

**WHITE ROSE OILFIELD
DEVELOPMENT APPLICATION**

**VOLUME 5
PRELIMINARY SAFETY PLAN
AND
CONCEPT SAFETY ANALYSIS**

SUBMITTED BY:

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January 2001

This Development Application is submitted by Husky Oil Operations Limited (as Operator) on behalf of itself and its co-venturer Petro-Canada, who are the project proponents. The Application is comprised of a Project Summary and five volumes.

- Project Summary
- Volume 1 – Canada-Newfoundland Benefits Plan
- Volume 2 – Development Plan
- Volume 3 – Environmental Impact Statement (Comprehensive Study Part One (issued October 2000))
- Volume 4 – Socio-Economic Impact Statement (Comprehensive Study Part Two (issued October 2000))
- Volume 5 – Safety Plan and Concept Safety Analysis

This is Volume 5 – the Safety Plan and Concept Safety Analysis. The following Part II documents have also been prepared in support of Volume 5 of the Development Application:

JWEL (Jacques Whitford Environment Limited). 2000. White Rose Oilfield Development Public Consultation Report. Part II Document prepared for Husky Oil Operations Limited, St. John's, NF.



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1 INTRODUCTION

1.1 Requirement for a Safety Plan

In the responsible conduct of its business, Husky Oil Operations Limited (Husky Oil) is committed to ensuring that the safety of its personnel is not compromised. Safety transcends exploration, drilling, production, and corporate image in importance, and will not be sacrificed for the sake of expediency. Husky Oil is also committed in its obligation to diligently minimize any adverse effects to the environment, as a result of the Company's activities.

As the Operator for the White Rose Oilfield Development project (the Project), Husky Oil is accountable for the safety of all personnel, facilities, and equipment associated with the exploitation and development of the field. To achieve this objective, a comprehensive Safety Plan will be in place to address all activities associated with the design, construction, installation, commissioning, drilling, production, transportation, decommissioning and abandonment phases of the Project. This preliminary safety plan outlines key factors to be incorporated into the final plan prior to production operations commencing.

The Safety Plan is a vital part of an extensive Loss Control Management System and is integrated into Husky Oil's Health, Safety, and Environment (HS&E) framework. This framework encompasses all activities associated with health, safety, environment, reliability, hazard management, risk assessment and loss prevention, as it relates to personnel (that is, Company and Contractors), the asset, production, and the environment.

The Project Safety Plan is built on the foundation of continuous improvement and maturation of the Project's safety culture. An underlying assumption of the plan is that compliance with all safety legislation is an absolute minimum requirement. In many cases, the Company's programs currently in place actually exceed these minimum requirements.

The White Rose oilfield development project will be very similar to the current Hibernia and Terra Nova projects. Husky Oil will further develop its HS&E management system, taking into consideration programs in place for the Hibernia and Terra Nova projects, making improvements wherever possible and ensuring that every effort is made to use only proven technology. For example, integrated Ice Management, Oil Spill Response and environmental monitoring plans will be in place for White Rose and will be in concert with other operators.

The Safety Plan, or specific components of the plan, will be modified as necessary to reflect continuous improvement and any changes in facilities, management systems, or organizational structure. The Safety Plan will also include measures to respond to operating and industry experience, as well as regulatory developments, as it evolves throughout the life of the Project.

As a component of the Development Application (DA) for White Rose, Husky Oil has prepared a Concept Safety Analysis (CSA) (Volume 5, Part Two) that focuses on the assessment of risks for the viable options being considered to develop the field.

As is to be expected with a concept risk assessment, assumptions have to be made. The assumptions are based on similar existing projects and many of the findings resulting from the CSA are dependent on those assumptions being fulfilled in the detailed design of the White Rose facilities.

Each of the viable proposed concepts are analyzed, with the frequencies and consequences associated with the major hazards quantified wherever possible. A more in-depth analysis is completed for the ship-shaped steel floating production storage and offloading (FPSO) facility, which has been initially selected by Husky Oil as the preferred option. Major hazards considered in the risk assessment, as applicable for each option, include:

- process and non-process loss of hydrocarbon containment (fire and explosion) (above sea);
- subsea loss of hydrocarbon containment (fire and explosion);
- blowout;
- ship impact;
- iceberg impact;
- dropped object;
- helicopter operations;
- fishing gear impact;
- structural failure;
- mooring failure; and
- seismic activity.

Consequential outcomes of the above major hazards, for each of options being proposed, are described in terms of fatalities and environmental damage. Fatalities are further sub-divided in terms of immediate fatalities, escape and escalation fatalities, and evacuation and rescue fatalities. It should be noted that escape and escalation fatalities are defined as those which occur outside the immediate area in which the event occurs, such as, while personnel are escaping to, or mustering within, the Temporary Safe Refuge (TSR). Evacuation and rescue fatalities are defined as those which occur while personnel are evacuating the installation.

Major environmental damage reflects the potential for a major oil spill and reflects an estimate of the amount of oil entering the sea. It is made only for event sequences that have the potential to result in a significant size spill (for example, loss of containment to subsea facilities, loss of containment of crude storage, and major and/or unisolated process loss of containment).

A fundamental aspect of the concept and design phases of the Project is the selection of clear goals to ensure the safety of personnel and the environment. Consequently, another requirement identified and included in the CSA is the setting of the Target Levels of Safety (TLS) that must be adhered to by the Project.

The TLS stipulated contains both risk and impairment-based criteria. The risk-based criteria can be further sub-divided into:

- individual risk (IR);
- group risk; or
- environmental risk.

The impairment-based criteria stipulated are applied to the following installation safety functions:

- primary structure of the installation;
- TSR;
- escape routes; and
- availability of evacuation systems.

Of the above, IR is the primary overriding criterion and must be met in the final design. It should be noted, according to Section 2.1.1 of the Canada-Newfoundland Offshore Petroleum Board (C-NOPB) Safety Plan Guidelines (C-NOPB 1995) that:

“Risk to individuals can emanate from “major accidents” which affect the entire, or large portions of the installation or from what may be termed “routine occupational exposures” which only have the potential to affect single, or small numbers of, individuals. It is expected that the risk from “major accidents” to both the installation as a whole and to individuals be quantified. It is not expected that risk to individuals from each “routine occupational exposure” be quantified. The method of assessment of risk to individuals from these exposures is left to the discretion of the operator.”

The measures outlined in this preliminary Safety Plan are activities Husky Oil will use to minimize the risks from major accidents as well as from “routine occupational exposures”.

Statistical risk to an individual can be calculated from the frequency of an undesired event, multiplied by the probability that the individual is exposed to the hazard associated with the undesired event, multiplied by the probability that the hazard causes fatal injury. The various risks to which the individual is exposed as a result of carrying out his or her duties can be summed to give the total risk to the individual. This aids targeting and implementing the most effective risk prevention and mitigation measures. The TLS for IR is summarized below in Table 1.1-1.

Table 1.1-1 Target Levels of Safety for Individual Risk

Level	Individual Risk	Description
Intolerable	$IR > 10^{-3}$	Unacceptable, risk control measures must be taken
As Low As Reasonably Practicable (ALARP)	$10^{-3} > IR > 10^{-6}$	It must be demonstrated that all practical means of risk reductions have been employed to ensure that the risk is as low as reasonably practicable
Negligible	$IR < 10^{-6}$	No need to consider further safety measures (For example an IR of 10^{-6} means that there is a 0.000001 probability of fatality per year for an individual on the installation)

All accidents, as a result of major hazards, that might have a significant effect on IR have been taken into account. The calculation of risk for any particular individual in the CSA takes into account that any given individual is normally working offshore 50 percent of the time.

The remaining secondary criteria (that is, group and environmental risk) are provided to allow the assessment of the design when personnel levels are uncertain, or when the overall risk assessment is at a preliminary stage. Such criteria are to be used as guidance only.

Impairment-based criteria are used during the concept and design phases to distinguish between possible hazardous events which have the potential to cause high-fatality accidents, and those which do not.

Recommendations and conclusions from the CSA will be considered and appropriately implemented into the Safety Plan. In addition to the CSA, Husky Oil, in order to provide a basis to demonstrate safe operation, will appropriately conduct various individual studies as the Project develops. Typical studies that Husky Oil will initiate will include:

- hazard identification;
- fire hazard analysis;
- explosion hazard analysis;
- dropped object;
- marine systems failure;
- review of integrity of emergency systems;
- escape, evacuation, and rescue assessment;
- review of integrity of TSR;
- analysis of other major identified hazards; and
- updates to the quantified risk assessment of major hazards.

The remaining sections of this Safety Plan will outline the aspects of Husky Oil's management of the White Rose oilfield which will be in place to ensure that risk has been reduced to a level considered to be as low as reasonably practicable (ALARP).

Items discussed include the following:

- safety management policies and procedures;
- facilities and equipment;
- operations and maintenance procedures;
- training and qualifications;
- command structure; and
- contingency planning.

This document generally follows the approach outlined in the C-NOPB's "Safety Plan Guidelines" (C-NOPB 1995).

It should be noted that the Safety Plan can only be developed to a level of detail that corresponds to the current level of project design and development of management systems. Accordingly, this plan is referred to as the Preliminary Safety Plan. The Project Safety Plan will undergo further refinements, as additional information becomes available. Key milestones influencing the Project Safety Plan will include changes required as a result of the impact of final system design on the CSA as well as other hazard and operability studies and risk assessments which are carried out as part of the final system design.

1.2 Issues Scoping and Stakeholder Consultation

Husky Oil conducted an extensive issues scoping and stakeholder information/consultation program in preparing the DA for the White Rose oilfield development. This program met the requirements of the Canadian Environmental Assessment Act, C-NOPB Development Application Guidelines (1988) and the *Atlantic Accord Acts*. A detailed report of the issues scoping and stakeholder consultation program is provided in the Part II Document to this DA, titled White Rose Oilfield Development Public Consultation Report (JWEL 2000). The program involved:

- reviewing relevant legislation and guidelines;
- reviewing the scoping document issued by C-NOPB, Department of Fisheries and Oceans (DFO), Environment Canada and Industry Canada;
- reviewing documents prepared for the Terra Nova and Hibernia oilfield developments;
- reviewing issues raised during the Terra Nova Development environmental assessment review process;

- consulting community, business, women's and non-governmental organizations, and the general public (key informant workshops, open houses and meetings/presentations);
- holding meetings with government departments and agencies;
- conducting media briefings and preparing press releases;
- tracking articles/stories from media sources;
- distributing project information (two mail distributions);
- establishing a project information telephone number (724-7244 and 1-877-724-7244);
- setting up a project-specific web site (www.huskywhiterose.com);
- documenting issues and concerns, and following up when necessary; and
- using professional judgement based on the particular characteristics of the White Rose oilfield development.

The main message heard throughout the scoping/consultation program was that the majority of participants were supportive of the development and interested in seeing it proceed. There was also a strong interest in ensuring that the project proceed in an environmentally, socially and economically responsible manner.

A number of general items that apply to all aspects of the project were noted throughout the consultation program. They are:

- learn from the Hibernia and Terra Nova experience;
- ensure ongoing, two-way communication with stakeholders;
- ensure project information is accurate, timely and appropriate; and
- do not raise false expectations in relation to benefits from the project.

Items raised throughout the scoping/consultation program have been incorporated in project planning and are reflected in the DA. A comprehensive list of items heard from stakeholders throughout the scoping/consultation program is provided in JWEL (2000). Items specific to each component of the DA are highlighted in the relevant DA documents. Specific comments received about health and safety, and accidental events are listed in Table 1.2-1, with the locations noted as to where they are addressed in this document.

Table 1.2-1 Comments about Health, Safety and Accidental Events

Comments	Where Addressed
Accidental Events	
Concern about the potential for a blowout, oil spill (all volumes) or chemical spill at the site or during transportation, and resulting effects of such accidents.	Part Two, Chapter 5
Ability to effectively respond to oil spills resulting from the operation.	Part One, Chapter 7
Emergency response plans for all accidents, including risk-based determination of response needs, types and location of response equipment, and time to deploy equipment.	Part One, Chapter 7 Part Two, Chapters 4, 7
Chronic oil pollution on the Grand Banks (e.g. drilling fluids and well-head leaks), cumulative effects and perceived lack of enforcement by regulatory agencies.	Part One, Section 7.8
Criteria, ability and time required to disconnect and move the facility in an emergency.	Part Two, Chapter 7, Sections 9.5.2, 10.3
Health and Safety	
Need for rigorous safety standards, and procedures for monitoring and enforcing safety requirements.	Part One, Chapter 2
Ability to operate in severe weather conditions.	Part Two, Chapter 8
Need for appropriate and effective safety and evacuation equipment and procedures.	Part One, Chapters 3, 4
Need to optimize the location of accommodations on the production facility relative to the production/processing activity.	Part Two, Sections 3.3, 10.6
Effects of electromagnetic emissions from radio equipment on personnel safety and mitigation measures for emissions.	Comprehensive Study Part One, Section 8.8.3.6
Air emissions and any implications for the health and safety of workers that may be exposed to them.	Comprehensive Study Part One, Section 8.8.3.1 Appendix 4.A
Need for employee and family assistance/support programs.	Comprehensive Study Part Two, Section 5.4
Need for a complaint reporting system.	Part One, Section 2.3

2 SAFETY MANAGEMENT POLICIES & PROCEDURES

2.1 General Safety Policy Statement

Husky Oil has developed and implemented a HS&E Policy that guides the company in all aspects of its business. This policy, plus the programs and procedures which support it, assists Husky Oil to be both responsible and duly diligent in its stewardship of health, safety, and environment. The Husky Oil Policy is endorsed by the CEO of the Corporation and by the East Coast Operations Manager; it is included as Figure 2.1-1.

A key document, which supports the HS&E Policy statement, is Husky Oil's East Coast Operations "Health, Safety and Environmental (HS&E) Loss Control Management Performance Standards" (Husky Oil 1998a). The stated purpose of that document is "to establish specific Health, Safety, and Environmental Loss Control standards for the Husky Oil East Coast Operations". Furthermore, the document intention is that adherence to these standards will assist in meeting the following objectives:

- keep employees (Husky Oil and contractor) free from harm;
- ensure that project facilities and operations are run in a manner that demonstrates Husky Oil's commitment to HS&E stewardship to its employees, neighbours, regulators and the general public;
- manage risk to protect Husky Oil from loss;
- manage the effects of Husky Oil's operations on the environment and the liabilities associated with those impacts;
- ensure clarity of expectations and appropriate consistency in the company's HS&E loss control program; and
- facilitate consistent company wide application of The Husky Oil Loss Control Management Program.

The following sections outline some of the key elements of the HS&E Loss Control Management system.

Figure 2.1-1 Health, Safety and Environment Policy

HEALTH, SAFETY AND ENVIRONMENT POLICY

We insist on a high level of concern for our employees, contractors, communities, customers and the environment. In conjunction with our business objectives we are striving to be one of the leading edge corporations in Health, Safety and Environmental stewardship and believe we can achieve this goal by managing our business under the following principles and values:

⌘ LEADERSHIP

High quality Health, Safety and Environmental stewardship is one of our corporate priorities and achieving this requires leadership, commitment and dedication of resources. We will include Health, Safety and Environmental objectives as part of our work and annual strategic plans.

⌘ RESPONSIBILITY

Health, Safety and Environmental protection is the responsibility of all employees and contractors. We will promote Health, Safety and Environmental awareness and respond promptly to and work diligently with all our stakeholders.

⌘ ACCOUNTABILITY

We are accountable for our performance and it will be measured against the Company's Health, Safety and Environmental Management Performance Standards. Safety and Environmental audits will be conducted on a regular basis to monitor compliance with the Standards, assess performance and identify areas where improvements are needed.

⌘ IMPROVEMENT

We will conduct our business activities with a progressive approach towards Health, Safety and Environmental protection and will monitor and if necessary, improve the performance of our operations. Improvements will be attained through planning, training and appropriate action.



G.E.O.
HUSKY OIL LTD.

C.P. Bailey
MANAGER

2.2 Functional/Departmental Responsibility for Health and Safety

Both Husky Oil and Contractor personnel involved in the Husky Oil East Coast Operations will participate in, and contribute to, the Project HS&E Loss Control Management system.

The Project Managers, FPSO/mobile offshore drilling unit (MODU) Offshore Installation Managers (OIMs) and Support Vessel Masters shall ensure that all shorebase and vessel management personnel will have specific HS&E Loss Control Management responsibilities clearly defined in their job outlines or descriptions, including any regulatory requirements involved in these responsibilities. In particular, the OIMs overriding authority to make decisions with respect to HS&E Loss Control Management issues shall be clearly identified. HS&E Loss Control Management responsibilities shall be included in employees' objectives and shall be evaluated as part of the annual performance appraisal. Copies of relevant documents concerning HS&E Loss Control Management responsibilities shall be provided to employees as appropriate.

2.2.1 Managers

Project managers will have primary responsibility for verifying/ensuring that the requirements of the HS&E Loss Control Management system are implemented and maintained. This would include development, implementation, review and revision of Project HS&E Loss Control Management performance objectives. On a periodic basis, they will be responsible to:

- participate in the establishment of annual HS&E objectives for the Project and/or the Shorebase, FPSO, MODU, Support Vessels and their applicable departments;
- on a scheduled basis, attend and participate in regular HS&E meetings;
- perform HS&E Loss Control Management inspections of facility departments;
- ensure that an audit and report on compliance with all of the elements of the HS&E Loss Control Management Performance Standard is completed annually and recommend modifications when appropriate to enhance compliance;
- review quarterly HS&E performance indicators (for example, statistics) in relation to established objectives and discuss HS&E performance/issues as appropriate at management meetings;
- ensure that a member of the Project, FPSO, MODU or Support Vessel management team participates in the monthly facility HS&E Committee Meeting; and
- review with facility management any necessary changes or deviations to the established Loss Control Management system

2.2.2 Supervisors

As part of their HS&E responsibilities, Supervisors will:

- participate in the establishment of annual HS&E Loss Control Management objectives;
- participate in the annual review of the HS&E Loss Control Management System as outlined above;
- carry out HS&E Loss Control Management inspections of their areas of responsibility ensuring that findings are documented and followed up;
- ensure their departments/areas hold HS&E meetings and that employees receive prompt feedback to the questions/suggestions; and
- require that all proposed equipment modifications are reviewed to ensure continued compliance with regulations and HS&E requirements.

2.2.3 Line Employees

All line employees will have clearly defined individual HS&E responsibilities to carry out under the Project HS&E Loss Control Management system.

2.2.4 Loss Control Program Support

Husky Oil and its major Contractors will formally allocate appropriate resources to support Project Managers, OIMs, and Support Vessel Masters in the safe performance of their duties. All shorebased and offshore facilities will have designated resources to assist with HS&E Loss Control Management issues. This responsibility could be divided among more than one position or could be combined with other responsibilities assigned to one position.

Written management performance standards for the HS&E/Loss Control Management program will be prepared and updated on an as required basis.

Specific Loss Control Management procedures will be implemented, as appropriate, to comply with Operator/Contractor corporate-wide standards and regulations. Project HS&E Policies and Procedures Manuals (both corporate and facility-specific) outlining standards, policies and procedures and offering guidance will be maintained and updated on an annual basis.

All shorebased and offshore facilities will have HS&E committees which are representative of all personnel at the worksite and function according to legislated requirements and individual company policy.

2.3 Employee Rights

2.3.1 The Right to Know

All employees of Husky Oil and Contractor(s) have a right to know of any working conditions that may in any way pose a hazard to health and safety. This awareness is fostered by Husky Oil through a variety of measures such as:

- an initial orientation, as outlined in Section 2.7.2 of this Preliminary Safety Plan, including hazard awareness and reporting;
- health hazard identification, and communication of that information. Supervisors will require that all employees are properly informed and knowledgeable about the potential occupational health and industrial hygiene hazards related to their work, including the handling of hazardous materials to which they could be exposed;
- supervisors will require group HS&E meetings to be held to discuss HS&E related topics;
- crew HS&E Meetings will be held monthly (or more frequently as dictated by crew change requirements) with individual shifts and department personnel including both Husky Oil and regular Contractor staff;
- joint Health Safety and Environmental Committees will be established on board vessels as required by regulation and meetings will be held at least monthly; and
- recommendations raised at the HS&E meetings will be recorded and addressed by designated personnel and action will be followed up and tracked on an ongoing basis.

2.3.2 The Right to Participate

The right of employees and contractors to participate in identification and management of HS&E issues is fostered by Husky Oil as follows:

- all shorebased and offshore facilities will have HS&E committees which are representative of all personnel at the worksite and function according to legislated requirements and individual company policy;
- management personnel will encourage employees to raise HS&E Loss Control Management concerns to their supervisors or team leaders either openly or in confidence at any time or at scheduled HS&E meetings, where concerns raised will be dealt with and recorded; and
- recommendations raised at meetings will be recorded and addressed by designated personnel and action will be reported at the next meeting.

2.3.3 The Right to Refuse Dangerous Work

Husky Oil and contractor personnel will be informed of their right to refuse to do any work that they feel, based on reasonable grounds, is dangerous to their health and safety or to the health and safety of other persons at the worksite. Personnel shall also be informed of the procedures to be followed if such a situation were to occur.

2.4 Individual Responsibility for Health and Safety

Husky Oil and contractor employees are encouraged by various measures specified throughout the Husky Oil HS&E Loss Control Management Performance Standards to assume personal responsibility for the health and safety of themselves and for their colleagues on the facility. This standard also states explicitly that observing and recognizing compliance with rules, policy and procedures is a responsibility of each employee.

2.5 Quality Assurance

Husky Oil will require specific quality assurance systems, across the whole development. This will be applicable to all major contractors and suppliers in the conduct of their activities associated with the project. As well, Husky Oil will ensure that the conduct of all project tasks, and the quality of installation, are in accordance with applicable Canadian and Newfoundland offshore regulations.

Before going into production operation, Husky Oil will obtain the requisite Certificates of Fitness, and Letters of Compliance. An independent certifying agency will be engaged to monitor the project throughout its development phase and to confirm that the complete installation has been designed, constructed and installed in compliance with regulations.

Husky Oil has developed HS&E Loss Control Management Performance Standards for its East Coast Operations, which mirror company standards across the country while recognizing the unique nature of the marine environment. The Loss Control Management Performance Standards are based on internationally recognized systems including the International Safety Rating System, the International Marine Safety Rating System, the International Safety Management (ISM) Code and the Det Norske Veritas (DNV) Safety and Environmental Protection Rules.

The relationship between Husky Oil and its major contractors, particularly in the case of the installation, needs to be seamless. A key element in achieving that seamless relationship is the demonstrated compatibility of the HS&E Loss Control Management system of the Company with that of its contractor(s). Husky Oil requires that its major contractors document how their Loss Control Management systems equate to that of Husky Oil, and how identified gaps are to be rectified, in order to achieve complete consistency. Husky Oil then conducts regular structured audits against the contractors systems.

2.6 Accident Investigation Procedures and Analysis

All accidents/incidents and near miss incidents resulting in personal injury/occupational illness, environmental releases, equipment damage or failure, fire, lost equipment, or criminal acts will be reported, investigated, and followed up by the Project Managers, OIMs or Support Vessel Master and the applicable area Supervisors. Investigation reviews for serious incidents will be conducted in a systematic fashion using established techniques (for example, Root Cause Analysis) and critical information will be documented and communicated to stakeholders. Reports will be completed thoroughly and in a timely manner as dictated by severity. The incident investigation system will include the following components:

- a review of events surrounding the incident with personnel directly involved;
- a description of what occurred;
- identification of substandard acts or conditions leading to the incident and the basic underlying causes;
- identification of corrective actions, assignment of responsibility to implement these actions as well as a system to ensure follow up of the implementation of the corrective actions;
- identification of required internal and external distribution of investigation reports to ensure that personnel who require the reports for operational or regulatory requirements receive the information on a timely basis; and
- investigation/reporting procedures to address Workers Compensation as well as cargo, subcontractor and third party claims (for example, damage to fishing equipment).

2.6.1 Accident Statistics and Analysis

At the end of each quarter, an overall Project report (Incident Summary) providing the cumulative annual accident/incident statistics will be published and communicated to employees. A copy of the report will be directed to Husky Oil's Corporate Manager of Risk, Health, Safety and Environment and Business Unit Leader or Lead Officer. Major incidents will be reviewed at local management meetings.

Records of accident/incident investigation reports are maintained and will be readily accessible in an active file.

2.7 Organisational Rules

2.7.1 General Health, Safety and Environment Policies

At all facilities the HS&E Coordinators will require that Husky Oil's general HS&E policy is:

- posted in suitable locations where it is visible to all;
- contained in rule booklets, policy and procedure manuals, etc.; and
- referred to in all major training programs.

2.7.2 Rules Development, Communication and Evaluation

Project HS&E rules, policies and standards will be developed and maintained on an ongoing basis in consultation with the shorebased and offshore facilities. Management will be responsible for ensuring that these policies and procedures are reviewed, and updated as required. Where appropriate, site or vessel-specific HS&E rules and procedures will be developed to supplement corporate-wide rules, policies and procedures.

A systematic approach will be used to identify requirements for specialized work rules. This will typically involve reviewing regulatory requirements, hazard assessments, incident report analysis or lists of occupations and the critical tasks for those occupations. Required specialized work rules will be prepared by the Supervisors and local HS&E program Coordinators as appropriate.

The requirements for work permits will be clearly indicated, including a description of the process to determine the need for permits, formal issuing and approval system, permit life requirements, permit training process, and permit retention requirements. Permits are required for:

- confined space entry;
- work within hazardous atmospheres (breathing apparatus work);
- personnel transfer between vessels/MODU;
- hot work/work generating ignition source (for example, welding);
- suspension of safety functions or equipment;
- energy source lock-out/tag-out;
- working at heights or over the ship's side;
- work with hazardous material including radioactive sources/explosives;
- carrying out of simultaneous operations;
- working under water (diving);
- heavy lifts; and
- transfer of well control.

A specific area dedicated to posting HS&E material will be maintained in locations readily accessible to all employees at shorebase, FPSO, MODU, or support vessels. Current information concerning HS&E Loss Control Management, including rules, policies, and programs, will be posted to facilitate communication to all employees.

Individual HS&E rules will be reviewed on an ongoing basis and updated as conditions warrant. All employees will receive an initial orientation, upon arrival at all offshore facilities, which will include an explanation of the following HS&E information:

- key policies/principles;
- general HS&E rules;
- emergency response procedures and responsibilities (for example, evacuation plans and drills);
- instructions essential for safe MODU/ship operations;
- work procedures (for example, use of work permits) and potential effects of departure from them;
- Loss Control Management objectives and the employees' role in achieving them;
- hazard awareness and reporting;
- shipboard drug and alcohol policy and the process for monitoring compliance to the policy;
- legal/legislative conditions and employees' roles in meeting them (including approval, or permit requirements); and
- environmental sensitivities and programs (for example, environmental awareness, waste management, discharge requirements).

Where necessary, employees will be tested, either orally or in writing, for understanding and knowledge of key rules following the initial instruction. Employees will be given a thorough review of key rules for their area at least once a year during safety meetings and a record will be kept of these reviews in HS&E Committee meeting minutes.

Transferred employees will receive updated training in rules and procedures specific to their new assignment prior to commencing regular duties.

All employees with specific HS&E responsibilities will be fully aware, trained and monitored through the facility performance management process in the execution of those responsibilities.

Commendation and re-training or discipline for compliance or non-compliance of rules will be administered consistent with shorebase, FPSO, MODU, or support vessel policies. Records relating to compliance or non-compliance of rules will be used to evaluate the effectiveness of methods used to review rules with employees. Observing and recognizing compliance with rules, policies and procedures is a responsibility of each employee.

Existing general and specialized rules, policies and procedures will be reviewed and updated at least on an annual basis, or as needs dictate. Distribution lists for this Loss Control Management material will also be reviewed. The findings and recommendations, with respect to policies and procedures, will be incorporated into the annual review of the overall Loss Control Management system.

An evaluation of the compliance with major rule requirements, in particular, safe work permits, will be carried out following any major or high potential incidents and at least on an annual basis.

2.7.3 Statutory and Classification Certificates and Standards

Husky Oil will operate within a framework of laws, standards, procedures and instructions. Safe operations will be achieved by complying with the law, selecting and meeting the right standards, applying the correct procedures and by following the right instructions. A system will be in place to identify and monitor regulatory and class society certification and licensing requirements such as load line certificates, radio equipment certificates, lifting equipment certificates and safety equipment certificates. The system should include a process to ensure that:

- all required certification requirements are met and certificates maintained;
- required survey/audit deadlines are met;
- identified deficiencies are corrected to the satisfaction of the certifying authority or Class Society; and
- communication requirements related to correction of deficiencies are defined and met.

2.8 Contractors

Husky Oil will ensure that all contractors are capable of achieving acceptable standards. Contractor performance will be monitored throughout the duration of the contract. Loss Control Management considerations will be incorporated into the subcontractor selection and management process. Selection will be based in part on their HS&E program.

2.9 Purchasing

A system will be developed and implemented to ensure that all equipment and materials brought on to the offshore facilities are controlled throughout the procurement cycle to ensure that they do not introduce any unacceptable risks to personnel on the installation.

2.10 Hiring and Placement

Husky Oil's staffing philosophy will be consistent with both the intent and the spirit of the *Atlantic Accord Legislation*. A systematic approach will be used to recruit personnel which addresses staffing requirements, qualification/experience requirements and language requirements.

Employee development will be conducted on an ongoing basis through a combination of training, coaching and specific job assignments.

Pre-employment medical examinations are carried out as stipulated in company policy.

Competency assessments of employees will be undertaken on a regular basis to establish their theoretical and practical knowledge levels and to determine their ability to effectively perform their duties. Where staffing agents are used, a verification process will be used to ensure the agent complies with Company requirements and language considerations and that checks are used to determine the validity of crew qualifications, licenses and certificates.

2.11 Safety Audits

Systematic safety audits will be conducted on a regular basis, within a prescribed frequency. Audits will evaluate the implementation of project Loss Control Management systems as well as physical conditions (as outlined in Section 4.7 of this Preliminary Safety Plan).

2.12 Health and Hygiene Control

Occupational health and hygiene hazards related to all aspects of vessel operations will be identified and evaluated on an ongoing basis.

Where potential hazards have been identified, surveys will be conducted to evaluate exposure levels to health and hygiene hazards. Regular monitoring to measure hazardous exposures will be done as necessary to ensure hazards are being controlled at safe levels.

A Health Surveillance Program will be introduced which includes:

- personnel medicals as required;
- medical fitness verification prior to returning to work after a prolonged illness or injury;
- medical monitoring as dictated by health hazard exposures; and
- drug and alcohol testing as required under Husky Oil's Alcohol and Drug Policy.

A medical support program will be in place at all times which includes the presence of appropriate medical teams in place at all offshore facilities, on-call physician and medivac support on a 24-hour basis and well equipped on-site medical facilities. Husky Oil has established Employee Assistance Program in place for employees to provide medical and mental health support as required.

3 FACILITIES AND EQUIPMENT

3.1 Description of Facilities

3.1.1 Facilities Included

The Safety Plan will address existing and future facilities and operations (such as, drilling units, production wells, production facilities, support vessels, aircraft and shorebase).

3.1.2 Oil Reservoir and Production Wells

The White Rose field is located approximately 350 km east of Newfoundland on the eastern edge of the Jeanne d'Arc Basin. Water depth at this location is approximately 120 m.

Ultimately, there will be up to 10 to 14 production wells associated with the Project. To maximize oil production, reservoir pressure will be maintained by injecting water into up to an additional six to eight strategically placed wells. It is also planned to inject surplus gas into the reservoir for gas conservation and, if necessary, to assist in pressure maintenance. It is currently assumed that the facilities will have a 20-year design life.

A typical subsea arrangement consists of templates, manifolds, flowlines, umbilicals, and risers. The main method of iceberg scour protection will be dredged glory holes, with the possibility of using a caisson system at strategic locations to optimize field layout.

The preliminary subsea layout for the Project can be described as follows:

- two to three drill centres in a north-south alignment to allow complete access to the South White Rose oil pool;
- gas injection, water injection and oil production capabilities required at various drill centres;
- a possible one to three additional well centres, depending on depletion plan requirements for the area, and well trajectory design considerations;
- templates used to minimize glory hole size, (templates are single service, either production/gas lift or water or gas injection);
- flowlines used for all intrafield lines and risers;
- well testing carried out via a dedicated test line;
- round trip pigging facilities for wax removal and line displacement of production fluids; and
- conventional electro-hydraulic control systems.

3.1.3 Drilling Unit

The drilling unit will typically be an anchored steel-hulled semi-submersible MODU. Its staffing complement will typically be approximately 70 to 100 persons.

3.1.4 Support Vessels

Two to three support vessels will be used for resupply and standby requirements. Vessel complements typically range from 10 to 12 persons.

3.1.5 Supply Base

An existing supply base will be used to provide logistics support to the operation.

3.1.6 Helicopter Support

Personnel will be transported to and from the field by helicopter. Helicopter support is provided by a flight centre at the St. John's Airport. Current aircraft used are Aerospatial Super Pumas, each having a carrying capacity of approximately 9 to 10 passengers and two crew members.

3.1.7 Production Unit

The following is an overview description of the production facility. Additional information is included in the attached CSA (Volume 5, Part Two).

The preferred production unit is a steel-hulled FPSO. Its oil production rate is estimated at 12,000 to 18,000 m³ (75,000 to 100,000 barrels per day). It will have a storage capacity of approximately 110,000 to 135,000 m³ (700,000 to 850,000 barrels).

The FPSO will contain a turret and emergency shutdown systems, which allows the FPSO to disconnect and move off location under its own power to address operational or emergency situations.

There will be approximately 50 to 60 personnel on board the FPSO at any one time, with approximately 50 being permanent crew and the remainder being temporary specialist personnel.

The FPSO is expected to include the following typical systems:

- separation, including manifolds and two-stage separation;
- oil handling – treating, metering, pumping, pigging, storage;
- gas handling – compression, dehydration, metering, and injection;

- water handling – treatment, disposal, injection;
- oil offloading;
- chemical additives – storage, injection;
- heating and cooling;
- potable water;
- air – compression, drying, distribution;
- nitrogen – gas and liquid distribution;
- power – generation and lighting distribution;
- fuel – gas, diesel, aircraft;
- vents;
- flares;
- drains;
- communications;
- sewage;
- living quarters;
- fire protection, fire pumps, water distribution, deluge, sprinklers, carbon dioxide, fire and gas detection;
- controls – process control, emergency shutdown; and
- ventilation.

3.2 Certification of Fitness

A current Certificate of Fitness for the FPSO and MODU will be maintained at all times while the facilities are in operation.

3.3 Prevention, Control and Mitigation of Major Hazards

3.3.1 Hazard Prevention and Detection

3.3.1.1 Production Facility Layout

Design criteria for the installation will be used to provide the required separation between the living quarters and the main sources of hydrocarbons, namely the process module and the turret. The areas between will act as a buffer zone to minimize any potential impact of hydrocarbon incidents on the living quarters.

The equipment layout will account for potential releases of flammable gases or liquids and potential ignition sources. The potential for overpressures will be minimized by providing vent paths for any potential explosions.

The configuration will provide for minimum evacuation times and minimum exposure to hazards, ensuring personnel will be able to leave the installation under all credible contingencies.

A minimum of two alternate routes will be provided for escaping from most locations on the installation, ensuring that at least one escape route is passable at all times.

3.3.1.2 Hazardous Area Classification and Minimisation of Ignition Sources

The installation will incorporate a Hazardous Area Classification System designed in accordance with the America Petroleum Institute (API) Recommended Practice (API RP 500) or equivalent. Areas on the installation will be classified in the following categories:

- Hazardous Class 1 Division 1: a hazardous area in which a flammable atmosphere is likely to occur in normal operation.
- Hazardous Class 1 Division 2: a hazardous area in which a flammable atmosphere is not likely to occur in normal operation and, if it does occur, will only exist for a short period.
- Unclassified: an area where the occurrence of a flammable atmosphere is so infrequent as to be deemed insignificant.

One of the main potential sources of ignition is electrical equipment. Where electrical apparatus is to be used in a hazardous area, it will be classed appropriately for the area and will be selected to withstand the environmental conditions to which it will be exposed.

3.3.1.3 Heating, Ventilation and Air Conditioning

The installation design will include multiple independent heating, ventilation and air conditioning (HVAC) systems which will satisfy both area classification requirements. The separation of the systems will minimize the possibility of back flow of gas into non-hazardous areas through the air intakes and will provide for a selective emergency shutdown strategy.

HVAC inlets will be located in non-hazardous locations and will be fitted with both smoke and gas detection, which will serve as trigger points for action related to the emergency shutdown system.

3.3.1.4 Fire and Gas Detection

A fire and gas detection system (FGS) will monitor the installation for fire, smoke and flammable gases. Upon detection, personnel will be automatically alerted both audibly and visually via local alarms and at the FGS panel in the central control room (CCR).

Upon confirmed fire or gas, the FGS will automatically activate the active fire protection systems and the emergency notification systems. The FGS will also shut down the ventilation systems and initiate operational shutdowns.

The detection devices will be selected according to the types of vapours and fires which would be anticipated in each area of the installation. They will be positioned to facilitate early activation and provide maximum protection.

3.3.1.5 Wellhead Control and Shutdown

The oilfield reservoirs will be capable of being isolated from the process areas by separate and independently controlled valves for each well. Typically these include a Surface Controlled Subsurface Safety Valve (SCSSV) and the upper master gate and wing valves at each wellhead.

The valves will be hydraulically operated and will be fail-safe, that is, if the control signal or power is lost the valves will fail in the closed position.

Riser emergency shutdown valves (ESDVs) are also provided to protect process areas from flowline inventories.

3.3.1.6 Process Isolation

Effective process isolation will limit the volume of inventory released in an incident, which in turn prevents escalation of a potential hazard. Upon detection of a hazardous condition emergency shutdown will be initiated isolating sections of the process, which will minimize the available inventory of hydrocarbons. This will limit the duration and consequence of a hydrocarbon release.

3.3.1.7 Blowout Preventer Systems

Blowout preventer (BOP) systems provide a means of preventing an uncontrolled release of well fluids during a drilling or workover operation.

Each BOP is equipped with a series of rams and an annular preventer designed to seal off the annular space around the drill pipe. The rams are closed by hydraulic pressure and the design of the BOP uses the pressure of the well fluid to keep the rams closed.

3.3.1.8 Marine Systems

The installation will be designed to ensure that all marine systems, such as ballast control, propulsion, engines, etc, can be safely operated during an emergency situation. Systems will be in place to ensure that ballast control can be achieved both automatically and manually.

3.3.1.9 Physical Environment Data Collection

Husky Oil currently has in place a physical environment data collection program consisting of a number of components. The program is in support of Husky Oil's drilling operations, and a similar program will be in effect to support the White Rose production facility operations. The program includes a physical oceanographic component, a Marine Weather Observation (MANMAR) component, a Supplementary Aviation Weather Reporting Station (SAWRS) component, a rig response component and a site-specific marine weather and sea state forecast component.

All components are such that the C-NOPB "Guidelines Respecting Physical Environmental Programs During Drilling and Production Activities on Frontier Lands" are satisfied. The physical oceanographic component consists of moored current meters at several depths, a current meter for real time current profiling, a waverider for measuring waves, and a water level recorder to record tidal elevations when necessary. Separate reports are issued for current data and for wave data.

Both the MANMAR and SAWRS observation components will be taken on-board the FPSO and MODU. Both are used in the preparation of the site specific operational forecasts, and the former is also distributed to the Atmospheric Environment Service of Environment Canada for regional weather forecasting, while the latter is transmitted directly to the Helicopter Contractor for flight support operations.

Observations include:

- date and time;
- type of observation;
- sky conditions;
- visibility;
- weather conditions;
- dry bulb air temperature;
- dew point;
- wind speed and direction;
- wind character;
- altimeter and mean sea level barometric pressures;
- comments on weather conditions;

- sea temperature;
- maximum combined seas;
- maximum trough to crest wave;
- significant wave height;
- average wave period;
- height and period of wind driven wave;
- height, period, and direction of primary non-wind driven wave component; and
- height, period, and direction of secondary non-wind driven wave component.

The rig response component of the program includes the heave, pitch, and roll experienced by the facility. The information for these three components is combined into an operational log which is used by the onboard drilling and marine personnel.

The ice observation component of the program encompasses both pack ice and icebergs. The observations of this component will include:

- date and time;
- descriptions of ice in terms of type, size and shape;
- the geographic position;
- the course of drift; and
- the calculated closest point of approach (CPA) to the facility and the time to CPA (or TCPA).

Ice observation data is then interpreted into the Ice Management Plan to assist in tactical decision making. In the event of a tow, further observations will be made and recorded and will include:

- vessel call sign;
- bollard pull of tow;
- tow direction; and
- any relevant factors such as rolling or breaking up.

Third party information using satellite and aircraft surveillance techniques will also be used for predicting ice conditions.

The weather forecasting component of the program in support of Husky Oil's drilling operations typically consists of:

- two site-specific forecasts per day at twelve-hour intervals;
- two six-hour updates;
- a continuous weather watch, including routine ongoing quality assurance/quality control (QA/QC) procedures for evaluation and verification of forecasts;

- site-specific weather forecasts consisting of short-term site-specific forecast issued in six-hour time steps for 54 hours, followed by a long-range forecast in twelve-hour time steps for an additional three days;
- updated forecasts on a three-hour basis or more frequently if required during emergency or storm situations;
- issuance of weather warnings whenever appropriate;
- weather briefing in Husky Oil's office in St. John's when required;
- telephone briefing and weather related discussions at any time;
- maintenance of an effective data communications systems to ensure timely receipt and issuance of environmental data and forecasts. Back-up by an on-site electrical generator to ensure continuous operation during power interruptions; and
- preparation of forecast verification reports on completion of each drilling program that meets Husky Oil's needs and satisfies C-NOPB guidelines.

A sample forecast, as produced in tabular form, is illustrated in Figure 3.3-1.

3.3.2 Hazard Control Systems

The offshore facilities will incorporate facilities and systems to control and monitor hazardous areas during both normal operation and potential hazardous situations.

The following control systems will be used:

- **Distributed Control System (DCS):** This is the primary means for controlling and monitoring the installation.
- **Emergency Control System (ECS):** Designed to initiate specific actions after receiving outputs from the FGS. The main functions of this system are to minimize the consequences of a fire or hydrocarbon release and provide a safe and orderly shutdown of the installation. An emergency shutdown may be initiated manually from designated pushbuttons or automatically via the FGS.
- **Process Shutdown System (PSD):** This system will be an integral part of the DCS and will initiate a controlled process shutdown in the event of process upset.
- **Vessel Control System (VCS):** For controlling all marine systems within the vessel (such as, ballast, cargo transfer).

The various control systems will all be operated from the central control room located in the process building on the FPSO.

Figure 3.3-1 Weather Forecast Form



MARINE WEATHER SITE FORECAST

Sample Forecast Husky Oil Operations Ltd. offshore Newfoundland, issued by OCEANS Ltd., St. John's
 Monday July 14 1997 at 1630 NDT, valid until 2130 NDT Wednesday
 with a long range forecast for the following three days.

WARNINGS IN EFFECT:										NIL									
SYNOPSIS																			
A 1000 MB LOW PRESSURE CENTER LOCATED NEAR SABLE ISLAND AT FORECAST TIME WILL TRACK NORTHEASTWARD PASSING TO THE NORTH OF THE PLATFORM LATE TUESDAY AFTERNOON. THEREAFTER, THE LOW WILL CONTINUE NORTHEASTWARD INTO THE NORTH CENTRAL NORTH ATLANTIC. LIGHT SOUTHERLY WINDS THIS EVENING WILL INCREASE TO STRONG SOUTHEAST WINDS SHORTLY AFTER DAWN TUESDAY THEN VEER INTO THE SOUTHWEST BY EVENING. A COLD FRONT SWINGING EASTWARD AROUND THE LOW WILL CROSS THE FORECAST WATERS LATE TUESDAY EVENING. STRONG WEST TO NORTHWEST WINDS ARE FORECAST BEHIND THE COLD FRONT ON WEDNESDAY.																			
VALID DATE / TIME																			
DAY / DATE	MON JUL 14	TUE JUL 15	TUE JUL 15	TUE JUL 15	TUE JUL 15	WED JUL 16	WED JUL 16	WED JUL 16	WED JUL 16	WED JUL 16	WED JUL 16	WED JUL 16	WED JUL 16	WED JUL 16	WED JUL 16	WED JUL 16	WED JUL 16	WED JUL 16	WED JUL 16
TIME (NDT / UTC)	2130/00Z	0330/06Z	0930/12Z	1530/18Z	2130/00Z	0330/06Z	0930/12Z	1530/18Z	2130/00Z	0330/06Z	0930/12Z	1530/18Z	2130/00Z	0330/06Z	0930/12Z	1530/18Z	2130/00Z	0330/06Z	0930/12Z
WIND AT																			
DIRECTION (true)	180	160	150	190	240	270	330	340	330	330	340	330	330	330	340	330	330	330	330
MEAN SPEED (kt)	10	15	25	22	25	20	28	30	25	28	30	30	25	28	30	30	25	28	25
MAX SPEED (kt)	12	20	30	25	30	25	34	38	30	34	38	30	30	34	38	30	30	34	25
WIND WAVES																			
SIG HEIGHT (m)	0.5	0.7	2.2	1.5	1.8	1.3	2.2	3.3	1.5	2.2	3.3	3.0	1.5	2.2	3.3	3.0	1.5	2.2	3.0
PERIOD (s)	3	3	5	4	5	4	5	7	3	5	7	7	3	5	7	7	3	5	7
PRIMARY / SECONDARY SWELL																			
DIRECTION (true)	200	200	200/180	180	180	180	NIL	NIL	200	NIL	NIL	NIL	200	NIL	NIL	NIL	200	NIL	NIL
HEIGHT (m)	1.5	1.0	1.0/1.5	1.8	1.5	1.2	0.0	0.0	1.5	0.0	0.0	0.0	1.5	0.0	0.0	0.0	1.5	0.0	0.0
PERIOD (s)	9	9	9/7	7	8	8	-	-	9	-	-	-	9	-	-	-	9	-	-
COMBINED SEA																			
SIG HEIGHT (m)	1.6	1.2	2.8	2.3	2.3	1.8	2.2	3.3	1.6	2.2	3.3	3.0	1.6	2.2	3.3	3.0	1.6	2.2	3.0
MAX HEIGHT (m)	3.0	2.0	5.0	4.0	4.0	3.0	4.0	5.5	3.0	4.0	5.5	5.0	3.0	4.0	5.5	5.0	3.0	4.0	5.0
TEMPERATURE (C)																			
TEMPERATURE (C)	11	11	12	14	13	12	11	11	11	11	11	11	11	11	11	11	11	11	9
MSL PRESSURE (hPa)																			
MSL PRESSURE (hPa)	1006.2	1004.0	1001.6	999.6	998.4	1000.1	1003.2	1006.1	1008.3	1000.1	1003.2	1006.1	1008.3	1000.1	1003.2	1006.1	1008.3	1000.1	1003.2
SKY COVER																			
SKY COVER	OBSC	OBSC	OBSC	OBSC	OVC VRBL OBSC	OVC VRBL OBSC	OVC/BKN	OVC/BKN	BKN	OVC/BKN	OVC/BKN	BKN	OVC/BKN	OVC/BKN	BKN	OVC/BKN	BKN	OVC/BKN	BKN
WEATHER																			
WEATHER	L-FOG OCNL R-FOG	L-FOG OCNL R-FOG	R-L-FOG OCNL RFOG	R-L-FOG	FOG/MIST OCNL RW-MIS	FOG VRBL RW-MIST	OCNL RW-MIST	OCNL RW-MIST	NIL	OCNL RW-MIST	OCNL RW-MIST	NIL	OCNL RW-MIST	OCNL RW-MIST	NIL	OCNL RW-MIST	OCNL RW-MIST	NIL	NIL
VISIBILITY (nm)																			
VISIBILITY (nm)	1/8 - 1/2	1/8 - 1/2	1/8 - 1/2	1/8 - 1/2	1/4 - 1/2 VRBL 1 - 5	1/4 - 1/2 VRBL 1 - 5	6+ OCNL 2 - 5	6+ OCNL 2 - 5	6+	6+ OCNL 2 - 5	6+ OCNL 2 - 5	6+	6+ OCNL 2 - 5	6+ OCNL 2 - 5	6+	6+ OCNL 2 - 5	6+ OCNL 2 - 5	6+	6+
LONG RANGE FORECAST																			
VALID DAY / DATE	THU JUL 17	THU JUL 17	FRI JUL 18	FRI JUL 18	SAT JUL 19	SAT JUL 19	SAT JUL 19	SAT JUL 19	SAT JUL 19	SAT JUL 19	SAT JUL 19	SAT JUL 19	SAT JUL 19	SAT JUL 19	SAT JUL 19	SAT JUL 19	SAT JUL 19	SAT JUL 19	SAT JUL 19
VALID PERIOD	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.
WIND DIRECTION (t)	WESTERLY	W TO SW	SOUTHWESTERLY	SOUTHERLY	S TO SW	S TO SW	S TO SW	S TO SW	S TO SW	S TO SW	S TO SW	S TO SW	S TO SW	S TO SW	S TO SW	S TO SW	S TO SW	S TO SW	S TO SW
WIND SPEED (kt)	10 - 15	10 - 15	10 - 20	15 - 20	20 - 25	20 - 25	20 - 25	20 - 25	20 - 25	20 - 25	20 - 25	20 - 25	20 - 25	20 - 25	20 - 25	20 - 25	20 - 25	20 - 25	20 - 25
COMB WAVE HGT(m)	2 - 3	2 - 3	3 - 4	3 - 4	4 - 5	4 - 5	4 - 5	4 - 5	4 - 5	4 - 5	4 - 5	4 - 5	4 - 5	4 - 5	4 - 5	4 - 5	4 - 5	4 - 5	4 - 5
VISIBILITY	FAIR TO GOOD	FAIR TO GOOD	POOR	POOR	POOR	POOR	POOR	POOR	POOR	POOR	POOR	POOR	POOR	POOR	POOR	POOR	POOR	POOR	POOR

Next Regular Forecast issued: SAMPLE ONLY Prepared by: NC Forecast number H A 140797.16
 Phone: (709) 753 2482 Fax: (709) 753 5972

3.3.3 Hazard Mitigating Systems

3.3.3.1 Active Fire Protection Systems

The installation will be provided with the necessary level and type of active fire protection (AFP) systems to assist in the recovery from fire, by applying a reliable and effective distribution of firewater and foam. The following AFP systems are planned to be used:

- **Deluge:** Primarily used in hydrocarbon areas where gas or liquid fires could occur. Deluge limits escalation of a fire by reducing the effect of the fire on equipment and structures. It provides a means of applying foam to assist in extinguishing hydrocarbon pool fires. It also provides protective water barriers to assist personnel during escape and evacuation.
- **Sprinkler:** Provided as the primary means of AFP in all accommodation areas, laboratories and workshops.
- **Fire Hydrants:** Provided on all areas of the installation for general fire fighting purposes.
- **Firewater Monitors:** Primarily used for the helideck. Firewater monitors use a dedicated foam supply and can be manually or automatically operated.
- **Hose Reels:** Provided in accommodation, utility and other areas.
- **Water Fog Systems:** For vessel machinery spaces.

The above systems will be supplemented with hand-held, portable or wheeled-type fire extinguishers strategically located around the installation and in the accommodation areas.

3.3.3.2 Passive Fire Protection

The installation design will be based on a passive fire containment principle. High-risk areas will be separated from adjacent areas by partitions designed to control the spread of fire.

Passive fire protection (PFP) systems are capable of providing an approved fire barrier and structural stability in the event that there is an absence or failure of any AFP system.

During a hydrocarbon fire, PFP systems provide stability for the primary and load bearing structure for a period of time sufficient to allow fire-fighting to proceed in a controlled manner and for personnel to evacuate the installation should this be deemed necessary.

3.3.3.3 Explosion Protection

In the event of an explosion, the installation will be designed to minimize pressure build-up in confined areas. This ensures that explosion overpressure does not impair the function of the primary structural members or the fire divisions. Rated blast walls will be used in specific areas to minimize the potential for an explosion in an area to impact nearby areas.

3.3.3.4 Blowdown and Flare System

The installation design will incorporate a blowdown system to minimize the risk of equipment rupturing and to reduce the quantity of inventory that may feed a fire or gas cloud.

The installation flare system will provide a safe and efficient way of collecting and disposing of hydrocarbons associated with the following:

- discharge from the safety valves during pressure relief conditions;
- partial or total installation depressurization scenarios; and
- disposal of hydrocarbons from process systems.

3.3.3.5 Power Generation

Power generation systems will provide electricity to the installation. Apart from normal power generation the installation will have an essential power supply which will serve emergency loads, such as firewater supply, in the event that main generation, is lost. In addition to this, an uninterruptible power supply (UPS) will be provided to power critical loads that must remain in service after a total loss of normal and essential power supply.

3.3.3.6 Communications

The installation will incorporate both internal and external communication systems to provide for effective, efficient and reliable communications links between the installation helicopters, attendant vessels and on-shore facilities. In the event of an emergency, they provide a means of communicating with lifeboats and assisting such agencies as the Canadian Coast Guard.

3.3.3.7 Temporary Safe Refuge

The installation will incorporate a TSR which serves as a “safe haven” where personnel can safely muster during emergency. The TSR will provide a resource base for emergency actions, the installation communications center and a means of getting to and using the evacuation systems. Access routes to the TSR provide a safe path from any area on the installation during the initial stages of an incident.

The TSR will incorporate the following features:

- in accordance with the TLS the installation design will provide a stable structure for the TSR and the evacuation systems for a minimum period of two hours. Performance standards to which the TSR and associated facilities are designed will be established to identify the minimum period that the facilities will remain capable of functioning in conditions of fire, explosion, toxic fumes and other hazards;
- protection against smoke and gas ingress;
- protection against loss of breathable atmosphere;
- protection against heat/temperature build-up;
- reliable power supplies;
- lighting and visibility systems;
- communication systems;
- command structure; and
- facilities to handle medical and rescue emergencies.

3.3.3.8 Evacuation, Escape and Rescue Systems

Two safe escape routes will be provided from all work areas to increase the likelihood that at least one route will remain accessible during any given condition. These routes will be clearly marked and lead to the TSR, where the muster areas will be located, and to the embarkation areas for the evacuation system.

Evacuation systems, such as Totally Enclosed Motor Propelled Survival Craft (TEMPSC) will be provided in sufficient quantity, and at strategic locations, to cater for 200 percent of the normal persons on board (POB). Secondary and tertiary escape systems will also be provided to satisfy regulatory requirements.

A Multifunctional Platform Support Vessel (MFPSV) on standby duty will be used for rescuing personnel who have escaped to the sea. The vessel will provide hospital space and food provisions.

The MFPSV will have a fast rescue craft that can be used for retrieving personnel who have left the installation and transferring them to the MFPSV.

3.4 Life Supporting and Life Saving Equipment

3.4.1 Lifebuoys

The installation will incorporate an adequate supply of lifebuoys distributed in such a way as to enable one lifebuoy to be visible from any point of the outside walkways on the installation.

Each lifebuoy will be supplied with a suitable tail line and self-actuating buoyant light. Each lifebuoy and its associated equipment will be designed to comply with current regulatory requirements.

3.4.2 Lifejackets

The installation will be provided, as a minimum, with the following allocation of lifejackets:

- 100 percent of maximum POB located within the TSR; and
- a minimum of 50 percent of maximum POB located outside the TSR.

Each lifejacket will be designed to comply with the current regulatory requirements. They will be of automatic inflating design and be provided with a strobe light to make the wearer more conspicuous to rescuers.

The location of all lifejackets will be clearly marked and will be easily accessible. Those located outside the TSR will be stowed in cabinets.

3.4.3 Survival Suits

These suits may be either the suits issued to personnel at the heliport for use while flying, or they may be separate suits issued at the installation. On arrival at the installation, each person will keep his or her survival suit in an emergency survival pack, as outlined in Section 3.5 of this Preliminary Safety Plan, contained within his or her cabin.

Additional suits to accommodate an additional 100 percent of the maximum POB will be located outside the TSR in storage cabinets located adjacent to the TEMPSC's.

3.5 Emergency Survival Packs

In each cabin there will be an emergency survival pack or "grab bag" for each person. The following equipment will be contained in each bag:

- heat resistant gloves;
- a flashlight; and
- survival suit.

In addition to the above, each cabin will contain two smoke hoods and a fluorescent snap nightstick for use in an emergency. For more information on personal protective equipment (PPE), refer to Section 4.8 of this Preliminary Safety Plan.

4 OPERATIONS AND MAINTENANCE PROCEDURES

4.1 Operations/Maintenance Manuals

Operating and maintenance procedure manuals will be used in all aspects of support of the White Rose Project. The manuals will be implemented specifically for the Project and will incorporate all regulatory requirements. These manuals will be a vital tool in the promotion of safe and efficient operations. Personnel will be trained in the use of the appropriate manuals and in associated procedures.

4.2 Production Monitoring and Control Systems

System manuals will be provided that will contain design rationale and operating parameters that will form the basis for the operating manuals for all primary, sub and ancillary systems.

4.3 Simultaneous Operations and Procedures

A simultaneous operations and procedure manual will be provided to address all aspects of simultaneous operations involving the FPSO and MODUs working over drill centres. This manual will be designed to enhance safety on both facilities at all times.

4.4 Work Permit System

A system of work permits will be in place for the installation. The system is described in more detail in Section 2.7.2 of this Preliminary Safety Plan.

4.5 Planned Maintenance System

The maintenance system is an integral part of the safety system in that it must provide assurances of the physical integrity of the individual components of the production system. A reliability centred maintenance (RCM) concept will be employed to ensure that equipment achieves required reliability levels. Reliability will be a function of criticality.

An inventory of critical parts, products, equipment and systems will be identified, established and maintained at each FPSO, MODU, support vessel and shorebase facility in order to fulfil parts and maintenance requirements and associated record keeping. Suppliers of critical materials will be identified based on their ability to meet required specifications. Critical parts are those whose failure are most likely to result in a major loss to people, property and/or the environment. Critical systems include ballasting systems, standby equipment (for example, emergency generators, emergency steering, main engine manoeuvring controls) and inactive equipment (for example, lifeboat launching systems, mooring and anchoring equipment).

Critical equipment and systems will be inspected on a regular basis in accordance with the vessel's regular inspection program.

Critical safety systems, monitoring instruments, and other equipment will be inspected, calibrated, and repaired as per manufacturer's specifications and applicable Husky Oil and contractor standards by maintenance personnel or other designated contractors.

Shorebased and offshore facilities will maintain and keep appropriate records regarding planned maintenance programs, including elements such as corrosion protection, leak detection and winterization programs, materials handling equipment and lifting gear.

4.6 Management of Change

A system will be developed and implemented to manage all process, engineering, procedural and organizational changes in a timely and effective manner. Relevant engineering regulations, codes, classification rules and industry standards will be reviewed on an ongoing basis to ensure compliance. A review system is in place to incorporate Loss Control Management considerations into design, construction and commissioning of vessel modifications or repairs.

Systematic processes will be used to identify hazards and assess risks associated with new, or changes to existing, work processes and procedures prior to the procedures being used and to ensure appropriate weight control procedures are employed.

Loss Control Management requirements are used as part of the acquisition criteria for spot charters or additional vessels. Vessels are inspected by qualified personnel prior to acquisition.

4.6.1 Non-Standard Modes of Operation

Procedures and guidelines will be developed as part of the overall Safety Management System to ensure that operational limits are not breached. An approval system will be implemented to ensure that process variables and unusual operating conditions are subject to appropriate control. Limitations imposed by the physical restrictions of the facilities will be established during the design stage of the project.

4.7 Planned Inspections

4.7.1 Health, Safety And Environment Inspections

All shorebased and offshore facilities are required to carry out inspections on a regular basis to identify conditions and practices which have the potential to cause health, safety or environmental problems, and have documentation, regarding these inspections which specify the following:

- those personnel responsible for conducting the inspections;
- frequency of the inspections;
- checklists to be used;
- written reporting, distribution, record keeping and follow up procedures; and
- responsibility/ confirmation to ensure that remedial actions are carried out in a timely manner along with analyses of the reports.

This documentation shall be updated on a yearly basis or when significant changes occur.

The inspection program design includes, but is not limited to, a consideration of the following general areas as they apply to the FPSO, MODU, supply vessels and shorebase facilities (dock, warehouse, offices):

- bridge;
- vessel offices;
- radio room;
- deck areas;
- engine room;
- living areas;
- galley;
- messes;
- drilling facilities/process areas and equipment;
- emissions monitoring and control equipment;
- effluent streams monitoring, treatment/control equipment;
- waste handling and storage facilities;
- maintenance/work shops;
- stores areas;
- bulk product containment/storage areas;
- fuel storage areas;
- loading and unloading areas;
- ballast control areas;
- relevant off-site areas;
- spill response and control equipment;
- fire and emergency equipment;
- all product and chemical transfer points;
- contractor work sites;
- leak detection systems; and
- corrosion detection systems.

4.7.2 Regular Health, Safety and Environment Inspections

Regular inspections will be conducted as follows:

- Monthly planned inspections of fire and emergency equipment by the applicable area Supervisor or designate, as set down on an approved check list.
- On a monthly basis, designated personnel will carry out HS&E inspections, using checklists, of a pre-determined section of their work area, and will identify and correct deficiencies. Significant findings from inspections will be reported at HS&E group/committee meetings.
- Supervisors will carry out formal scheduled HS&E inspections of their areas annually using checklists, and will follow up and correct deficiencies on a timely basis.

Copies of inspection reports will be forwarded to the appropriate Supervisors for follow-up actions. Inspection and follow-up reports will be maintained on file as necessary. Records of deficiency reports will also be maintained on shore.

Management and other appropriate personnel will be kept regularly informed of results of planned inspections, along with the details of remedial actions taken or reasons for delays to address high hazard (priority) items.

4.8 Personal Protective Equipment

4.8.1 Personal Protective Equipment Information

Requirements and needs for PPE will be identified on an ongoing basis by Husky Oil and Contractors. Needs will be based on:

- regulations, Class Society requirements;
- HS&E Committee recommendations/employee consultation and input;
- job analysis and history;
- accident incident investigations;
- accepted industry standards; and
- work permits.

PPE standards, requirements and procedures will be written down and communicated through:

- policy and rule booklets;
- site-specific job procedures and Safe Work Permits or plans;
- material safety data sheets;
- training programs;

- special bulletins; and
- posted warning signs.

4.8.2 Protective Equipment Availability And Maintenance

As a means to control occupational hazards at the worksite, Supervisors will be responsible for ensuring that PPE is available and used as appropriate by all personnel. Proper facilities and expertise will be provided for maintaining, cleaning and storage of PPE. All employees (Husky Oil and Contractor) will be instructed in the need for, proper use, limitations, cleaning and maintenance of applicable PPE prior to commencing job assignments. Records will be maintained of the instruction.

Employees will be required to check and monitor the condition of PPE as part of their regular routine and standard practice. Substandard equipment shall be taken out of service. The condition and use of employees PPE will be maintained on a random basis to ensure it is being maintained and remains in serviceable condition.

To meet legislative requirements, Supervisors and/or Program Coordinators will ensure that records are kept on testing, repair, replacement, usage, inspection and issuance of applicable PPE (for example, breathing apparatus).

The shorebased and offshore facility's disciplinary and commendation procedures concerning PPE requirements and use will be discussed with all employees so that enforcement will be consistent throughout the shorebase, FPSO, MODU, and support vessels.

4.9 Hazardous/Dangerous Goods

Husky Oil will ensure that all requirements for both provincial and federal Transportation of Dangerous Goods and Workplace Hazardous Materials Information System (WHMIS) regulations and legislation are met. All requirements of both provincial and federal legislation and regulations respecting the handling, storage, use and disposal of hazardous materials will be met.

An Offshore Chemical Management System (OCMS) will be developed and implemented to ensure that HS&E considerations are taken into account prior to the introduction of any chemicals to the site. Material Safety Data Sheets (MSDS) will be readily available to all employees and user systems put in place.

5 TRAINING AND QUALIFICATIONS

5.1 Organizational Structure

Husky Oil will manage the operation on behalf of itself and its co-venturer, Petro-Canada, from the Husky Oil office in St. John's. The operation will include an integrated team of trained personnel from both owners, supplemented by contractor's personnel. A preliminary overview of the onshore operation is outlined in Tables 5.1-1 and 5.1-2 and Figures 5.1-1 and 5.1-2.

Table 5.1-1 Functions of On-shore Personnel

Responsibility	Number of Persons	Function
Management	1	Operations Management
Drilling and Completions	3-4	Drilling Supervision Drilling Engineering Completions Engineering
Technical Services	15-16	Facilities Engineering Reservoir Engineering Geology Geophysics Petroleum Engineering Petrophysics Telecommunications Computer Services Maintenance Engineering Subsea Engineering Instrumentation and Controls
Logistics	11-12	Procurement Materials Transportation Crane Operation Radio Operation Yard Labour
Business Services	7-8	General Accounting Invoice Processing Production Accounting
Administration	5-6	Office Management Human Resources Public Relations Secretarial Services Reception Telephone
Loss Prevention	3-5	Loss Management Quality Assurance Quality Control Security
Total	45-52	

Table 5.1-2 Functions of FPSO Offshore Personnel

Responsibility	Number of Persons	Function
Management	1	Offshore Installation Manager
Loss Management	2	Loss Prevention Advice Environment Advice Medical Services
Production	6-7	Supervision Control Room Operators Production Operations
Marine	6-7	Marine Supervisors Marine Operations
Maintenance	14-15	Supervision Instrument Maintenance Mechanical Maintenance Electrical Maintenance Telecommunication Maintenance Maintenance Scheduling
Services	16-18	Supervision Helideck Loading Deck Crew Supervision Deck Crew Operations Crane Operations Radio Operations Ice and Weather Surveillance Catering and Accommodations Services
Total	45-50	

Figure 5.1-1 On-shore Organization

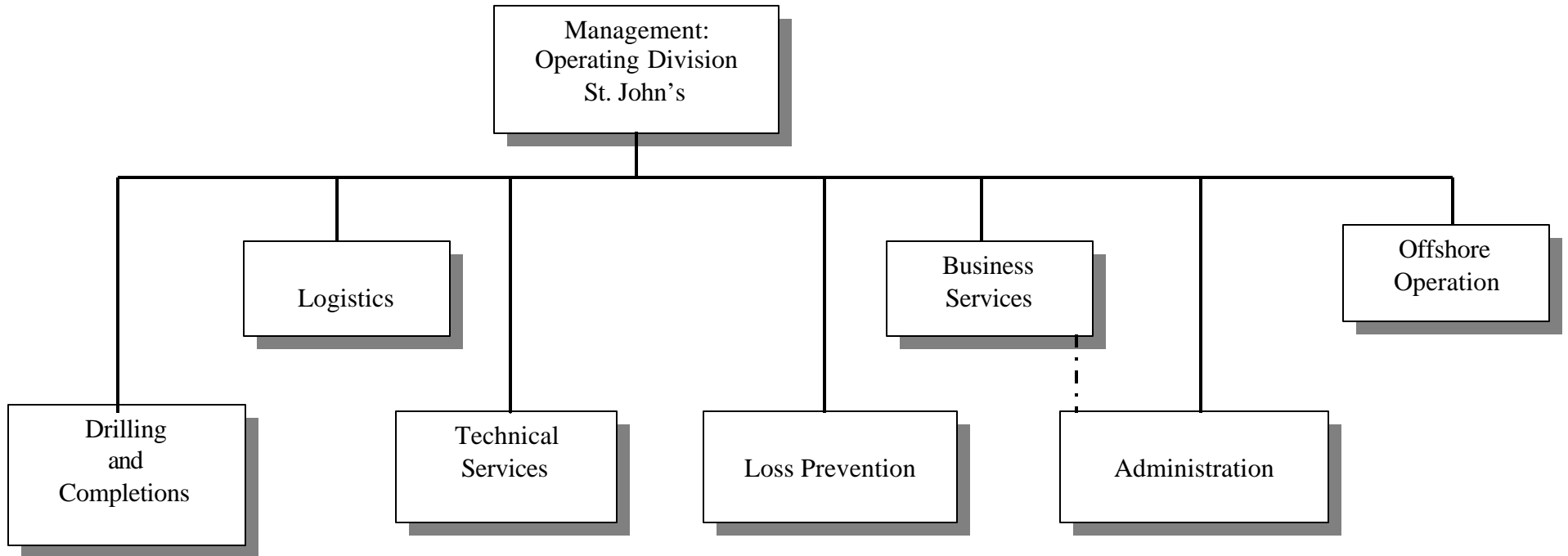
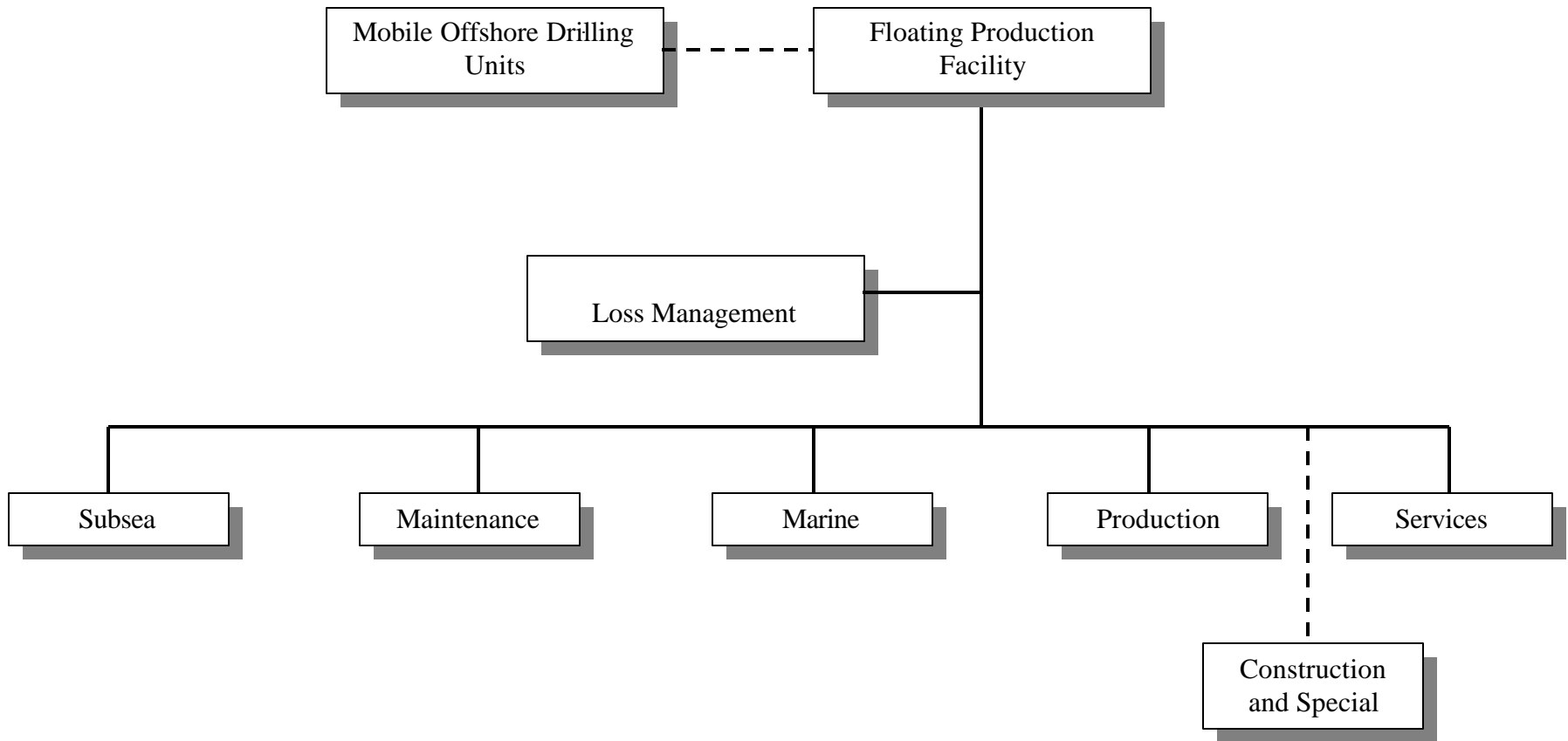


Figure 5.1-2 Offshore Organization



5.2 Entry Level Qualifications

As outlined in Section 2.10 of this Preliminary Safety Plan, Husky Oil's staffing philosophy will adopt a systematic approach in the recruiting of personnel which, among other factors, will address entry level qualifications.

5.3 Job Orientation and Follow-up

As outlined in Section 2.7.2 of this Preliminary Safety Plan, all employees will receive an initial orientation upon arrival at all offshore facilities, including an explanation of key HS&E policies, principles and rules. Where necessary, employees will be tested for understanding and knowledge of key rules following the instruction.

5.4 Operating Maintenance Procedures and Practices

As outlined in Chapter 4 of this Preliminary Safety Plan, operating and maintenance procedure manuals will be used in support of all aspects of the Project. These manuals will be a vital tool in the promotion of safe and efficient operations and personnel will be trained in the use of the appropriate manuals and in the associated procedures.

5.5 Safety and Emergency Preparedness/Response Training

Individuals and work groups will be assigned specific offshore responsibilities for safety and emergency response preparedness. Specialized training will be provided prior to going offshore to ensure that personnel are sufficiently competent to perform effectively in these areas. The training will include the following:

- helideck teams;
- lifeboat coxwains;
- advanced first aid;
- man overboard;
- transportation of dangerous goods;
- medical escort;
- fire teams; and
- on scene incident command.

In addition, a command structure will be established to handle all offshore emergencies. Personnel assigned to the offshore command teams will receive specialized training in the following areas:

- command skills;
- search and rescue methods;
- stress management;
- oil spill management; and
- fire management.

The emergency command team will participate in regular team exercises to develop their skills and to foster effective teamwork amongst team members.

5.6 Ongoing Competency of Personnel

Husky Oil will implement a system for documenting all employee qualification and training records. These records will identify the date that training occurred, topics covered and the methodology applied to verify that the employee understood the training. The system will also flag when refresher training is required.

Where certified safety training is specifically required by regulation or by Husky Oil policy, copies of the relevant certificates will be held on file.

The company will consider the use of a centralized training and qualifications register or database to provide a current summary of all employees. This system would expedite internal and regulatory audits of employee competence levels.

5.7 Simulator Training

In addition to the use of traditional training programs, Husky Oil will consider the use of a simulator that can realistically reproduce operating and emergency conditions on the installation. The simulator would provide particular benefit in training central control room personnel in process control, well control, ballast control and start-up/shutdown operations. As appropriate, existing simulators in place for the Hibernia and Terra Nova programs will be used.

5.8 Training Documentation and Compliance Auditing

Audits to ensure essential training requirements are met will be conducted on a scheduled basis as part of the HS&E auditing program. Contractors will be required to demonstrate their compliance with essential training prior to any person going offshore. Training audits of Contractors will also be conducted.

5.8.1 Training Needs Identification

Supervisors, and/or HS&E Coordinators will identify training needs for all positions based on applicable regulations, employee job functions, training requirements for next professional level, reviews of the Loss Control Management system and reviews of accident/incident investigation reports. Training requirements will be set down in an annual training requirements (budget) summary.

Supervisors will conduct a formal training needs analysis for all new or reassigned employees, with particular emphasis on personnel performing potentially dangerous work such as handling hazardous materials or working in specific hazardous environments.

5.8.2 Training Aids

To provide training consistency and thoroughness, as well as to facilitate flexibility in the use of trainers, designated personnel will ensure that effective training aids such as written lesson plans, audio visual aids or computer based training will be used where possible.

5.8.3 Records And Compliance

The Project Manager, OIMs, and Support Vessel Master or designated personnel will ensure that training needs as outlined in the shorebase, FPSO, MODU, or support vessel training plan are met.

For those courses where testing is mandatory, designated personnel will ensure that employees are tested for knowledge and proficiency, with results recorded on file as required.

Records will be maintained of training for all employees and will be used to assess compliance with training plans.

The Project Managers, MODU OIM, and Support Vessel Master or designated personnel will ensure that training records are maintained and updated to reflect training received by employees on an ongoing basis.

5.9 Management Training and Qualifications

5.9.1 Management Personnel

Loss Control Management leadership training (shorebased and shipboard) needs will be identified based on regulatory requirements, Husky Oil's Loss Control Management system, and individual performance objectives. Shorebased and offshore management personnel (such as, first line Supervisors and higher) will receive HS&E Loss Control Management training on a scheduled basis to facilitate their effectiveness in carrying out their loss control responsibilities.

6 COMMAND STRUCTURE

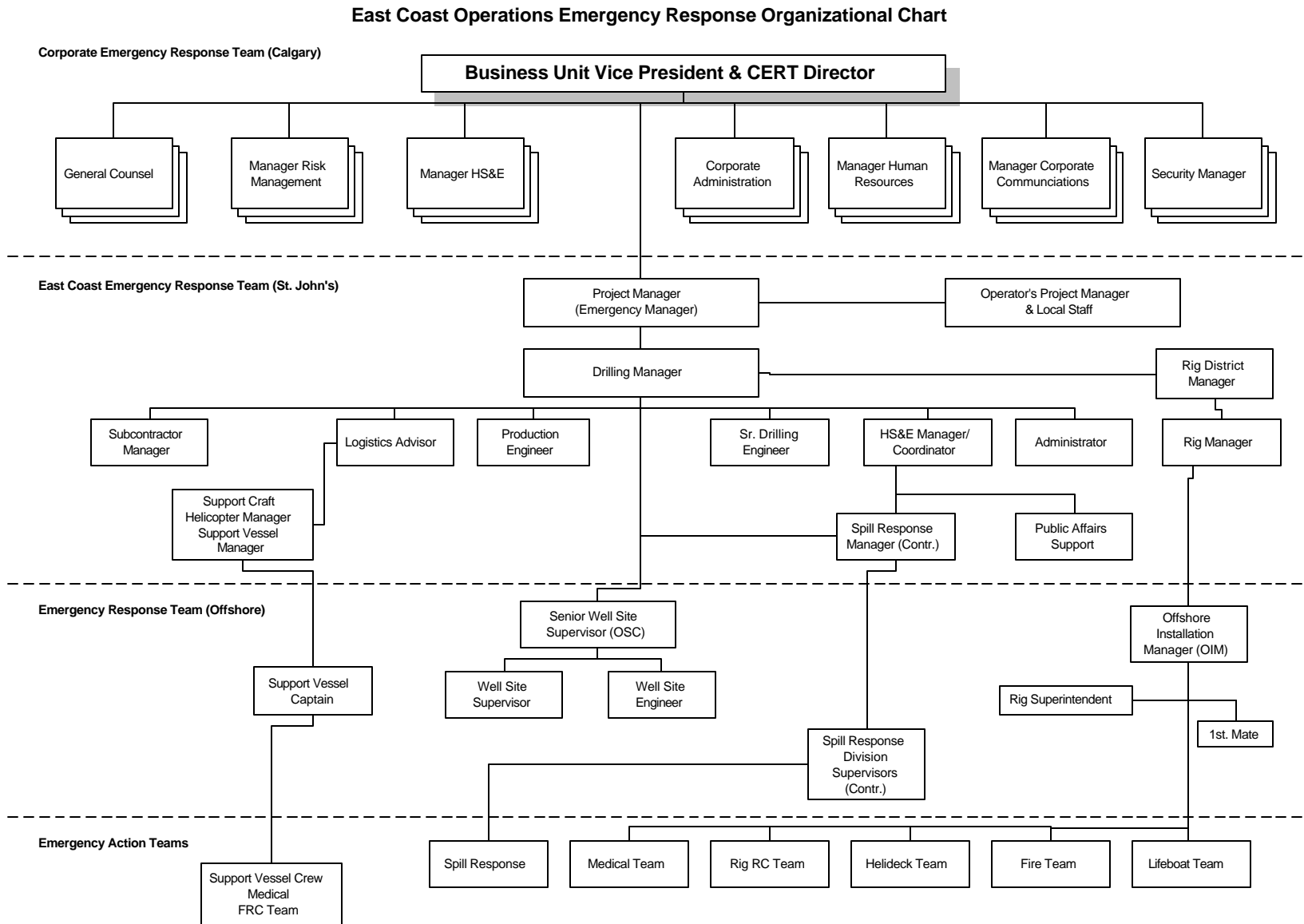
The final organizational structure for the Project has not yet been established, and will be developed and incorporated into this Preliminary Safety Plan at the appropriate time in the overall project realization. The command structure will indicate clearly the on-shore management structure as well as the command structure in place at the FPSO and MODU. Duties, responsibilities and authorities of all management personnel will be defined for both normal operating conditions and emergency situations. This will include lines of reporting and information flow, and lines of authority, and it will extend not only to Husky Oil's personnel but also to its contractor(s) personnel. Also, the interfaces with the corporate office, support craft and installation personnel will be identified. A succession plan will be identified in the event of key Managerial incapacitation during an emergency.

Husky Oil currently has in place a fully developed organizational structure for its East Coast Operations Emergency Response Plan, which is applicable to the Company's exploration program. This structure will of necessity be modified, as it focuses entirely upon the current exploratory drilling activities. In addition, it will need to reflect the organization that will govern the FPSO. Nonetheless, it can be anticipated that a significant portion of the final structure will be similar, if not identical, to the existing organization.

The Emergency Response Plan structure encompasses not only the command organization governing activities in the offshore environment, but also the on-shore command organization in St. John's, as well as the corporate command structure based in Calgary, Alberta. In addition to the Husky Oil internal organization, the structure may include the contract/operator of the offshore installation. While there will be clearly defined demarcations of responsibilities between the Husky Oil internal organization and that of the installation partner, from a functional point of view the overall organizational command structure will be seamless.

The current Husky Oil East Coast Operations Emergency Response Organization is represented in Figure 6.1. This is presented at this time as a representative command organization only, on the possible understanding that the organization may be customized as the Project develops, to align as closely as to the routine operating organization.

Figure 6.1 East Coast Operations Emergency Response Organizational Chart



6.1 Offshore Installation Manager

The OIM is the person in charge of the floating production facility and is responsible for coordinating all activities in the field. Their responsibilities will include:

- health, safety and welfare of all personnel working on the installation and for the protection of the environment;
- maintenance of order and discipline;
- emergency procedures, written instructions and the Permit to Work (PTW) system; and
- application of corporate procedures on the installation.

Activities under the OIM's jurisdiction are performed in accordance with company policy. Key HS&E responsibilities will include:

- developing HS&E awareness in the workforce, for both Husky Oil and Contractor personnel, through the enforcement of safety standards, the creation and implementation of relevant programs and active encouragement of workforce involvement in HS&E management;
- applying the PTW system to control and coordinate work on and around the installation;
- developing and maintaining emergency response capability;
- control of hazardous materials;
- monitoring and analyzing safety performance and communicating results;
- achieving the installation waste management objectives; and
- maintaining the integrity of the installation.

If an emergency affects, or threatens to effect, the integrity of the installation, and is not being contained, the OIM will initiate precautionary evacuation procedures for all personnel not involved in attempts to control the emergency. An immediate decision to totally evacuate the installation will be made by the OIM should it be apparent that the emergency is beyond control (for example, major structural failure). If a situation arises whereby it is necessary to disconnect the vessel, the responsibility for the vessel will then be assumed by the marine lead.

Within the terms of the above responsibilities, all departments on the installation will report to the OIM. These include production and marine operations personnel, contractors, well services, installation services, and safety and facilities management.

7 CONTINGENCY PLANNING

7.1 Scope of Planning

Prior to commencement of production operations, Husky Oil will develop contingency plans that will serve as the guides for the company's response to any emergency encountered during the White Rose production and will file them with the appropriate authorities. Plans will be developed to address emergencies that could potentially be encountered based on operations-specific hazard/risk analysis. The plans will outline the necessary personnel, equipment, and logistics support along with procedures to implement initial actions to respond to an emergency incident in a safe, prompt, coordinated manner. The plans will be distributed to designated personnel who will be responsible for emergency response actions. The content of the plans will contain sufficient detail to enable personnel to respond in a coordinated and effective manner.

7.1.1 Geographic Area Covered by Planning

Emergency response planning for White Rose production operations will focus on the area immediately adjacent to the location of the potential emergency which in most cases is the production site or satellite drill sites. This area will be defined as the safety zone established around the production site to ensure collision avoidance with ocean-going vessels. This is the area that will be under the jurisdiction of the *Atlantic Accord Implementation Act* and administered by the C-NOPB.

The safety zone will be recognized by Transport Canada, who will publish a description of this area for the information of all ocean-going traffic. Based on the precedent set by Terra Nova, Husky will apply for a 5-nautical mile (9.5 km) safety zone and an additional 5 nautical mile cautionary zone around the FPSO production location.

7.1.2 Husky Oil Corporate Policy

Husky Oil maintains a strong commitment to health, safety and environmental stewardship. The company conducts its business activities with a progressive approach and is committed to monitoring and improving its performance. Central to this commitment is a corporate HS&E Management System, which governs all aspects of loss control management.

7.1.3 Husky Oil Corporate Contingency Planning

As part of the corporate HS&E Management System, Husky Oil has developed a company-wide approach to contingency planning. All Husky Oil facilities, both in western Canada and offshore operations, are equipped with emergency response plans and procedures that share common format and

approaches. Each plan reflects conditions and is risk specific to each facility but is similar enough to plans for other facilities that it may be quickly implemented by any trained Husky Oil personnel.

Husky Oil will use the same philosophy and approach that it uses throughout the company when developing contingency plans for the proposed White Rose offshore oilfield development. In addition to environmental protection plans (including environmental compliance, monitoring and environmental effects monitoring programs) to be developed specifically for all phases of White Rose production operations, Husky Oil will update and modify its existing offshore ice management and emergency response plans for use in production operations. Specifically, general emergency response procedures that have been developed for delineation drilling in 1999 will be updated and expanded for use during production operations. Facility-specific alert and emergency response procedures and vessel-specific contingency plans will also be developed to cover the details of local response procedures.

7.1.4 Emergencies Covered by White Rose Contingency Planning

An emergency will be defined as any unexpected occurrence resulting or having the potential to result in:

- death or serious injury/illness requiring hospitalization;
- an environmental effect posing serious threat to on-scene personnel, third-party personnel, marine life or wildlife; or
- major or substantial damage to operator or contractor property.

Several types of emergencies will be covered by White Rose contingency plans. The response to any of the following incidents will require immediate notification and action:

- accidental injury;
- explosion or fire;
- loss of well control;
- hydrocarbon or chemical spills;
- loss of or damage to aircraft supporting production operations;
- loss of or damage to support or standby vessels;
- loss or disablement of the FPSO or MODU, including ballast control or stability problems;
- major damage to equipment not caused by any of the above (for example, materials handling, equipment failure, or operator error);
- imminent threat to operations posed by weather, sea ice, or icebergs;
- collision or threat of collision with an ocean-going vessel;
- diving incidents;
- threatened or actual damage to subsea pipelines or well centre hardware; and
- security-related incidents such as extortion, bomb threat, or criminal or terrorist acts.

7.1.5 Proposed Contingency Plan Development

Because of the complexity of the White Rose development, contingency planning will be addressed in a number of inter-related documents, each of which will cover a specific aspect of production operations. An overview of the individual documents that, collectively, will dictate all emergency response operations is presented in Table 7.1-1. The plan names used in Table 7.1-1 are generic. The structure and naming of each plan will be finalized during the development of the White Rose production program.

Figure 7.1-1 Overview of Contingency Plans to be Developed for the White Rose Project

Plan	Description
HS&E Loss Control Management System	<ul style="list-style-type: none"> • a series of policies and procedures requiring activities to be carried out so as to prevent the occurrence of emergency incidents.
Offshore Emergency Response Procedures	<ul style="list-style-type: none"> • directs on-site actions at the White Rose site (including production operations at the FPSO and production drilling at the MODU); • provides very specific actions for supervisory and technical response personnel for a number of potential emergencies; • provides a link between all offshore facilities (FPSO, MODU, and support vessels); and • communication to area operators and regulatory first responders.
Alert and Emergency Response Plan	<ul style="list-style-type: none"> • integrates overall response actions; • directs actions of shore-based Emergency Response Team; • provides general management procedures for any emergency; • allows for increasing shore and corporate responsibility as an incident escalates; • provides the link between offshore actions (coordinated by FPSO Offshore Installation Manager (OIM)) and corporate emergency teams; and • communication to area operators and regulatory responders.
Collision Avoidance Plan	<ul style="list-style-type: none"> • a specific plan for <ul style="list-style-type: none"> ! identifying all potential collision situations involving the FPSO or MODU, ! communications with the threatening vessel, and ! prompt relocation of the offshore platform in the event that the threatening vessel does not change course; • includes an expanded multi-level traffic control area regulated by the FPSO; and • developed specifically for offshore use and directly related to the Offshore Emergency Response Procedures.
Ice Management Plan	<ul style="list-style-type: none"> • a plan that describes the procedures for <ul style="list-style-type: none"> ! monitoring the movement of icebergs that might pose a threat to drilling and production activities, and ! determining the need for specific countermeasure operations, including iceberg deflection or moving the platform off location; • the plan provides a link between all ice management operations offshore and on-shore; and • the plan provides a link between Husky Oil and other operators.
Oil Spill Response Plan	<ul style="list-style-type: none"> • procedures developed specifically for the response to oil spills originating from the White Rose production site; • covers situation where Husky Oil is the responsible party; • applies for both C-NOPB and <i>Canada Shipping Act</i> jurisdictions;

Plan	Description
	<ul style="list-style-type: none"> • covers <ul style="list-style-type: none"> ! specific actions to be taken by platform and support vessel personnel, ! management or coordination actions taken by shore-based company and contractor personnel, and ! specific strategies for the response to anticipated oil spill scenario situations; • the plan provides a link between all spill response operations offshore and on-shore; • details procedures for spill response management (ISC-based) when an incident escalates above Stage 1; • the plan provides a link between Husky Oil and other operators; and • directly related to the FPSO or MODU SOPEP, Offshore Emergency Response Plan, and the Alert and Emergency Response Plan.
Ship's Oil Pollution Emergency Plans (SOPEP)	<ul style="list-style-type: none"> • individual oil spill response plans developed for each of the vessels contracted by Husky Oil for offshore production-related activities; • will apply when vessel is not at the production and is under the jurisdiction of the <i>Canada Shipping Act</i>; and • vessel operator and not Husky Oil will be the responsible party.
Family Support Plan	<ul style="list-style-type: none"> • a plan to assist family members and friends of offshore personnel during an emergency situation; • description of the operation of a family information service and a family support centre; • protocols for contacting family members in a constructive and proactive manner; and • guidelines for volunteer family responders in how to deal with concerned relatives and friends.
Emergency Communications Plan	<ul style="list-style-type: none"> • a comprehensive guide to all communications with affected individuals, the public, and the media during an emergency response; • description of the operation of a media response centre; • news release and statement templates; • sample media questions and answers; • media information packages; and • directly linked to Corporate Plan.
Action Plans and Standard Operating Procedures	<ul style="list-style-type: none"> • set procedures for specific technical activities undertaken by Emergency Action Teams.
Corporate Emergency Notification Procedures	<ul style="list-style-type: none"> • Overall Husky Corporate Response Plan and Procedures outlining senior management and specialized corporate support department response to an emergency.

7.1.6 Plan Description

Because of the similarity in the response to different emergencies and construction of all Husky Oil contingency plans, the White Rose plan structures will be generic. Emergency response plans will outline management and operational procedures only. Procedures for the technical response to many of the above emergencies (medical, fire fighting, well control, ice management, spill response, equipment repairs, etc.) will be outlined in specific manuals and Standard Operating Procedures (SOPs) intended for the training and direction of designated Emergency Action Teams (EAT).

Most emergencies, however serious, will be of short duration and require a concentrated response involving a limited amount of resources. The exception will be the response to a major oil spill, which may require the mobilization of considerable equipment, vessel, and personnel for an extended period of time. Because of the complexity of oil spill response preparations and because of the environmental implications of a major oil spill, this review of White Rose contingency planning will include a detailed section on oil spill response management and countermeasures.

7.2 Plan Format

All Husky Oil contingency planning follows a standard format. This consistency allows any Husky Oil emergency response personnel to become quickly assimilated into an emergency response at any company facility. As a result, Husky Oil has the basis for continuous improvement of its corporate response capability and a complement of trained responders who can be employed as required in an emergency response at any company facility.

7.2.1 General Layout

The plan will be controlled in its distribution to company employees, contract personnel and regulatory agencies. Each copy will be numbered and assigned to a designated user. Each page is clearly labelled to indicate the revision date and chapter and page numbers. The plan will be produced in 8.5" x 11" format and bound in a 3-ring binder for ease in updating. The plan will be divided into logical sections and appendices separated by colour-coded tabs for quick access.

7.2.2 Division of Content

The content of the main portion of the plan will be based on a standard outline (Table 7.2-1). Procedures for specific emergencies will be presented in dedicated appendices.

Table 7.2-1 Overview Content for White Rose Project Contingency Plans.

Section	Description
Introduction	<ul style="list-style-type: none"> C Purpose and scope of plan C Geographic coverage C Definition of emergencies covered
Action Plan	<ul style="list-style-type: none"> C Conditions leading to emergencies C Stages of alert and response C Roles and responsibilities C Notification procedures C Specific response activities
Emergency Telephone List	<ul style="list-style-type: none"> C Emergency services groups C Company personnel C Contractors and suppliers C Government contacts
Area Considerations	<ul style="list-style-type: none"> C Location maps C Facility and vessel diagrams C Sensitive areas near the emergency scene
Emergency Support	<ul style="list-style-type: none"> C Medical services C Logistics support resources C Media guidelines C Family support C Communication systems
Emergency Preparedness	<ul style="list-style-type: none"> C Plan maintenance C Personnel training C Exercises
External Assistance	<ul style="list-style-type: none"> C Mutual Aid arrangements C Canadian Coast Guard assistance C Well relief resources C C-NOPB Emergency Response Plan

7.3 Classification of Emergencies

The level of response to an emergency at White Rose will be dictated by the scale of the incident. Husky Oil uses a tiered approach to response (“principle of graduated response”) that relies upon increasing levels of resources from a larger pool as the scope of an emergency escalates. There are four stages of emergency in Husky Oil’s response process, including an alert stage which acknowledges threatening circumstances that may precede an actual emergency.

7.3.1 Alert Stage

An alert stage will be declared when any condition exists or is forecast which does not require immediate emergency response but has the likely potential to escalate into a defined emergency situation. Examples include forecast heavy weather or approaching icebergs that have the potential to become emergency situations.

7.3.2 Emergency Stages

7.3.2.1 Stage 1 Emergency

The OIM will declare a Stage 1 Emergency when a situation is confirmed that will affect one area of the site or facility. At this stage, there is no immediate hazard to the public or environment and there is no immediate danger of uncontrolled escalation.

The emergency may not be trivial and could include loss of life. The key feature of a Stage 1 Emergency is that the effect is limited and identified and that the conditions that led to declaration of an emergency have either passed or have been controlled so that no further escalation is anticipated.

Actions include internal and regulatory notification and response by on-scene personnel, with logistical support, as required, from shore. Until the emergency has been declared over, responders will take the necessary steps to prepare for a possible Stage 2 Emergency.

7.3.2.2 Stage 2 Emergency

In a Stage 2 Emergency, the related effect is broader than just a confined portion of the site or facility. The situation has the potential to result in serious off-site effects and there is some hazard to the public or the environment. A key feature is the potential for uncontrolled escalation.

Primary activities focus on ongoing response and containment. At Stage 2, additional personnel or equipment may be needed from shore or from other operators offshore, to support the on-site resources.

7.3.2.3 Stage 3 Emergency

A Stage 3 Emergency is considered to be a major emergency in which operating control has been lost and the integrity of the facility is threatened. The situation is escalating and uncontrolled and definite, and serious hazard to the public or environment exists.

The primary activities include ongoing response and containment, mobilization of external resources, and implementation of public information initiatives.

7.3.3 Post-Emergency Stages

Once the conditions that led to the emergency have passed, Husky Oil will take measures to terminate the response in an orderly and responsible fashion. Some of the actions that are prescribed during this stage of an emergency response will include:

- advise all company and contract personnel, government agencies, and the public of the termination of response operations;
- initiate incident debriefing, reporting, and investigation;
- ensure integrity of all equipment before returning to production operations;
- monitor needs for critical incident stress debriefing for response personnel;
- implement longer term effects monitoring program, if required;
- review response actions and modify Emergency Response Plan (ERP), as required; and
- complete all financial issues relating to the response.

7.4 Emergency Response Management

7.4.1 Management System Processes

The White Rose emergency response structure will be based on the organization of action-oriented teams structured for the rapid and efficient response to emergencies. Organization will be specific to each operating location but within the context of a corporate system. Response organization will be comprised of four levels:

- Corporate Emergency Response Team (CERT);
- East Coast Emergency Response Team (ECERT);
- Offshore Emergency Response Team (OERT); and
- Offshore EAT including
 - Technical Operations Team,
 - Medical Team,
 - Fire Team,
 - Helideck Team,
 - Lifeboat Team,
 - Fast Rescue Craft Team, and
 - Spill Response Team.

This structure relies on a strong response team offshore which is in command of trained action teams to implement specific actions. Offshore personnel will be supported and complemented by regional and corporate teams in the event that the incident escalates.

Management will rely upon close interaction between team members. As most decisions must be made quickly, management team members will work very closely together. All communications will be as efficient as possible. The focus at this stage will be directed towards dealing with the emergency.

Documentation will be efficient, relying on status boards and pre-formatted self-carbon note pads. Reporting will be done upon completion of the response and be based upon the documentation generated during the response by the responders themselves.

7.4.2 Response Organizational Structure

Most emergencies covered by this plan will take place offshore at or near the White Rose production field. In most cases, regardless of the level of the emergency, the OIM on the FPSO or MODU will act as On-Scene Commander (OSC) and be in command and control of response operations. Exceptions would be:

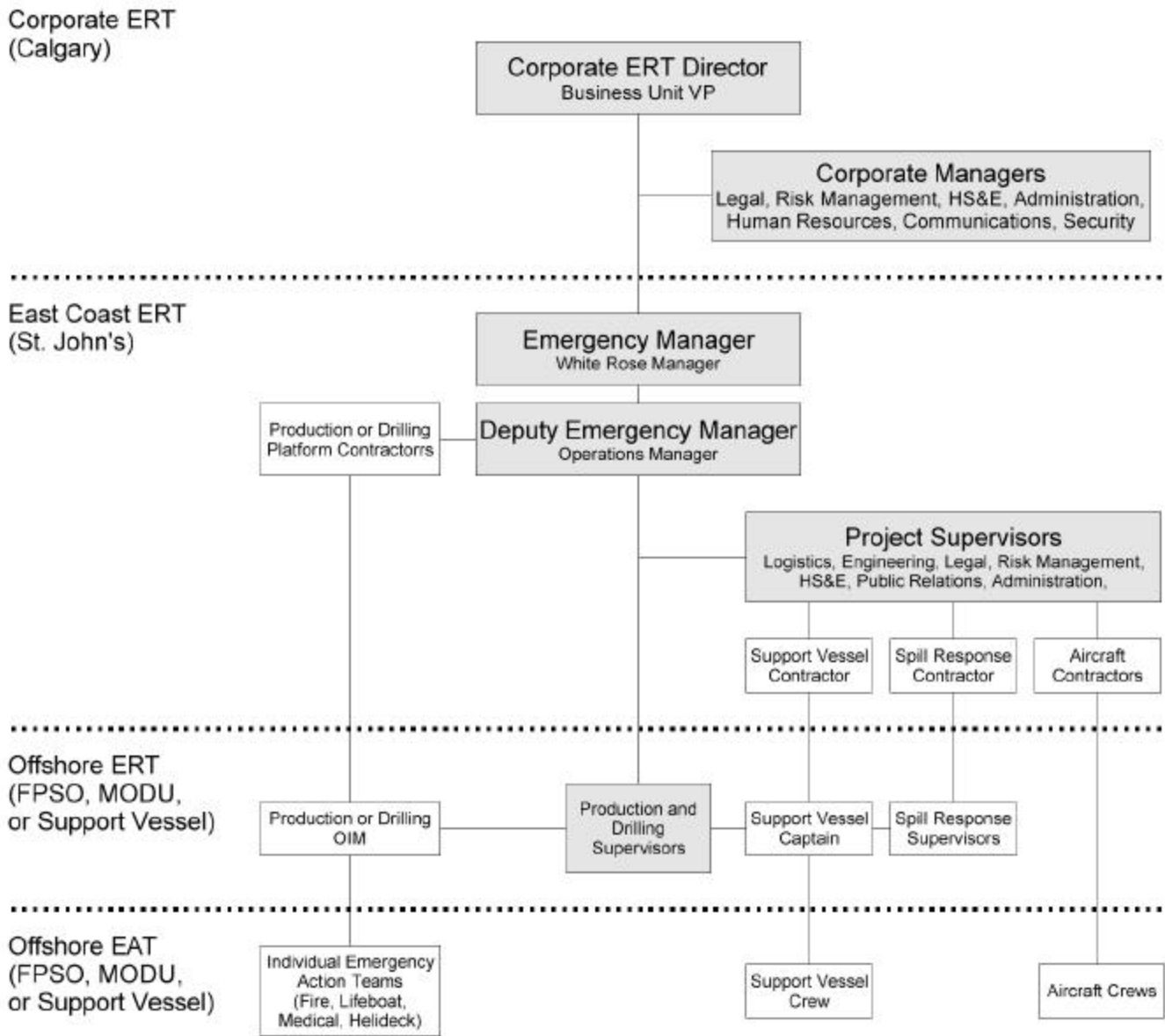
- loss of the FPSO or MODU (OSC would shift to another platform or standby vessel);
- Search and Rescue (SAR) Operations, in which case the Rescue Coordination Centre (RCC) (Halifax) or Marine Rescue Sub Centre (MSRC) Canadian Coast Guard (St. John's) will take command; and
- major oil spill, during which incident command will be based in St. John's.

Even in cases where command is not based offshore, the OERT will coordinate all offshore operations and be a principal point of contact for all other responders.

7.4.2.1 General Emergencies

The main role of the shore-based ECERT (Figure 7.4-1) is to provide support for operations taking place offshore and for developing larger scale response plans. Support could be provided in a number of different ways, including logistics, materials, technical advice, regulatory liaison, family notification, and media or public relations. In major emergencies, support offered by the CERT will generally consist of public relations, insurance issues, legal advice, risk assessment, and impacts to corporate business created by the emergency. In major emergencies, operational management will usually remain with the on-shore or off-shore ERTs.

Figure 7.4-1 General Organization For White Rose Emergency Response Management

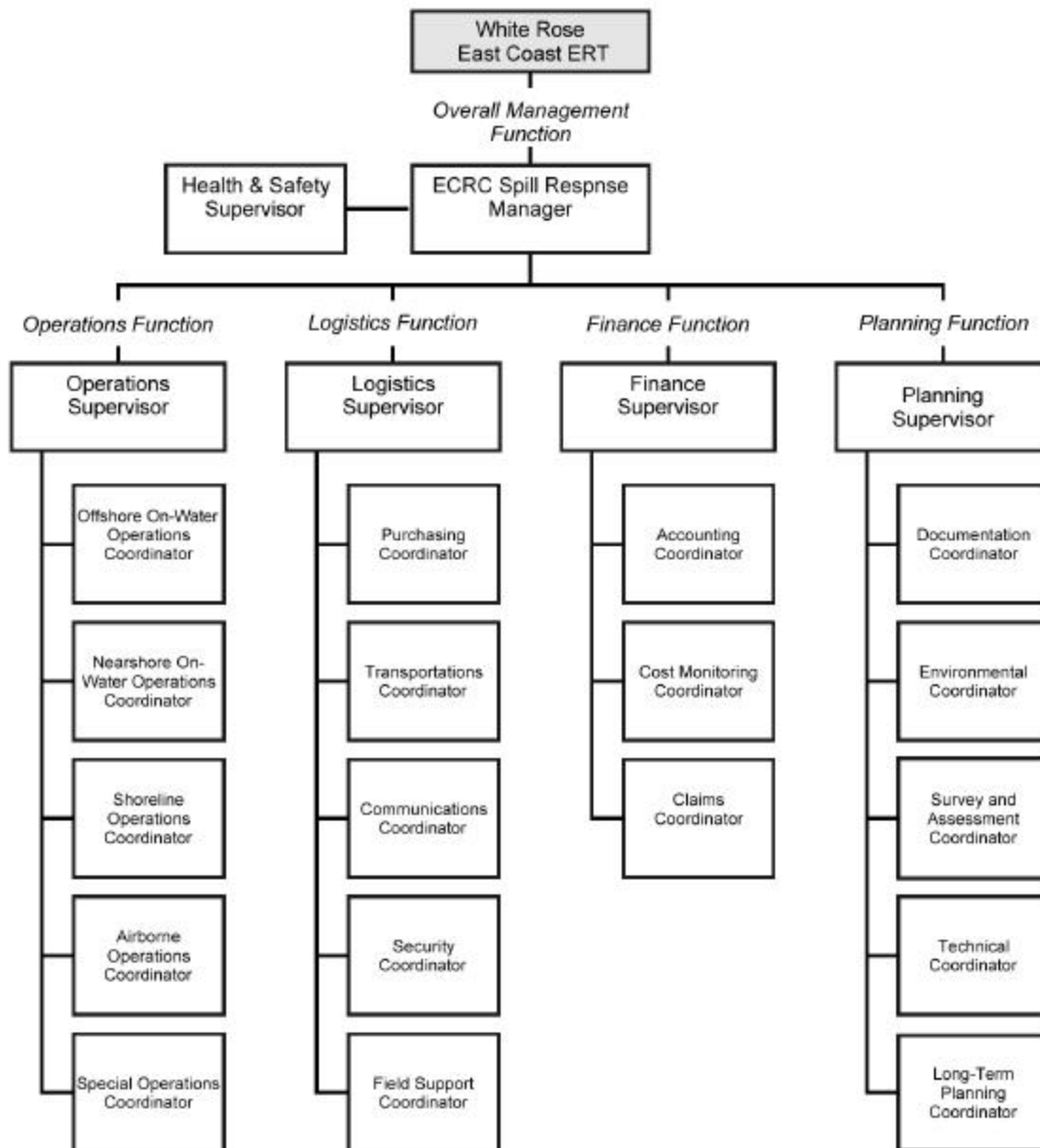


7.4.2.2 Oil Spill Response

In the event of a major oil spill, the operational component of the response will be managed by using a unified management approach such as the Incident Command System (ICS). The ICS emergency response management structure has been widely adopted by emergency response agencies throughout North America as a means of sustaining a long term response effort by adopting a function-based approach that allows personnel to rotate through positions over an extended period.

The Eastern Canada Response Corporation (ECRC) Spill Management System is ICS-based. Hibernia Management and Development Company (HMDC) and Terra Nova are also developing ICS-based oil spill response procedures. The fully activated ECRC ICS management structure is outlined here in Figure 7.4-2.

Figure 7.4-2 ECRC Incident Command System-Based Oil Spill Response Management Structure (Expanded for major oil spill)



7.4.3 Response Centres

An Offshore On-Scene Command Post will be staffed on the FPSO or MODU within minutes of the declaration of an emergency. This site will be the headquarters for the OERT and all off-platform communications. This centre will be supported by the Central Control Room, which will be the primary point of contact for all personnel on the platform. In the event the platform must be abandoned, the command post will shift to the remaining platform or, if necessary, to the standby vessel.

On-shore emergency response activities will be directed from an Emergency Response Centre within the Husky Oil office in St. John's. This site will be staffed by the ECERT. Depending upon the circumstances of the emergency, the Emergency Response Centre will be supported by a communications contractor, a Media Centre, and Public Inquiry Centre (family support centres). In the case where the emergency is a major oil spill, the Emergency Response Centre will be supported by a dedicated Oil Spill Response Centre.

Oil spill response operations will be managed on shore from a dedicated Response Centre shared with Terra Nova and HMDC and located at Pier 12 in St. John's. The Response Centre will be kept in a state of readiness at all times and be outfitted with complete telephone, fax, and data communications and all spill management maps and posters. All reference and reporting materials will be available at the Response Centre. All spill response training and exercise practices for company and contract personnel will take place in the Response Centre.

7.4.4 Use of Response Contractors

In general, White Rose emergency response management personnel will be drawn from in-house resources and include both Husky Oil and major contractor staff. In the event of an oil spill, however, the incident may require considerable resources over an extended period. In such a case, it will be necessary to use the services of additional personnel to assist in the coordination of response operations. In such a case, Husky Oil would use ECRC in a spill response management role. ECRC could be used in one of two ways:

- ECRC could act as a stand-alone response management entity answering to the ECERT. In this case, ECRC personnel would probably be based at its Mount Pearl response depot; or
- Husky Oil and ECRC personnel could be integrated into a single team working from the Husky Oil Response Centre. Common grounding between the Husky Oil spill response plan and ECRC in ICS management will allow for such an integration to be efficient.

7.5 Roles and Responsibilities

7.5.1 Roles During an Oil Spill Incident

The response management structure used by Husky Oil during an oil spill incident defines the functional roles for all supervisory personnel. These functions include Command, Operations, Planning, Logistics, and Finance. Additional functions that might be required as the scale of the emergency escalates are shown in Figure 7.4-2. The specific tasks that individuals will be assigned will be determined over time as a result of the evolution of the incident and consultation between functional groups. The Unified Management Approach process ensures that the level of response is always reasonable and necessary through:

- established and communicated objectives;
- integrated field operations, tactical planning, and logistics support through situation analysis;
- longer term planning and operational preparation based on prediction of future situations; and
- information exchange through continuous interaction of supervisory personnel, scheduled review meetings, routine written reports, and daily proposed action plans.

7.5.2 Roles During Non-Oil Spill Incidents

In all other emergencies, which are generally short term by nature, the emphasis will be more on rapid response to very specific scenarios. In many cases, the conditions of the emergency can be anticipated so that action plans can be prepared in advance. General responsibilities for White Rose emergency response personnel in non-oil spill incidents are shown in Table 7.5-1. More detailed versions of this table and specific task summaries for individual team members will be developed in specific plans.

Table 7.5-1 General Response Actions for Non Oil Spill Incidents

Level	Corporate ERT	On-shore ERT	Offshore ERT (OIM)
Alert	<ul style="list-style-type: none"> - No formal notification 	<ul style="list-style-type: none"> - Notified by OIM - Alert ERT, review actions 	<ul style="list-style-type: none"> - Notify On-shore ERT, vessels - Alert ERT, review actions
Stage 1	<ul style="list-style-type: none"> - Notified by On-shore ERT 	<ul style="list-style-type: none"> - Support field operations - Identify potential technical resources - Maintain contact with OIM, and other operators - Media and Public Relations 	<ul style="list-style-type: none"> - Control field operations - Notify First Response regulators (e.g., SAR) - Use platform resources - Maintain contact with On-shore ERT, vessels, and other platforms
Stage 2	<ul style="list-style-type: none"> - Maintain contact with On-shore ERT - Mobilize Corporate Emergency Response Team (CERT), review actions 	<ul style="list-style-type: none"> - Coordinate overall response - Plan large scale response ops. - Support field operations - Maintain contact with OIM, CERT, regulators, and other operators - Media and Public Relations 	<ul style="list-style-type: none"> - Control field operations - Request shore resources - Maintain contact with On-shore ERT, vessels, and other platforms
Stage 3	<ul style="list-style-type: none"> - Manage corporate position - Direct corporate aspects of response - Media and Public Relations 	<ul style="list-style-type: none"> - Coordinate overall response - Plan large scale response operations - Support field ops. - Maintain contact with OIM, CERT, regulators, and other operators. - Family support. - Local media and public relations. 	<ul style="list-style-type: none"> - Control field operations - Request shore resources - Maintain contact with On-shore ERT, vessels, and other platforms

7.6 Notification and Documentation

7.6.1 Notification

Once an emergency has been declared, timely notification of associated persons or agencies will be critical. In some cases, notification may include a written report (Section 7.6.2 of this Preliminary Safety Plan).

Contingency plans will include instructions for all personnel who have a notification responsibility. Initial notifications will be submitted by the OERT under the direction of the OIM. Where appropriate and convenient, further notifications may be delegated to shore personnel. All other notification actions will be included in the specific role descriptions of each response team member and will be summarized in an overall notification checklist.

7.6.2 Emergency Notification and Log Forms

All personnel will be required to keep an accurate record of events and actions in which they are personally involved. Good documentation will assist in describing the situation at any time, as well as recording events for incident reporting.

To ensure efficiency and accuracy of reporting, standard forms will be used wherever practical. Following is a list of forms that will be used:

- Initial Incident Report, which:
 - includes critical incident information for general distribution,
 - is completed by the OERT, and
 - includes Standard IMO format for vessel information;
- Initial Briefing Report, which:
 - includes detailed incident information, and
 - is for use of ERT personnel;
- Action Log, which:
 - documents specific actions, and
 - includes a personal log;
- Resources Summary, which:
 - includes current status of all vessels, equipment, and personnel involved in response;
- Daily Situation Report, which:
 - including detailed summary of the day's activities,
 - makes recommendations for next day's work, and
 - is for use of ERT and senior management personnel; and
- Bomb/Terrorism Threat Forms, which:
 - includes a report form for recording content of threatening communications, and
 - provides guidelines for personnel inexperienced in security issues.

7.7 Emergency Preparedness

7.7.1 Plan Distribution

Contingency plan distribution will be carefully controlled. Plans will be produced in limited numbers and provided only to designated personnel. Personnel will include ERT members, C-NOPB, FPSO and MODU owners' representatives, standby vessels, St. John's shorebase, and Canadian Coast Guard (SAR) as well as other agencies such as Royal Newfoundland Constabulary (RNC), Royal Canadian Mounted Police (RCMP), DFO and Environment Canada. Each plan copy will be identified by a unique code assigned to the plan holder.

7.7.2 Plan Maintenance

White Rose contingency plans will be dynamic documents which must be updated as needed to reflect changes in project operations. So that the version of any part of the plan can be identified, plans will be assembled in three-ring binders and each page will be clearly labelled with document identification code, plan version reference, and date that page was generated. Updates will be issued as they are produced to designated plan holders. Upon receipt of updates, plan holders will insert replacement pages and destroy those pages which have been replaced.

7.7.3 Personnel Training

All regular East Coast operations personnel, including contractors, will receive directed emergency training. External personnel who play some role in White Rose emergency operations will be provided with a general orientation and a specific review of personal roles.

Training will be conducted according to a matrix that links personnel positions with types and levels of training required for each position. Levels of training required for specific ERT and EAT personnel will range from basic awareness of an activity or function to achieving a working knowledge to becoming an expert in that function. In some cases, personnel will be required to be certified for certain activities. Wherever possible, training will be conducted to recognized standards and certified instructors will be used. A schedule for refreshers, retraining, and re-certification will be established for all plans.

All personnel will undergo an orientation to elements of emergency response planning. Offshore personnel will receive a general overview of evacuation alarms and procedures, and response organization. To ensure familiarity with emergency response planning, a portion of all HS&E meetings will be devoted to emergency response issues.

EATs will receive specialized training with emphasis on hands on experience. Emergency drills will be conducted weekly, bi-weekly, or monthly for all EAT activities.

7.7.4 Response Exercises

A regular program of exercises will be instituted to ensure the readiness of all personnel. The frequency of exercising will vary with each task but will be no less than annual. The purposes of exercises include:

- continuing training and familiarization of all personnel with emergency procedures;
- testing of the preparedness of all personnel; and
- a means of developing continued improvement to emergency procedures.

Exercises will be conducted in three areas:

- Communications, which includes
 - personnel call out,
 - inter-facility communications testing, and
 - media and public information training;
- Table Top, which includes
 - methodical response to an emergency scenario by the on-shore and/or OERT, and
 - an opportunity for interaction between ERT, operational, regulatory, and external personnel; and
- Logistics, which includes
 - hands-on training and experience for marine and technical personnel.
 - demonstration of field response operations for marine crews, ERT, other operators' personnel, and regulators, and
 - confirmation of the effectiveness of established field procedures.

7.8 Mutual Aid and Integration with Other Operators' Plans

Husky Oil has entered into a formal mutual aid agreement with other Grand Banks operators. This agreement provides for the release of personnel, vessels, and equipment for logistics support and exchange of operational information. Under this agreement, operators are required to provide support if requested by a second mutual aid operator. The level of this support is limited to that effort that can be provided without jeopardizing the safe operation of the supporting operators' facilities. Mutual aid will be most evident in logistics issues, ice management, and oil spill response efforts.

So that mutual aid may be effective, the mechanism for interaction between operators will be clearly stated in all White Rose contingency plans and other operators will be provided with controlled copies of appropriate plans.

7.8.1 Logistics

Other offshore platforms may be used to provide nearby staging or refuelling platforms in support of a Husky Oil emergency. These platforms may also provide temporary accommodation for evacuated platform personnel.

Several logistics services are shared by all operators. Cougar Helicopters has been contracted by all operators to provide helicopter transportation services to offshore facilities. Stratos Communications provides flight following and fleet tracking services as well as shorebased radio communications support to all Grand Banks operators. Vessel management, while not completely integrated between all operators, can be quickly coordinated through interaction between company and vessel owner's logistics personnel.

7.8.2 Ice Management

Ice data collected by all operators will be shared and efforts to manage oncoming icebergs will be taken with the advice and knowledge of neighbouring offshore facilities. All operators have currently contracted Provincial Airline Limited (PAL) for airborne surveillance activities. All PAL, Canadian Ice Service (CIS), and International Ice Patrol (IIP) ice data are integrated and readily available to all operators. When combined with site-specific information provided by individual operators, all operators have the benefit of complete and timely reports of ice conditions.

7.8.3 Oil Spill Response

In the event of a major offshore oil spill, countermeasures equipment will be available at each permanent production platform. As well, all operators have access to a dedicated oil spill response centre at Pier 12 on St. John's Harbour. This facility is permanently equipped with the resources to manage an offshore oil spill response. The layout and materials in this centre are geared to an ICS management effort, in keeping with the spill response plans of all operators, ECRC, and Canadian Coast Guard.

7.9 Response Contractors and Outside Agencies

Depending upon the nature of the emergency, Husky Oil will interact with a variety of external agencies who will participate actively in the response action. The roles and means of interaction for each of these groups or agencies will be clearly indicated in the appropriate plan. External agencies will be provided with controlled copies of the plan to ensure that cooperation with Husky Oil is efficient.

7.9.1 Regional Environmental Emergency Team

The Regional Environmental Emergency Team (REET) is a group of environmental specialists chaired by Environment Canada who can provide knowledgeable advice to support response operations. In the event of a spill, REET may be activated either by C-NOPB or Environment Canada.

Most REET members are government (federal and provincial) representatives from the local area. Private sector personnel may also be included in REET. Environment Canada may choose to draw on regional or national expertise, as required, to provide the best possible advice. Some REET members also have regulatory responsibilities and may be the best contact for permits for operational activities.

7.9.2 Rescue Coordination Centre/Marine Rescue Sub Centre

The federal government has the responsibility for coordinating all SAR activities in Canada. The Department of National Defence (DND) is responsible for aeronautical operations and the coordination of air and maritime SAR coordination. The Canadian Coast Guard is responsible for maritime operations. The Halifax RCC, staffed by DND personnel, is tasked with coordinating all SAR activities in the Atlantic Canada Search and Rescue Region (SRR). The MRSC in St. John's is staffed by Canadian Coast Guard personnel and is responsible for direct coordination of maritime SAR actions in Newfoundland waters.

The SAR Coordinator at either RCC or MSRC will be in command and control of all SAR actions. Where appropriate, the White Rose OIM may act as an at-site coordinator of local operations. All Husky Oil offshore installations and support vessels will be equipped with the IMO SAR Manual and the Merchantship SAR Manual. Husky Oil will immediately contact RCC and MSRC in any emergency involving:

- call to muster stations;
- fire or explosion;
- person overboard;
- structure damage;
- vessel collision; and
- all aircraft or marine incidents at or near the White Rose site.

7.9.3 Police

White Rose emergency planning will incorporate the support and responsibilities of police services. The RNC will provide local services in the City of St. John's and the RCMP will be responsible for offshore incidents.

7.9.3.1 Royal Newfoundland Constabulary

As well as its responsibility for investigating incidents within its own jurisdiction (northeast Avalon area), the RNC will assist in interactions with local fire, ambulance and hospital services. The RNC also plays a large role locally in the notification of next of kin as part of the Family Support Plan and assists in access control.

7.9.3.2 Royal Canadian Mounted Police

The RCMP will be responsible for any offshore incident requiring police involvement. Some of the incidents that will require the RCMP include:

- major injury or loss of life;
- bomb threat; or
- aggressive or threatening behaviour.

7.9.4 East Coast Response Corporation

Husky Oil has a subscriber's agreement in place with ECRC for the provision of operational and management services in the event of a major oil spill. ECRC is a full-time oil spill Response Organization certified by Canadian Coast Guard under Chapter 36 of the *Canada Shipping Act*. This contract allows Husky Oil to access ECRC personnel and equipment at any time.

Husky Oil intends to contract ECRC to carry out the routine management of a Stage 2 or Stage 3 oil spill response. By incorporating ECRC's existing Spill Management Team into the White Rose response structure, much of the administrative and planning work can be delegated to qualified contract personnel, thereby ensuring continuous availability of trained personnel reducing the work load of Husky Oil personnel and minimizing the delay to the resumption of normal operations at the White Rose site.

ECRC will manage the response and be responsible for developing tactical and strategic plans for spill response operations. All plans will be reviewed and authorized by the White Rose Incident Commander prior to implementation.

7.9.5 Canadian Coast Guard

The Canadian Coast Guard maintains an operational spill response staff as well as a large inventory of oil spill response equipment at its depot in Mount Pearl. As well, the Canadian Coast Guard operates a fleet of vessels suitable for offshore oil spill response activities. In the event of a major oil spill event, Canadian Coast Guard resources will be requested as required to bolster industry and ECRC resources. Recent oil spill exercises have included practising the integration of Operator, Coast Guard and ECRC resource to enhance preparedness for a major spill.

7.9.6 Relief Well Considerations

In the event of a wellsite loss control emergency, it may be necessary to drill a relief well. If a White Rose MODU is not on site or unable to do this, an alternate drilling vessel would be required. Throughout the lifetime of the White Rose production program, Husky Oil will maintain a listing of drilling vessels that could be brought to White Rose at short notice to drill the relief well.

7.10 Ice Management

Husky Oil and other Operators on the Grand Banks have implemented a “Grand Banks Ice Management Plan” (JBO et al. 1998). This plan represents a coordinated approach to the management of ice on the Grand Banks and emphasizes mutual support amongst the various operators. The Plan is prefaced by the following statements:

Policy and procedures for ice management

This manual has been prepared for the following reason:

- *to outline the companies policy and procedures as it relates to operations in waters where sea ice and glacial ice periodically occur;*
- *to outline the links between individual operations and the Regional Grand Banks Ice Management Plan;*
- *to define procedures to facilitate safe operations in an ice environment;*
- *to outline series of accepted procedures for ice management; and*
- *to define roles and responsibilities for those involved in ice management operation.*

Policy Statement

The Grand Banks Operators (Operators) are committed to operating in a safe, efficient, and environmentally responsible manner. These Operators will take all necessary actions to ensure that wells and facilities are protected from potential hazardous ice situations. This will involve early detection and reporting of ice, sharing of information and resources related to ice, ice tracking, ice deflection, securing the operation and, if necessary, moving off location if the ice threat cannot be averted.

The Operator will comply with all regulations and provide the necessary personnel and resources to effectively manage the ice threat to their facilities.

General Information

This Ice Management Plan is used in conjunction with other company documents regarding:

- *safety;*
- *monitoring procedures;*
- *alert response measures;*
- *offshore operations manuals; and*
- *alert and emergency response plans.*

7.10.1 Ice Detection

The shorebased ice centre will coordinate general ice and iceberg detection, using vessels and aircraft. However, it is the responsibility of each offshore unit to monitor for any small ice that may have escaped detection by other means.

Detection activities will include the following:

- all installations and all support will maintain a radar watch. This will provide close range detection watch for bergy bits and growlers as well as pack ice;
- support vessels following ice routes provided by the ice control center will conduct medium range detection and surveillance. These routes will be approved by the Ice Centre prior to vessel dispatch;
- long, medium and short-range aerial reconnaissance as required. The results will be downlinked in near real time to the installations. The completed mission will be transferred to the Shorebase Ice Management Network upon termination of the flight;
- flight requests can be initiated by any installation by contacting the Ice Centre;
- dedicated ice support vessels will be dispatched routinely on ice surveys; and
- special helicopter reconnaissance will be conducted when required.

7.10.2 Data Gathering Network

All ice detection reports will be assigned an initial validation code between one (the highest) and three (the lowest). The assigned code will depend on the age of the sighting and the reliability of the source. The purpose of the validation code is not to dismiss any ice data but rather, to provide a guide as to how this information should be assimilated into the overall Ice Management Plan, thereby avoiding duplication of existing ice data.

All ice data will be entered into an ice management computer system that will allow data from all sources to be assimilated into one overall view of the current ice situation.

Ice data will be distributed through the ice management computer system, with the installation acting as a focal point for all field data, and the shorebase ice management acting as the coordinating center for other data sources.

7.10.3 Tactical Predictions

Tactical models will be used primarily as a source to forecast the short-term movement of individual icebergs or the movement of the pack ice edge. While these types of models have had some success, especially in the area of pack ice movement, the output should be used only as a guide to what individual ice may do in the given conditions. The derived forecast should by no means be taken as absolute.

If direct action is in the form of towing, deflection or ice breaking, a dedicated ice support vessel will be instructed to commence the required operations. Data on these actions will be transmitted hourly (or less if required) to the installation that initiated the action. A designated offshore ice specialists will be assigned to each operation to facilitate coordination of the plan.

7.10.4 Multi-Operator Ice Management

The individual Operators Ice Management Plan will interface closely with other operators carrying out activities on the Grand Banks. A designated, trained offshore Ice Specialist will be assigned to each operation to facilitate coordination of the plans.

7.10.5 Communications

It is paramount that reliable communication channels be established to pass ice data from one operator to another and that these channels be used prior to initiating or concluding any active ice management procedure that may result in a disruption to another operations.

Each installation will have an Ice Data Network System (IDNS) installed and operated by a qualified Ice Specialist. The IDNS is a system of networked computers that allow the instant display of all current ice information, along with installation positions and management zones. Each installation is networked to a central computer server in the Ice Centre and the entire network can either parallel process (write data to all systems simultaneously) or will periodically update each system on the network automatically with the most up-to- date iceberg data.

Through the IDNS, each facility will have instant access to not only ice data related to their own operation but also ice data from all other operators. This ability allows a continuous update of all ice operations currently underway.

Any changes in T-time should be entered into the IDNS immediately. This will allow informed decisions with regard to ice management procedures, and will minimize potential disruptions to operations.

It is each Ice Specialist's duty to monitor all ice operations and anticipate any effects that other operators' ice management functions may have on their operation.

7.10.6 System Compatibility

Operators will exchange Ice Management Plans to ensure there are no fundamental conflicts in approach. Efforts will be made to ensure compatibility of plans and integration of resources where possible. While it is not a requirement for all operators to use the same Ice Management Plan, consistency of approach may provide benefits. The plans must be compatible in their approach to active ice management procedures. It is important that each operator's ice management display(s) show not only their own safety zone, but also the current safety zone(s) for each facility in the area.

7.10.7 Active Ice Management Control

Operators will agree and establish who is actively managing ice (towing, etc.) at any given time. The methods of managing and the direction of any deflection attempts will be determined after considering the following:

- the effects of ice management decisions on other operators;
- the position of the ice after active management; and
- the availability of logistics support to other operators.

7.10.8 Control Of Active Ice Management

The decision to conduct active ice management is under the control of the installation effected by the ice in question. Ice under active management (monitoring and towing, etc.) will be handled by the installation with the shortest TCPA on each particular piece of ice. Decisions on methods of management and the direction of any deflection attempts will be made only after considering the following:

- the position of ice after completion of active management;
- the effect of the ice management decision on any operators that are downstream; and
- the availability of logistics support (tow vessels etc.) to downstream operators.

If two or more installations are effected (that is, they have the same TCPA), then the Ice Centre will designate control.

All operators in the area are to be advised of proposed action through their onboard Ice Specialists.

Once a vessel engages in ice management, it will continue until the confirmation of Course Made Good (CMG).

7.10.9 Shared Logistics

A more effective operation will be afforded if there is a standard agreement in place for one operator to temporarily take control of a vessel engaged in ice management until it has cleared a specific safety zone. This becomes more important when the distance between operators is less than the size of their safety zones.

8 REFERENCES

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