	Yes	Yes	Yes	
24	Pumproom ventilation is effective	Yes	Yes	Yes	Yes	Yes	Yes	
28	Tanker is ready to move at agreed notice period	Yes	Yes	Yes	Yes	Yes	Yes	
29	Fendering is effective	Yes	Yes	Yes	Yes	Yes	Yes	
33	Communications are effective	Yes	Yes	Yes	Yes	Yes	Yes	
35	Supervision and watchkeeping is adequate	Yes	Yes	Yes	Yes	Yes	Yes	
36	Sufficient personnel are available to deal with an emergency	Yes	Yes	Yes	Yes	Yes	Yes	



Part 8. Tanker: repetitive checks during and after the transfer (cont.)								
37	Smoking restrictions and designated smoking areas are complied with	Yes	Yes	Yes	Yes	Yes	Yes	
38	Naked light restrictions are complied with	Yes	Yes	Yes	Yes	Yes	Yes	
39	Control of electrical devices and equipment in hazardous zones is complied with	Yes	Yes	Yes	Yes	Yes	Yes	
40 41 42 51	Emergency response preparedness is satisfactory	Yes	Yes	Yes	Yes	Yes	Yes	
54	Electrical insulation of the tanker/terminal interface is effective	Yes	Yes	Yes	Yes	Yes	Yes	
55	Tank venting system and closed operation procedures are as agreed	Yes	Yes	Yes	Yes	Yes	Yes	
85	Individual cargo tank inert gas valves settings are as agreed	Yes	Yes	Yes	Yes	Yes	Yes	
86	Inert gas delivery maintained at not more than 5% oxygen	Yes	Yes	Yes	Yes	Yes	Yes	
87	Cargo tank high level alarms are operational	Yes	Yes	Yes	Yes	Yes	Yes	
Initials								



Part 9. Terminal: repetitive checks during and after transfer								
Item ref	Check	Time	Time	Time	Time	Time	Time	Remarks
Interval time: hrs								
18	Mooring arrangement is effective	Yes	Yes	Yes	Yes	Yes	Yes	
19	Access to and from the terminal is safe	Yes	Yes	Yes	Yes	Yes	Yes	
29	Fendering is effective	Yes	Yes	Yes	Yes	Yes	Yes	
32	Spill containment and sumps are secure	Yes	Yes	Yes	Yes	Yes	Yes	
33	Communications are effective	Yes	Yes	Yes	Yes	Yes	Yes	
35	Supervision and watchkeeping is adequate	Yes	Yes	Yes	Yes	Yes	Yes	
36	Sufficient personnel are available to deal with an emergency	Yes	Yes	Yes	Yes	Yes	Yes	
37	Smoking restrictions and designated smoking areas are complied with	Yes	Yes	Yes	Yes	Yes	Yes	
38	Naked light restrictions are complied with	Yes	Yes	Yes	Yes	Yes	Yes	
39	Control of electrical devices and equipment in hazardous zones is complied with	Yes	Yes	Yes	Yes	Yes	Yes	
40 41 47 51	Emergency response preparedness is satisfactory	Yes	Yes	Yes	Yes	Yes	Yes	
54	Electrical insulation of the tanker/terminal interface is effective	Yes	Yes	Yes	Yes	Yes	Yes	
55	Tank venting system and closed operation procedures are as agreed	Yes	Yes	Yes	Yes	Yes	Yes	
Initials								

APPENDIX F– Concordance Table

CONCORDANCE TABLE

Oil Handling Facilities (OHF)

The content of the Oil Pollution Prevention Plan (OPPP) and the Oil Pollution emergency Plan (OPEP) must make reference and meet the regulatory requirements from the following sources :

- Canada Shipping Act, 2001 – Part 8
- Environmental Response Regulations ([SOR/2019-252](#))
- Environmental Response Standards ([TP 14909](#))
- Vessel Pollution and Dangerous Chemicals Regulations ([SOR/2012-69](#))

NOTE : The information contained in this document is for reference only. It is the responsibility of the OHF operator to inquire and become familiar with the provisions of the Act, and to ensure that the plans are compliant with applicable regulations and standards.

Canada Shipping Act, 2001 – Part 8

OHF Requirements

168 (1) Subject to the regulations, the operator of an oil handling facility of a class established by the regulations shall

(a) have an arrangement with a response organization in respect of any quantity of oil that is, at any time, involved in being loaded or unloaded to or from a vessel at the oil handling facility, to a prescribed maximum quantity;

(b) have on site a declaration in the form specified by the Minister that

(i) describes the manner in which the operator will comply with the regulations made under paragraph 182(1)(a),

(ii) confirms that the arrangement has been made, and

(iii) identifies every person who is authorized to implement the arrangement and the oil pollution emergency plan referred to in paragraph (d);

(c) have on site an up-to-date oil pollution prevention plan to prevent a discharge of oil during the loading or unloading of a vessel, which meets the requirements set out in the regulations;

(c.1) submit the up-to-date oil pollution prevention plan to the Minister within the time and in the circumstances set out in the regulations;

(d) have on site an up-to-date oil pollution emergency plan to respond to a discharge of oil during the loading or unloading of a vessel, which meets the requirements set out in the regulations;

(d.1) submit the up-to-date oil pollution emergency plan to the Minister within the time and in the circumstances set out in the regulations; and

(e) have the procedures, equipment and resources required by the regulations available for immediate use in the event of a discharge of oil during the loading or unloading of a vessel.

(2) [Repealed, 2014, c.29, s. 61]

Duty to take reasonable measures – oil handling facilities

- (3) The operator of an oil handling facility referred to in subsection (1) shall take reasonable measures to implement
- (a) the oil pollution prevention plan referred to in paragraph (1)(c); and
 - (b) in respect of an oil pollution incident, the oil pollution emergency plan referred to in paragraph (1)(d).

Update or revise plans

168.1 Despite any other provision of this Part or the regulations, the Minister may direct the operator of an oil handling facility to update or revise an oil pollution prevention plan or an oil pollution emergency plan and to submit the up-to-date or revised plan to the Minister within the time specified by the Minister.

Note: Exceptions to Section 168 of the Canada Shipping Act, 2001 can be found in the Environmental Response Regulations.

Exception – Arrangement with a Response Organization

Section 6 – Paragraph 168(1)(a) and subparagraphs 168(1)(b)(ii) and (iii) of the Act do not apply in respect of oil handling facilities that are located north of latitude 60° N.

Environmental Response Regulations (SOR/2019-252)

SECTION	REQUIREMENT	REFERENCE (page, section, etc.)
	<u>Oil Pollution Prevention Plan (OPPP)</u>	
	Content	
10(a)	The oil pollution prevention plan must contain the following: the position of the person who is responsible for supervising in person the loading or unloading of oil to or from a vessel;	Section 5.3, page 18
10(b)	the types and quantity of equipment for use in the loading or unloading of oil to or from a vessel and the measures to be taken in order to meet the manufacturer's specifications in respect of the maintenance and certification of that equipment;	Section 3.2.4, page 6; Section 5.3, page 18
10(c)	the procedures to be followed by the oil handling facility's personnel before and during the loading or unloading of oil to or from a vessel;	Section 5.3, page 18; Appendix D; Appendix E
10(d)	the procedures to be followed in order to meet the requirements of subsection 38(2) of the <i>Vessel Pollution and Dangerous Chemicals Regulations</i> and in order to reduce the rate of flow or pressure in a safe and efficient manner when the supervisor on board a vessel gives notice of the stopping of the loading or unloading of oil to or from the vessel to the person referred to in paragraph (a);	Section 5.3, page 18; Section 8, page 28; Section 10, page 39

10(e)	the measures to be taken in order to meet the requirements of section 33 of the <i>Vessel Pollution and Dangerous Chemicals Regulations</i> and, in the event of failure of the means of communication referred to in that section, in order to ensure that effective two-way communication between the person referred to in paragraph (a) and the supervisor on board the vessel is continuously maintained before and during the loading or unloading of oil to or from the vessel;	Section 8, page 28
10(f)	a description of the lighting to be provided in order to meet the requirements of section 34 of the <i>Vessel Pollution and Dangerous Chemicals Regulations</i> ;	Section 5.3, page 18;
10(g)	documentation that demonstrates that the transfer conduit at the oil handling facility meets the requirements of subsection 35(1) of the <i>Vessel Pollution and Dangerous Chemicals Regulations</i> ;	Section 3.2.4, page 6;
10(h)	the measures to be taken in order to meet the requirements of subsection 35(3) of the <i>Vessel Pollution and Dangerous Chemicals Regulations</i> ;	Section 3.2.4, page 6
10(i)	the procedures to be followed by the person referred to in paragraph (a) in order to meet the requirements of subsection 35(4) of the <i>Vessel Pollution and Dangerous Chemicals Regulations</i> ;	Section 10, page 39
10(j)	the procedures to be followed by the operator of the oil handling facility in order to prevent a discharge of oil;	Section 5.3, page 18;
10(k)	a description of the training provided, or to be provided, to the oil handling facility's personnel who are engaged in the loading or unloading of oil respecting the procedures to be followed in order to prevent an oil pollution incident, including the frequency of the training; and	Section 12, page 48
10(l)	the procedures to be followed for the review and updating of the plan in order to meet the requirements of section 12.	Section 2.1, page 2; Section 12, page 47

SECTION	REQUIREMENT	REFERENCE (page, section, etc.)
	Oil Pollution Emergency Plan (OPEP)	
11(1)(a)	<p>Content</p> <p>The operator of an oil handling facility must demonstrate in its oil pollution emergency plan that the operator has the ability to meet the requirements relating to the procedures, equipment and resources referred to in section 13 by providing the following information:</p> <p>(a) the procedures to be followed in order to respond to an oil pollution incident;</p>	Section 10, page 39
11(1)(b)(i)	<p>(b) in respect of each type of oil product that is loaded or unloaded to or from a vessel, an oil pollution scenario that</p> <p>(i) in the case of a facility of a class set out in the table to section 5 located at or south of latitude 60° N, describes the procedures to be followed to respond to a discharge of a quantity of that oil product of at least</p> <p>(A) 1 m³, in the case of a class 1 facility,</p> <p>(B) 5 m³, in the case of a class 2 facility,</p> <p>(C) 15 m³, in the case of a class 3 facility, and</p> <p>(D) 50 m³, in the case of a class 4 facility,</p>	NA
11(1)(b)(ii)	<p>(ii) in the case of a facility located north of latitude 60° N, describes the procedures to be followed to respond to a discharge of the total quantity of the oil product that could be loaded or unloaded to or from a vessel, up to a maximum of 10,000 tonnes,</p>	All document, Section 11.4, page 43
11(1)(b)(iii)	<p>(iii) identifies the assumptions on which that scenario is based,</p>	Section 5.2, page 17

11(1)(b)(iv)	(iv) identifies the factors that were taken into account when developing those assumptions, including: (A) the nature of the oil product,	Section 5.1, page 15
	(B) the types of vessels to or from which the oil product is loaded or unloaded,	Section 5.1 and 5.2, page 15-17
	(C) the tides and currents that exist at the facility,	Section 4.3.7, page 12
	(D) the meteorological conditions that exist at the facility,	Section 4.3.8, page 12
	(E) the surrounding areas of environmental sensitivities that would likely be affected by a discharge,	Section 4.3.9, page 12
	(F) the measures to be taken to minimize the effects of a discharge, and	Section 5.3, page 18
	(G) the time necessary to carry out a response to an oil pollution incident in accordance with these Regulations	Section 3.2.1, page 5
11(1)(c)	(c) the activities to be carried out in the event of an oil pollution incident, the order in which and the time within which those activities are to be carried out, and the name and the position of the persons responsible for carrying them out, taking into account the following priorities: (i) the safety of the facility's personnel,	Section 2.1, page 2; Section 9, page 34 Section 10, page 39
	(ii) the safety of the facility,	Section 2.1, page 2; Section 10, page 39
	(iii) the safety of the communities living adjacent to the facility,	Section 2.1, page 2; Section 10, page 39
	(iv) the prevention of fire and explosion,	Section 2.1, page 2; Section 10, page 39
	(v) the minimization of the effects of a discharge,	Section 2.1, page 2; Section 10, page 39
	(vi) the reporting of the oil pollution incident,	Section 2.1, page 2; Section 10, page 39
	(vii) the environmental impact of a discharge, and	Section 2.1, page 2; Section 10, page 39
	(viii) the measures to be taken for clean-up following the oil pollution incident, including with respect to areas of environmental sensitivities and surrounding ecosystems;	Section 2.1, page 2; Section 10, page 39

11(1)(d)	the types and quantity of equipment and resources referred to in subsection 13(2) that are available for immediate use at the location of the discharge;	Section 7, page 23
11(1)(e)	the name of each person or organization and the location from which the equipment and resources will be obtained in the event of an oil pollution incident, and the manner in which the equipment and resources will be deployed at the location of the incident;	Section 7, page 23
11(1)(f)	the name and the position of the persons who are authorized and responsible for ensuring that the response to an oil pollution incident is immediate, effective and sustained;	Section 1, page 1; Section 7, page 23
11(1)(g)	the name or the position of each person who has received oil pollution incident response training or any other training in relation to an oil pollution incident;	Section 12.1 page 47
11(1)(h)	a description of the training provided, or to be provided, to the oil handling facility's personnel or other individuals in preparation for the responsibilities that they may be requested to undertake in response to an oil pollution incident;	Section 12.1, page 47
11(1)(i)	an oil pollution incident exercise program established to evaluate the effectiveness of all aspects of the procedures, equipment and resources that are identified in the plan, including exercises to be coordinated with vessels engaged in the loading or unloading of oil, vessels used to respond to oil pollution incidents, response organizations, the Department of Transport and the Canadian Coast Guard;	Section 11, page 43
11(1)(j)	the measures to be taken by the operator, in accordance with applicable federal and provincial regulations relating to health and safety, to protect the health and safety of personnel and of other individuals who are involved in responding to an oil pollution incident at the operator's request;	Section 2.1 Page 2 Section 10 Page 39 Appendix C Page 54
11(1)(k)	the procedures to be followed for the review and updating of the plan in order to meet the requirements of section 12;	Section 2.1 Page 2
11(1)(l)	the procedures to be followed by the operator in order to meet the requirements of section 39 of the <i>Vessel Pollution and Dangerous Chemicals Regulations</i> ; and	Section 10 page 39; Section 11.4, page 43
11(1)(m)	the procedures to be followed by the operator to investigate any oil pollution incident in order to determine the causes and contributing factors and the actions that are needed to reduce the risk of reoccurrence.	Section 9.3, page 38
11(2)	Other plans The operator must ensure that the oil pollution emergency plan takes into account any contingency plan for its geographical area that may affect the facility's plan, including contingency plans that are issued by the Canadian Coast Guard or provincial or municipal	Section 10.1.2, page 40
11(3)	Notification — exercise The operator must submit a written description of any exercise referred to in paragraph (1)(i) to the Minister at least 30 days before the day on which it conducts the exercise.	Section 11, page 42

SECTION	REQUIREMENTS	REFERENCE (page, section, etc.)
	Plan Reviews and Updates	
12(1)	Annual review The operator of an oil handling facility must review the oil pollution prevention plan and the oil pollution emergency plan annually and, if necessary, update the plans to ensure that they meet the requirements of section 10 or 11, as the case may be.	Section 2.1 Page 2
12(2)	Review — events The operator of an oil handling facility must review the oil pollution prevention plan and the oil pollution emergency plan when any of the following events occur and, if necessary, update those plans within 90 days after the day on which the event occurred: (a) any change in the law or in environmental factors that could affect the loading or unloading of oil to or from a vessel; (b) any change in personnel involved in the loading or unloading of oil to or from a vessel; (c) the identification of a gap in either of the plans after an oil pollution incident or exercise; and (d) any change in the business practices, policies or operational procedures of the facility that could affect the loading or unloading of oil to or from a vessel.	Section 2.1 Page 2
12(3)	Submission of updates to Minister If the operator of an oil handling facility updates the oil pollution prevention plan or the oil pollution emergency plan, the operator must submit the up-to-date plan to the Minister no later than one year after the update.	Section 2.1 Page 2
12(4)	Record The operator of an oil handling facility must keep a record of the date and the results of each review of the oil pollution prevention plan and the oil pollution emergency plan conducted under subsections (1) and (2), including any updates, and must maintain the record for three years after the day on which it is created.	Document Control, page v

13(1)	Procedures, Equipment and Resources	
	Procedures	Section 10.4, page 41
	The procedures referred to in paragraph 168(1)(e) of the Act must include the following: (a) the immediate shut down of loading or unloading operations and their restart in a manner that would not interfere with the immediate, effective and sustained response to the discharge;	
	(b) the reporting of the discharge in accordance with section 133 of the <i>Vessel Pollution and Dangerous Chemicals Regulations</i> ;	Section 10.2, page 40
	(c) the coordination of the oil handling facility's response operation with the activities of the Canadian Coast Guard and federal, provincial and other bodies responsible for, or involved in, the protection of the marine environment;	Section 10.1, page 40
	(d) the taking into account by the operator of the oil handling facility of the priorities set out in paragraph 11(1)(c) during the entire response to the discharge;	Section 2.1, page 2; Section 10, page 39
	(e) the making available of at least one of the persons referred to in paragraph 11(1)(f) to the Department of Transport and the Canadian Coast Guard during the entire response to the discharge;	Section 1, page 1
	(f) the measures necessary to ensure that the operator of the oil handling facility is prepared to respond in the event of a discharge of oil of at least the applicable quantity set out in clauses 11(1)(b)(i)(A) to (D);	Section 3.2, page 5; Section 5.3, page 18; Section 7, page 23; Section 8, page 28; Section 9, page 34 Section 10, page 39; Section 11, page 42
	(g) the deployment of the equipment and resources referred to in subsection (2) at the location of the discharge within the time frames set out in that subsection; and	Section 3.1, page 5
	(h) the undertaking of an investigation of the discharge in order to determine the causes and contributing factors, and the actions that are needed to reduce the risk of reoccurrence.	Section 9.3, page 38
13(2)(a)	Equipment and resources The equipment and resources that the operator of the oil handling facility must have available for immediate use in accordance with paragraph 168(1)(e) of the Act are those (a) that are required to contain, control, recover and clean up a discharge of oil of at least the applicable quantity set out in clauses 11(1)(b)(i)(A) to (D); and	Section 7, page 23
13(2)(b)	(b) that can be deployed, if it is possible to do so in a safe, effective and practicable manner, at the location of the discharge, (i) for the purposes of containing and controlling the oil, within one hour after the discovery of the discharge, and	Section 3.1, page 5

	(ii) for the purposes of recovering the oil and cleaning up, within six hours after the discovery of the discharge.	Section 3.1, page 5
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