

Emergency Management Program



Alberta, British Columbia, Federal Edition

Manual Request Form

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	Chief Operations Officer Approval	_____	_____	_____														
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Revision History

Rev No.	Revision Date	Revised By	Sections Affected	Description	Approved By
1.0	April 1, 2020	Roy McKnight	All Sections Reviewed and updated.	Converted the Westcoast, Enbridge, Spectra, G&P Canada Emergency Management program to NorthRiver Midstream Inc.,	Roy McKnight, Director HSE
1.0	December 1, 2020	Roy McKnight	Updated Organization Structure section 1.0	Placed FRT on top of EOC page 14.	Roy McKnight, Director HSE
1.1	February 23, 2022	Roy McKnight	Updated Policy, Values and Principles	Inserted signed copy of HSE policy	Roy McKnight Director HSE
1.2	December 21, 2022	Roy McKnight	Updated Policy, Values and Principles	Inserted signed copy of HSE policy	Roy McKnight Director HSE
1.3	December 21, 2022	Roy McKnight	Reviewed Section 9 to ensure NRM consults and cooperates with Indigenous Peoples	Updated Section 9 describes how NRM consults and cooperates with all people and other entities including Indigenous peoples in the emergency planning and emergency response process.	Roy McKnight Director HSE
2.1	November 20, 2023	Roy McKnight	Updated to identify the approach to hazards and define imminent hazards. Replaced references to BCOGC with BCER	<ul style="list-style-type: none"> • Pg. 7 updated purpose • Pg. 8 paragraph 2 removed typo from <i>integrated management approach to <u>all hazards approach</u></i>. • Pgs-20-23 updated the hazard and risk assessment process as • Pg 74. Definition of imminent hazard 	Roy McKnight Director HSE

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HSE Policy, Values and Principles



HEALTH, SAFETY AND ENVIRONMENTAL POLICY VALUES, AND PRINCIPLES

POLICY

NorthRiver Midstream Inc., ("NRM") will manage all operations in a manner that protects the health and safety of employees, contractors and the public, as well as protecting the environment while complying with and, where appropriate, exceeding applicable laws, regulations, industry and internal standards and stakeholder expectations.

NRM will continually strive to improve personal safety, process safety, and environmental performance by proactively evaluating its operations to identify hazards and risks, assess priorities and maintain programs and procedures to reduce the number and severity of personal safety, process safety, and environmental-related incidents towards a goal of zero incidents.

VALUES

- **We** believe in looking out for one another
- **We** believe in trusted partnerships
- **We** believe in accountability
- **We** believe in a growth mindset

PRINCIPLES

NorthRiver Midstream is committed to the following safety principles:

- All injuries, incidents, and occupational illnesses can be prevented.
- All environmental impacts can be controlled.
- Leaders, Managers and Supervisors are accountable for safety and environmental performance.
- All workers (employee or contractor) are responsible for safety and protecting the environment.
- We will continually improve our personal safety, process safety, and environmental performance.
- We comply with all occupational health, safety and environmental regulatory requirements.

A handwritten signature in blue ink, appearing to read "Jay Billisberger", is written over a circular blue stamp or seal.

Jay Billisberger
Senior Vice President Safety, Engineering and Operations
NorthRiver Midstream Inc.
December 25, 2022

Purpose, Scope and Expectations

PURPOSE

This document describes NorthRiver Midstream Inc., (NRM) Emergency Management Program (EMP). The NRM Emergency Management Program (EMP) describes the **system** for responding to imminent hazards that result in incidents and emergencies that could impact: the health and safety of employees, the public, the environment, or property.

The Program combines systems and procedures from across the organization enabling a quick, effective response to any emergency. (AER *Directive 71, Under ss. 5 of the BC EMR, and section 11.2 of CSA Z246.2-18*) The EMP provides direction and governs emergency management activities, which include:

- Establishing clear roles and responsibilities for achieving Emergency response objectives and performance targets.
- Providing an EMP that aligns with applicable industry standards and achieves safe, environmentally responsible, and reliable operations.
- Anticipating, recognizing, evaluating, and controlling emergency management specific hazards and risks.
- Preparing NRM to respond to emergency situations.
- Evaluating and continually improving the management of the EMP.
- Measuring, monitoring, and reporting emergency management performance.
- Demonstrating and reinforcing the priority of emergency management in all business activities.

Specific terms are used to indicate whether an action is mandatory or recommended. The following words have specific meanings:

- “Shall” is used where an action is mandatory.
- “Should” is used where an action is recommended.
- “May” is used where alternatives are equally acceptable.

Some additional terms are capitalized, but do not appear on the list of defined terms, such as the job titles of NRM personnel and departments.

Certain Sections within this Manual are supported by additional policies, standards, practices, processes, documentation, and forms. These shall be referenced where applicable.

In some cases, the Manual calls out specific SOPs which are referenced to provide further guidance on a specific topic that may be further complicated by:

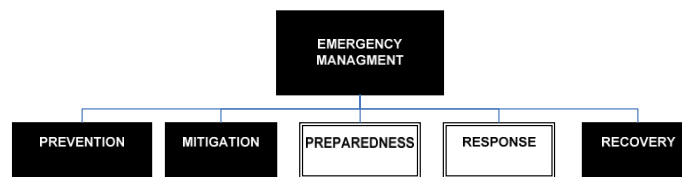
- jurisdictional or regulatory requirements,
- facility design criteria for Asset Areas, and/or
- Operational controls.

SCOPE

This Manual applies to all NRM Employees and Contractors engaged in *design, construction, operation, gathering, processing, storage maintenance, decommission and abandonment* activities at Company facilities, as well as visitors to these worksites.

NRM takes an **all-hazards approach** for emergencies; we define this as *abnormal events (imminent hazards) that exceed the normal operating capacity of the facility, pipeline, department, or the organization*. The EMP establishes the framework for preparing for, responding to, mitigating, and recovering from imminent hazards, abnormal events, and natural hazards regardless of the nature or severity.

NRM follows the principles of the British Columbia Energy Regulator *Emergency Management Program* framework, the Alberta Energy Regulator (AER) *Directive 071* and *CSA Z246.2-18 Emergency Preparedness and Response for Petroleum and Natural Gas Industry System* which are provided to ensure a coordinated and organized approach to emergencies and disasters.



EXPECTATIONS

- Company Management recognizes that the establishment of an effective safety culture cannot be realized through this Manual alone.
- Employees at all levels, including contractors and visitors, must carry out their individual responsibilities to provide a safe and healthful work environment.
- Everyone must therefore become familiar with this Manual with respect to his or her work duties.
- The Emergency Management Program is responsible for the development, compilation, and issuance of response procedures and plans identified in this Manual.
- The contents of this Manual are subject to further development and revision.
- This Manual is issued electronically to all locations and departments within the Company. As updates are provided, the facility Supervisor is responsible for ensuring that Employees are informed of any changes.
- Each Employee is encouraged and expected to take an active role in the implementation and future development of this Manual. This includes following the procedures and guidelines as well as providing oversight to Contractors and Visitors to follow the same practice.

1 Leadership Commitment and Participation

Management System

NorthRiver Midstream Inc. management system (MS) provides coordination between the company's management systems and protection programs. This ensures that all imminent hazards that are identified are considered in the Emergency Management protection program.

Legal Requirements

This **Emergency Management Program document** contains a comprehensive set of procedures required to fulfill the legal requirements found in:

British Columbia: Energy Resources Activities Act (s. 38 (1) (b)) requires that NorthRiver Midstream Inc., prepare and maintain an emergency response program and emergency response plans (ERP) as prescribed in the Emergency Management Regulation (EMR). The objective of the EMR is to protect people, the environment and the property by establishing a framework for emergency preparedness, planning and response capabilities.

Alberta: The AER Directive 071 – Emergency Preparedness and Response Requirements for the Petroleum Industry prescribes three core principles:

1. Emergency Response Plans (ERPs) are in place to respond to incidents that present significant hazards to public and the environment.
2. Ensures that there is an effective level of preparedness to implemented ERPs.
3. Ensures that there is the capability in terms of trained personnel and equipment to carry out an effective emergency response to incidents.

Federal Regulations: The Canadian Energy Regulator (CER), formally known as the National Energy Board (NEB) - regulates the construction and operation of oil and gas pipelines that cross provincial and international boundaries through the Onshore Pipeline Regulations (SOR/99-294). At NRM we have developed, implemented, and maintain an emergency management program, which includes developing and submitting applicable Emergency Response Plans annually and updating as required. Emergency exercises are conducted annually with a full-scale exercise conducted every three years. At the federal level, Public Safety and Emergency Preparedness Canada, through the Emergency Management Act, develops programs and policies to prepare for national disasters.

Environment and Climate Change Canada: Environment Canada (EC) regulates business operations that may have an environmental impact, including propane and LNG storage facilities, in accordance with the Canadian Environmental Protection Act and the Environmental Emergency Regulation. NRM has included environmental emergency response in accordance with the Environmental Emergency Regulation. ***Per BCER we update, and test emergency response plan every 12 months and include full scale exercises every 3 years.***

Transport Canada (TC): NRM has transportation Emergency Response Assistance Plans (ERAP) relating to the transportation of dangerous goods. The ERAP is submitted to TC for approval in accordance with Part 7 of The Transport of Dangerous Goods Regulation and are included in NRMs regular drills and exercises.

BC Utilities Commission (BCUC): The BC Utilities Commission directed adoption of the Mandatory Reliability Standards Regulation (MRS) to ensure British Columbia's electric transmission system remains

capable of meeting customer needs and that of a much larger interconnected grid. Due to the McMahon Co-Generation facility these standards require that NRM review and update the emergency plan annually.

BC Ministry of Health: The Ministry of Health (MOH), under the Drinking Water Protection Regulation, requires all small water system operators to have an emergency response plan in case of an emergency that might pose a health threat.

CSA Z246.2-18 Emergency Preparedness and Response for Petroleum and Natural Gas Industry Systems: the CSA Standard establishes criteria for emergency preparedness and response for the petroleum and natural gas industry.

CSA Z731-03 Emergency Preparedness and Response: the AER expects this CSA standard to be used by the petroleum industry in conjunction with the AER Directive 71.

(CSA) Z1600-08 Emergency Management and Business Continuity: this Standard is to establish the elements of a continuous improvement process to develop, implement, maintain, and evaluate emergency management and business continuity programs that address the functions of prevention and mitigation, preparedness, response, and recovery.

Goals and Objectives

The goal and objectives of the Emergency Management Program are to:

- Protect people, property, and the environment by establishing a framework of emergency preparedness, planning, and response capabilities.
- Protect the public and minimize impacts to the environment through the implementation of the EMP.
- Prepare and maintain an emergency response program.
- Prepare and maintain emergency response plans.
- Complete required emergency response training, exercises, and drills

Roles, Responsibility, Accountability and Authority

NorthRiver Midstream must:

- Ensure the health and safety of all workers and other workers present at the workplace.
- Comply with either the:
 - BC Workers Compensation Act, Regulations and Orders or.
 - The Alberta Occupational Health and Safety Act, Regulation and Code.
- Remedy any workplace conditions that are hazardous to the health or safety of workers.
- Make workers aware of all known and reasonably foreseeable health and safety hazards to which they are likely to be exposed by their work.
- Make workers aware of their rights and duties under the act and regulations.
- Establish health and safety policies and programs in accordance with the regulations.
- Provide and maintain in good condition personal protective equipment, devices and clothing as required by the regulations.
- Provide to the workers information, instruction training and supervision necessary to ensure the health and safety of those workers and other workers.
- Make a copy of the act and regulations readily available for review.
- Consult and cooperate with the joint committees and health and safety representatives.
- Cooperate with the board, officers of the board and other persons carrying out a duty under the act and regulations.

Senior Leadership Shall:

- Prepare and maintain an Emergency Management program in accordance with CSA Z246.2-18.
- Appoint an Emergency Management Program Coordinator.
- Ensure submission and maintenance of the contact information for the emergency management program coordinator as per ss .13(2) and 15(1) of the BC EMR.
- Ensure all field operations staff are trained to respond to emergencies.
- Review and if necessary, update the program:
 - Every three (3) years, or
 - After a significant change occurs in the type of hazards and risks arising from the activities identified in the emergency response plan(s), or
 - After an evaluation of a response to a level 3 incident, or
 - When NRM becomes aware of a deficiency in the program that risks the safety of emergency response personnel, employers, or the public.
- Develop a training plan to ensure employees are trained to respond to emergencies.
- Conduct full scale exercises every three (3) years).
- Conduct tabletop or functional exercises in the years between full scale exercise or,
 - Within three months after the first day NRM holder carries on a new activity or,
 - Within 3 months after a change in NRM emergency response staff if there is a change in at least 1/3 of the current emergency response staff since the last conducted tabletop or functional exercise or,
 - If none of the new emergency response staff have previously participated in a tabletop or functional exercises under the NRM Emergency Management program

- Report emergency incidents as per the NRM Incident Reporting procedure.
- Fulfill the General Staff and Command Staff Roles for level 3 emergencies.
- Ensure NRM is a member of the Western Canada Spill Cooperative (WCSS).

Emergency Management Program Coordinator

- Ensure the Emergency Response plans are developed, reviewed, revised, updated, and maintained on an annual basis.
- Maintain revision history for all Emergency Management documents.
- Maintain Emergency Management Documentation Distribution lists.
- Ensure that emergency incidents are reported to that appropriate regulatory agency.
- Ensure that Emergency Response training is provided to all staff as appropriate.
- Review and verify that the content of the emergency response training courses is appropriate.
- Work with training department to ensure that training is delivered and recorded.
- Establish an annual schedule for tabletop/functional exercises and tri-annual full-scale exercises.
- Approve ERP updates.
- Cascade Seasonal Awareness Briefings to operations.

People Leaders (Area On-Call Supervisors) shall:

- Fulfill the role of incident command staff for level 1, 2 and 3 emergencies.
- Activate and respond to level 1, 2 and 3 emergencies.
- Activate the regional incident command post for level 1, 2 and 3 emergencies.
- Ensure notification of appropriate external regulatory agencies.
- Assign employees and workers to public safety roles (rovers, telephoners, road blockers, air monitors and reception center staff)
- Establish the objectives for level 1, 2 and 3 emergencies.
- Assign qualified individuals to fill the command and general staff roles during an emergency.
- Ensure field operations staff are trained to respond to emergencies.
- Participate in tabletop/functional exercises every year.
- Review the area emergency response plans with all operations personnel at least once per year.
- Participate in full scale exercises every three years.
- Report emergency incidents as per the Incident Reporting procedure.

Employees and Workers:

- Fulfill public safety roles (Rovers, Telephoners, Road Blockers, Air Monitors and Reception Center Staff).
- Participate in tabletop/functional exercises.
- Participate in full scale exercises.
- Review the area emergency response plans each year.
- Report emergency incidents as per the Incident Reporting procedure.

Contractors shall:

- Comply with emergency management requirements set out in this Manual.

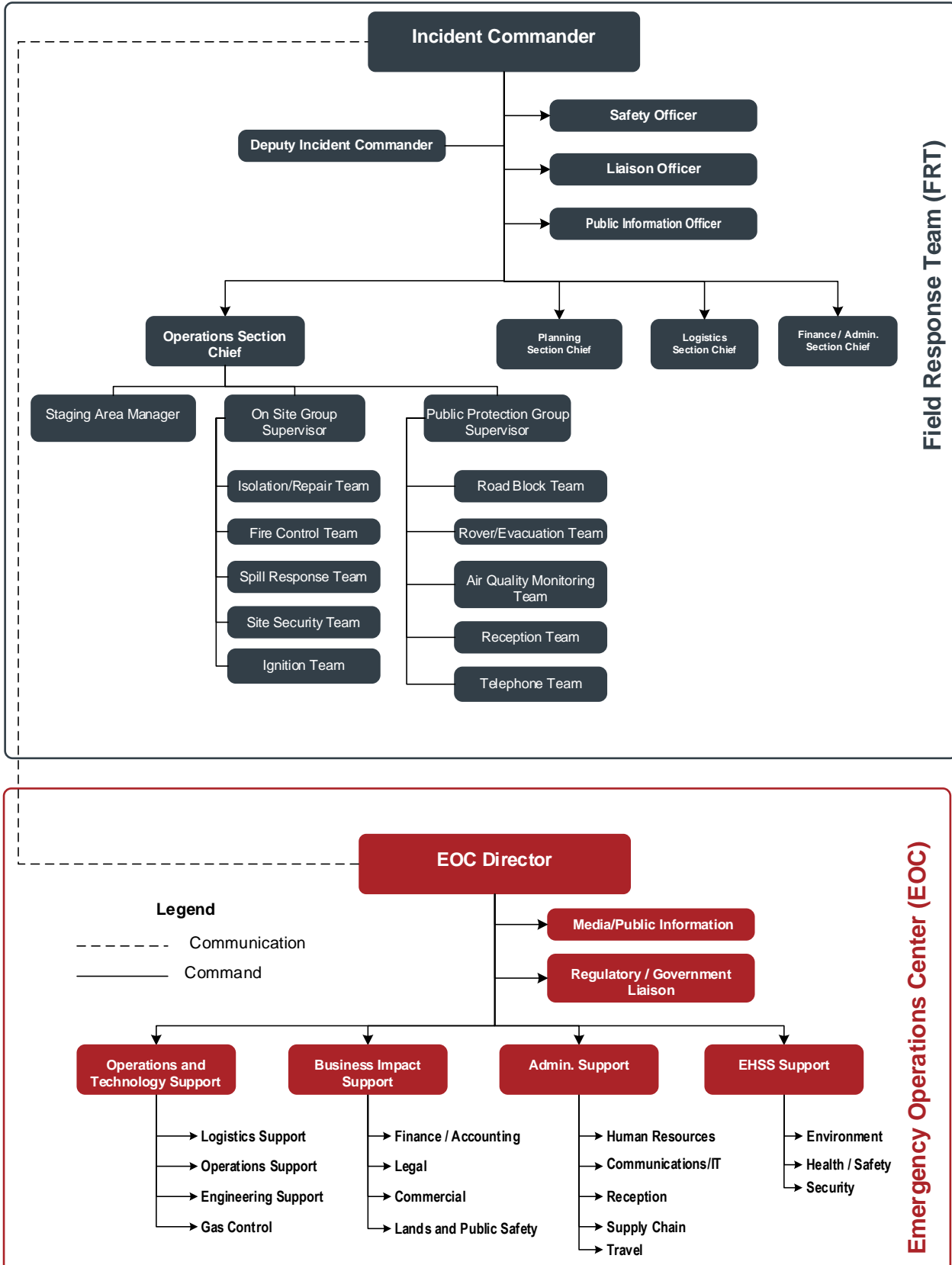
Regulator Having Jurisdiction - Roles

- Will be notified of incidents within the jurisdiction.
- Establishes communication with the NRM.
- Confirms incident level with NRM.
- Confirms downgrade of incident level.
- Issues road closure order upon request of NRM.
- Request NOTAM order from NAV Canada upon request from NRM.
- May send a representative to NRMs On-Site Command Post and/or Reception Centre.
- May establish a government EOC at the BCER office.
- Confirms ignition decision with NRM if time permits.
- Confirms media releases to be sent out by NRM.

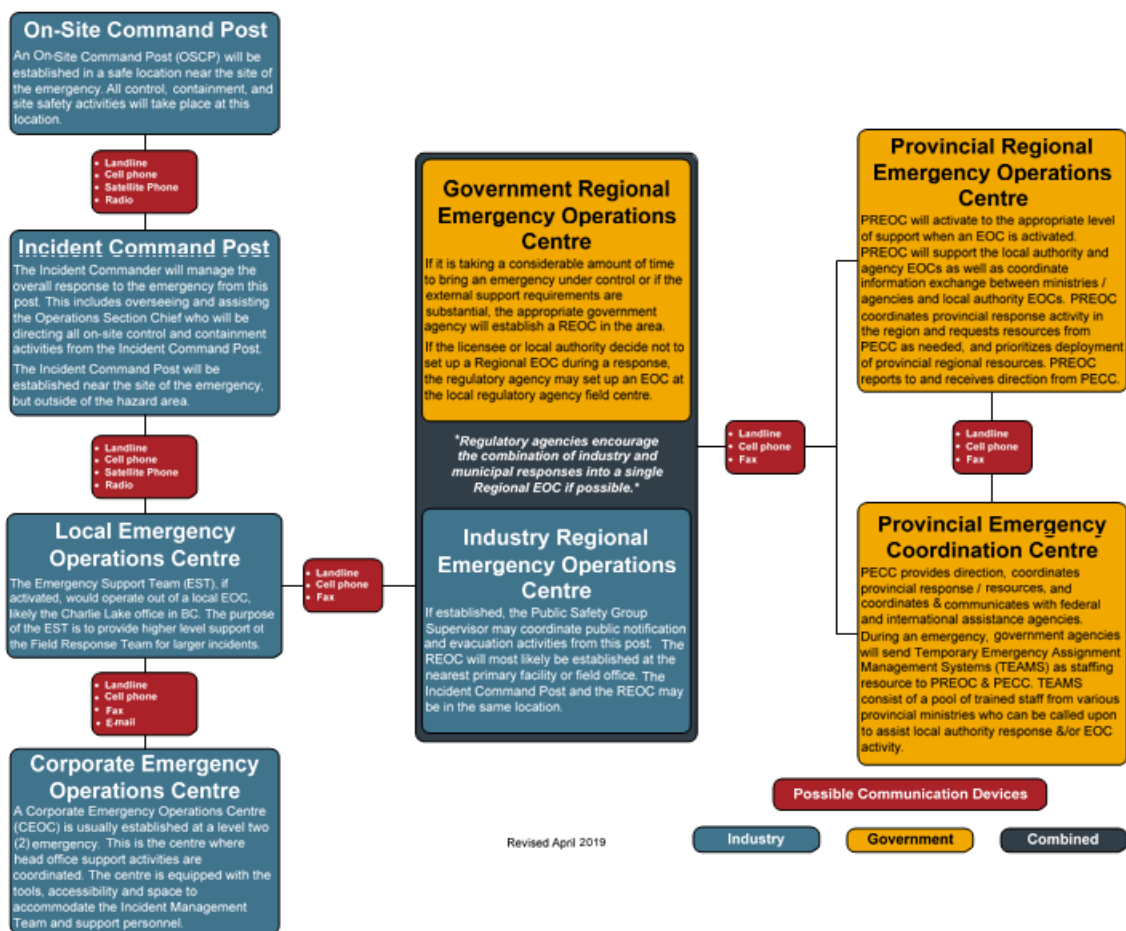
DOCUMENTATION:

- NRM Emergency Response Plan – Command Staff Roles
- NRM Emergency Response Plan – General Staff Roles – Operations Section
- NRM Emergency Response Plan – General Staff Roles – Planning Section
- NRM Emergency Response Plan – General Staff Roles – Logistics Section
- NRM Emergency Response Plan – General Staff Roles – Finance/Admin Section
- NRM Emergency Response Plan – Operations Section – Public Safety Roles
 - Public Safety Group Supervisor
 - Air Monitors
 - Reception Center Representative
 - Road Blockers
 - Rovers
 - Telephoner
- NRM Emergency Response Plan – Lead Agency Roles
- NRM Emergency Response Plan – Health Emergency Management - BC Northern Health Authority
Emergency Response Roles and Responsibilities
- NRM Emergency Response Plan – Alberta Health Services – Oil and Gas Industry Emergency
Preparedness and Response Roles and Responsibilities
- NRM Emergency Response Plan – Emergency Management BC – Emergency Response Roles and
Responsibilities
- NRM Emergency Response Plan - Ministry of Transport Roles and Responsibilities
- NRM Emergency Response Plan – Supporting Agency Roles
- NRM Emergency Response Plan – Federal Agency Roles

Organizational Structure for Emergency Management



Communication Methods Between EOC Emergency Support Team, Field Response Team, and Regulatory Agencies in British Columbia are outlined below.

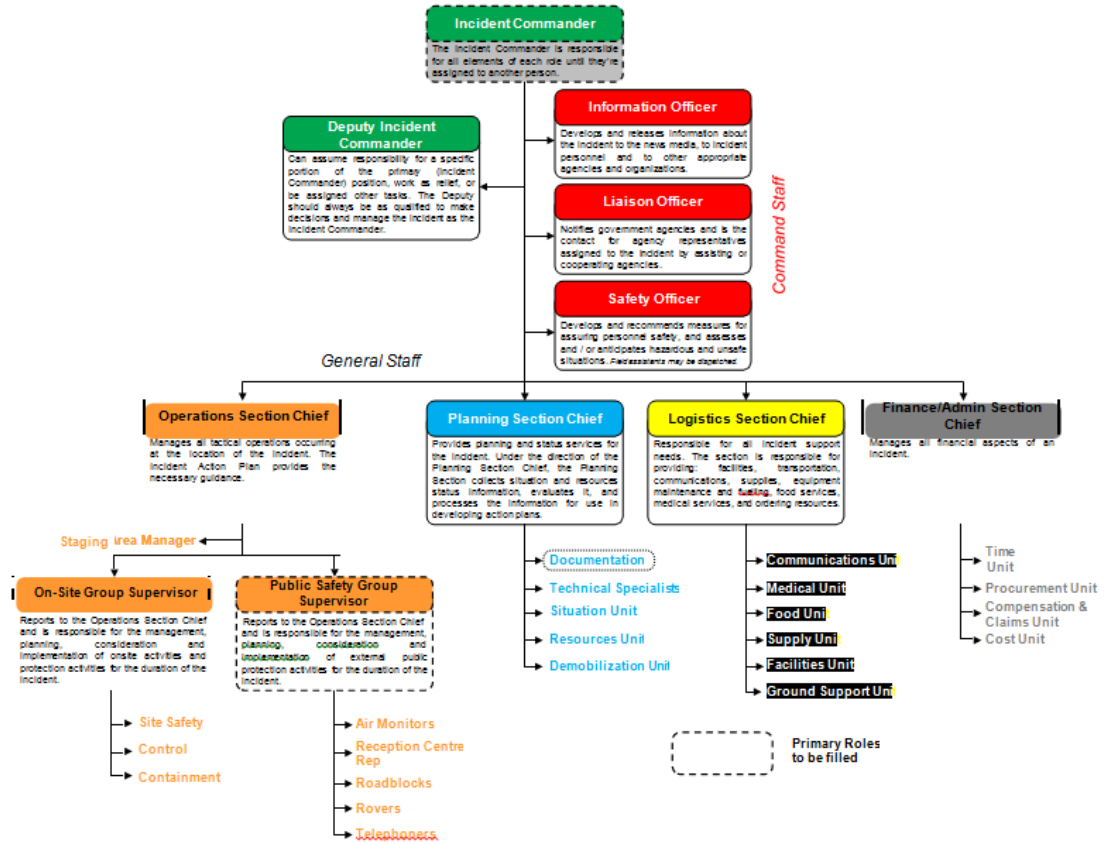


Incident Command System (ICS):

NRM has adopted the Canadian ICS model as the organizational structure for responding to all emergencies. The ICS structure will ensure that NRM is:

- Complying with applicable regulations and legislation.
- Aligning with industry standards and best practices.
- Follows the processes for identifying potential emergency situations and planning for mitigation and control.
- Minimizing consequences of emergency events by ensuring prompt and effective actions.
- Providing appropriate training to ensure employees understand their roles and responsibilities under the Emergency Response Plans.
- Conducting operational and discussion-based exercises to test the readiness of the organization.
- Supporting response efforts by providing on-call support and emergency management leadership.
- Providing stakeholders with relevant information regarding emergency management activities.
- Reviewing emergency management procedures and evaluating emergency responses to ensure continual improvement.

Field Response Team



Emergency Operations Center Support Roles

EOC Director	The EOC Director is responsible for coordination of response efforts from the corporate office to support the Field Response Team (FRT) and for efforts to ensure business continuity during the incident. The EOC Director coordinates the actions upon request of the Incident Commander. The EOC Director is the main link between the FRT and the EOC.
Public Information Officer	Serves as the coordination point for all public information, media relations and internal information sources. Communications & Media is responsible for preparing the FRT and the EOC to deal successfully with internal and external communication.
Regulatory Government Liaison / Indigenous Relations	Provides regulatory guidance and advice to the EOC as well as to be a liaison between responding government agencies and the company. The Regulatory / Government Liaison is responsible for providing support to the field Liaison Officer. The Indigenous Relations team will contact any potentially impacted first nation.
Operations Support	The Incident Support Manager speaks directly with the field Deputy Incident Commander, if assigned, or the field Incident Commander. The Incident Support Manager provides operational, public safety, planning and logistics support to assist the FRT with developing an effective field Incident Action Plan (IAP).

Business Impact Support	The role of business impact is to identify and work to mitigate all the negative impacts of the incident on the business as well as to provide business advice and support. The Business Impact Support Manager provides support to the company in the areas of finance / accounting, legal, marketing, risk management and insurance.
Admin Support	The Admin Support Manager provides administrative and technical support to the company in the areas of human resources, information technology, travel, security, and reception.
EHSS Support	The Health, Safety & Environment Support is responsible for providing Health, Safety & Environmental support to the FRT.

EMERGENCY MANAGEMENT PROGRAM REQUIREMENTS

- Policy
- Management commitment
- Roles, Responsibility, Accountability and Authority
- Legal Requirements
- Goals and Objectives
- Organization Structure
- Emergency Management Program Coordinator
- Document and Document Control
- Records Management
- Competence and Training
- Exercises and Drills
- Hazard Risk and Vulnerability Assessment
- Emergency Response Plans
- Public Awareness and Liaison
- Communications Planning
- Emergency Management Resources
- Situational Awareness
- Crisis Management (Business Continuity) Plans
- Distributions Lists (Internal and External)
- Continuous Improvement

DOCUMENTATION:

- NRM Emergency Response Plan – Command Staff Roles
- NRM Emergency Response Plan – General Staff Roles – Operations Section
- NRM Emergency Response Plan – General Staff Roles – Planning Section
- NRM Emergency Response Plan – General Staff Roles – Logistics Section
- NRM Emergency Response Plan – General Staff Roles – Finance/Admin Section

- NRM Emergency Response Plan – Operations Section – Public Safety Roles
 - Public Safety Group Supervisor
 - Air Monitors
 - Reception Center Representative
 - Road Blockers
 - Rovers
 - Telephoner

REFERENCES

- Section 2 Roles and Responsibilities - NRM Emergency Response Plans
- British Columbia Occupational Health and Safety Regulation Part 3 Section 115 to 124 inclusive. (2018 Edition).
- British Columbia Occupational Health and Safety Regulation Part 3 Section 3.1 to 3.3 inclusive. (2018 Edition)
- Alberta Occupational Health and Safety Act Part 5 Sec 37 (1)
- Alberta Energy Regulator (AER) Directive 71 Emergency Preparedness and Response Requirements for Petroleum Industry
- British Columbia Emergency Management Regulation (EMR)
- CSA Z246-2 Emergency Preparedness and Response for Petroleum and Natural Gas Industry Systems

2 Hazard and Risk Management

Hazard Identification, and Assessment

INTRODUCTION

NRM takes an **all-hazards approach** for emergencies; we define this as:

- An event or imminent event outside the scope of normal operations that requires prompt coordination of resources to protect people, the environment, and property.

The EMP establishes the framework for preparing for, responding to, and recovering from non-routine incidents, regardless of the nature or severity.

The following sections describe the hazard identification procedures used to systematically identify, control, or eliminate potential or actual hazards. People Leaders and Workers can prevent hazards from causing harm when they:

1. Eliminate the hazard,
2. Reduce the hazard, including substitution or isolation,
3. Engineering,
4. Administration by way of following procedures or applying training, or
5. Wear personal protective equipment.

Risk Assessment

Purpose Risk assessment is a method for analyzing the probability and impact of failure on personnel, the public, the facility, the environment, and/or NorthRiver's reputation. Utilizing the Hazard, Risk and Vulnerability Assessment Matrix during the response to an emergency will help to ensure the incident is managed within NorthRiver risk tolerances.

The nature of the hazard(s) will influence the responses that are implemented by the Site Operations Section Chief and the Incident Commander. NorthRiver risk management during response to any incident is based on the following:

- Activities that present an extreme risk to workers, responders, and public must be limited to only situations where there is a potential to save endangered lives. Life Safety is the number one priority in every incident; this includes the safety of responders.
- Where there is no possibility to save lives, personnel should not attempt extreme risk operations.
- Activities to protect the environment or property are recognized as inherent risks to the safety of response personnel and actions should be taken to reduce or avoid these risks.

The Incident Commander is responsible for the overall coordination and direction of all activities and has the primary responsibility to evaluate the risk to on-site personnel with respect to the purpose and potential results of their actions in each situation. In situations where the risk to personnel is excessive, activities should be limited to defensive and protective operations.

The Site Operations Section Chief has the primary responsibility to evaluate the risk to on-site personnel with respect to the purpose and potential results of their actions in each situation. In

situations where the risk to personnel is excessive, activities should be limited to defensive and protective operations.

Determining Risk

There are four steps in assessing the risk of an activity or process (see Hazard, Risk and Vulnerability Assessment Matrix):

1. Identify the risk or concern: Describe the risk or concern.
2. Assess the impact: The potential consequence of an incident is defined in terms of impact to people, the environment, operational assets, and the company's reputation.
3. Assess the Probability: The probability of occurrence is estimated in a range from Remote to Frequent.
4. Plot risk level and act: Risk is categorized in terms of:
 - Critical - the activities must stop until risk controls have been implemented to reduce the risk to a lower level.
 - High - extensive risk controls must be immediately implemented.
 - Moderate - risk controls are required.
 - Low - some risk controls are justified.

Hazard Identification

NorthRiver Emergency Response Plans are BC Energy Regulator Emergency Management Regulation compliant 'all hazards' ERPs covering production operations. Although written and employing an 'all hazards' approach, the focus of these plans are upstream petroleum production operations. Under Canadian Standards Association (CSA) Z1600-08 Emergency Management and Business Continuity, organizations are required to identify and monitor hazards that can have an impact on their operations or areas of responsibility.

Organizations are mandated to consider the impact of natural, technological hazards and human caused. Hazards and risks for NorthRiver were identified and vulnerabilities were assessed by the Emergency Management team and listed in the area specific emergency response plan.

NorthRiver Emergency Response Planning personnel using the Hazard, Risk and Vulnerability Assessment Matrix. As per the Risk Assessment process, staff evaluated information to facilitate the assignment of both probability and impact scores to the three categories of hazards.

The combined scores were then plotted on the Risk Matrix so that the Risk Potential/Level could be determined, and appropriate ERP procedures developed where necessary. Tables are then developed for each area that summarize the hazards.

Hazard, Risk and Vulnerability Analysis

Step 1 – Assess the Impact

Level	People	Environment	Assets	Reputation
4 Critical	<ul style="list-style-type: none"> Fatality Long-term health impact Permanent disability Life altering injury or illness Evacuation of a facility and community Action from / activist involving weapons 	<ul style="list-style-type: none"> Severe long-term environmental damage Wide-spread impacts to sensitive environments, wildlife and/or major bodies of water Significant off lease/site groundwater impacts 	<ul style="list-style-type: none"> One-month facility/equipment outage Production, equipment, property, motor vehicle loss and/or damage greater than \$10 million Terrorist attack/attempt 	<ul style="list-style-type: none"> Action resulting in regulatory and/or legal prosecution or suspension of operations Prolonged national/international media attention Sustained widespread stakeholder public protest
3 High	<ul style="list-style-type: none"> Short term health impact Lost time injury or illness Evacuation of facility and immediate area Violent action from landowner/ activist 	<ul style="list-style-type: none"> Severe short-term environmental damage Localized on lease groundwater impacts Significant off lease/site surface impacts 	<ul style="list-style-type: none"> One-week facility/equipment outage Production, equipment, property, motor vehicle loss and/or damage greater than \$1 million Substantial loss from theft/ vandalism 	<ul style="list-style-type: none"> Regulatory and/or legal action resulting in fines or punitive action Prolonged national/regional media attention Prolonged local/regional stakeholder public protest
2 Moderate	<ul style="list-style-type: none"> Medical aid injury or illness Restricted work/modified duties Evacuation of job site Specific threat from landowner/ activist 	<ul style="list-style-type: none"> Moderate environmental damage No groundwater impacts Localized off lease/site surface impacts Immediate clean-up 	<ul style="list-style-type: none"> Short term (less than one week) facility/equipment outage Production, equipment, property, motor vehicle loss and/or damage greater than \$100,000 Major property crime 	<ul style="list-style-type: none"> Regulatory and/or legal action resulting in administrative response Brief local/regional media attention Brief local public protest
1 Low	<ul style="list-style-type: none"> First aid injury or illness Implied threat from landowner/ activist 	<ul style="list-style-type: none"> Minor environmental damage Localized on lease/site surface impacts 	<ul style="list-style-type: none"> Negligible production loss Protection, equipment, property, motor vehicle loss and/or damage less than \$100,000 Minor property crime 	<ul style="list-style-type: none"> No regulatory action anticipated Brief or no media attention Brief or no public attention

Step 2 – Determine the Probability

Level	Description	Likelihood
4 Frequent	Event is expected to occur in most circumstances.	One or more occurrences per year.
3 Likely	Event will probably occur at home time based on current practices.	One occurrence every 1-5 years.
2 Unlikely	Event should occur at some time based on current practices	One occurrence ever 5-20 years
1 Remote	Event could occur at some time based on current practices	One in the life of the facility

Step 3 – Determine the Risk Level

Impact	Probability			
	1 Remote	2 Unlikely	3 - Likely	4 Frequent
4 Critical	Yellow	Yellow	Red	Red
3 High	Yellow	Yellow	Yellow	Red
2 Moderate	Green	Green	Green	Yellow
1 Low	Green	Green	Green	Green

Impact x Probability = Risk Level

Step 4 – Risk Level

Critical – STOP activities. Work cannot proceed until risk is reduced to a lower level.

High – Extensive risk controls/mitigation measures must be implemented, and possible corporate approval is required to allow work to proceed. Efforts to reduce risk to a MEDIUM or LOW level should be undertaken.

Moderate- Risk controls/mitigation measures must be implemented to allow work to proceed. Efforts to reduce risk to a LOW level should be undertaken.

Low – Some risk controls/mitigation measures may be justified. Represents an acceptable level of risk.

Step 5 – Take Action

Ensure all Risks are understood, controlled, and communicated prior to starting work.

For each facility a table is developed lists the high-risk hazards that are present at the operating facility.

Risk Level	Hazards	Controls
Critical	None Identified	N/A
High	None Identified	N/A
Moderate	Fire: Industrial/Facility	Section 7.21 - Facility Fires
	Release: Chemical (e.g. produced water, cleaning agents)	Section 7.16 – Liquids Release
	Release: Gas (Sweet)	Section 7.11 Sweet Gas (Hydrocarbon) Release
	Release: Gas (Sour)	Section 7.10 Sour Gas Release
	Fire: Wildland/Grass/Forest	Section 7.20 – General Fire Response
	Flood	Sub-Section 7.31.5 - Floods
	Release: Liquid Product	Section 7.16 – Liquids Release, Section 7.17 Spill Contingency Plan
Low	Excessive Runoff from Facility	Section 7.17 Spill Contingency Plan
	Medical Event (Slips, Trips, First Aid, Heart Attack, etc.)	Section 7.28 – Injury/Fatality
	Transportation/Vehicle Incident: On Site	Section 7.25 – Transportation Incident
	Transportation/Vehicle Incident: Off Site Involving Company/Contractor Personnel	Section 7.25 – Transportation Incident
	Weather: Lightning Strike	Section 7.31.4 – Lightning
	Weather: Extreme Cold	Section 7.31.1 – Severe Weather Safety
	Threat or Suspicious Activity	Section 7.34 – Bomb Threat
	Disgruntled Landowner/Employee/Contractor/Vendor	Section 7.33 - Site Security
	Weather: Extreme Heat	Section 7.30.1 – Severe Weather Safety
	Wildlife Bites/Attacks	Section 7.32 – Animal Attacks
	Intruder/Squatter	Section 7.33 - Site Security
	Landslide	Section 7.31.6 – Seismicity
	Seismic Event: Earthquake	Section 7.31.6 – Seismicity
	Weather: Tornado	Section 7.31.3 - Tornadoes
Prolonged Power Outage	Refer to Business Continuity Plan	

Each area emergency response plan will have a table that lists the hazards by product and where those hazards are located (tank or pipeline). Example tables are below.

Tupper Main Field Area – Hazard Summary					
Hazardous Product	General Description	Health Effects	Downwind Evacuation	Fire	HPZ Public Safety (immediate precautionary measures)
Methane	<ul style="list-style-type: none"> Often referred to as "sweet gas". Flammable. Lighter than air. At room temperature and standard pressure, methane is a colorless, odorless gas. It is the simplest alkane and the main component of natural gas. 	<ul style="list-style-type: none"> Vapors may cause dizziness or asphyxiation without warning. Some may be irritating if inhaled at high concentrations. Contact with gas or liquefied gas may cause burns, severe injury and/or frostbite. Fire may produce irritating and/or toxic gases. 	Large Spill Consider initial downwind evacuation for at least 800 metres (1/2 mile)	If tank, rail car or tank truck is involved in a fire, isolate for 1600 metres (1 mile) in all directions; also, consider initial evacuation for 1600 metres (1 mile) in all directions.	100 m (330 ft)
Methane, compressed					
Natural gas, compressed					
Propane	<ul style="list-style-type: none"> Extremely Flammable – will be easily ignited by heat, sparks or flames. Colourless Denser than air. When odourized has a sulphur type odour. Non-odourized has a slight hydrocarbon odour. A by-product of natural processing and petroleum refining, it is commonly used as a fuel for engines, oxy-gas torches, portable stoves, and residential central heating. Propane is one of a group of liquefied petroleum gases (LPG). 	<ul style="list-style-type: none"> Vapours may cause dizziness or asphyxiation without warning. Some may be irritating if inhaled at high concentrations. Contact with gas or liquefied gas may cause burns, severe injury and/or frostbite. Fire may produce irritating and/or toxic gases. 	Large Spill Consider initial downwind evacuation for at least 800 metres (1/2 mile)	If tank, rail car or tank truck is involved in a fire, isolate for 1600 metres (1 mile) in all directions; also, consider initial evacuation for 1600 metres (1 mile) in all directions.	100 m (330 ft)
Butane					
Liquefied Petroleum Gas (LPG)					
Petroleum Crude Oil	<ul style="list-style-type: none"> Brown to black. Viscous liquid. May contain or release poisonous hydrogen sulfide gas. Extremely flammable liquid and vapour 	<ul style="list-style-type: none"> Inhalation or contact with material may irritate or burn skin and eyes. Fire may produce irritating, corrosive and/or toxic gases. Vapors may cause dizziness or suffocation. 	Large Spill Consider initial downwind evacuation for at least 300 metres (1000 ft).	If tank, rail car or tank truck is involved in a fire, isolate for 800 metres (1/2 mile) in all directions; also, consider initial evacuation for 800 metres (1/2 mile) in all directions.	50 m (150 ft)

Tupper Main Gas Plant A-021-B/093-P-09							
		Latitude	Longitude	Easting	Northing		
UTM Zone 10 NAD83		55.518750	-120.128125	--	--		
STARS Landing Site Number				ERAP Number			
115				ERAP 2-0010-083			
Type	Capacity	Substance	United Nations (UN) ID Number	Transport Canada ER Guide Number	Downwind Evacuation	Fire	HPZ Public Safety (immediate precautionary measures)
Tank	2 tanks 5.68 M3, aprox. 3.31 tonnes	Propane	1075	115 – Gases (Flammable)	Large Spill - 800 metres (1/2 mile)	1600 metres (1 mile)	200 m (660 ft)
Tank	320 M3	Condensate	1267	128 – Flammable Liquids (Water-Immiscible)	Large Spill - 300 metres (1000 feet)	800 metres (1/2 mile)	1200 m (3940 ft)
Tank	5x 2000 bbl	Produced Water	1993	128 – Flammable Liquids (Water-Immiscible)	Large Spill - 300 metres (1000 feet)	800 metres (1/2 mile)	50 m (150 ft)

RESPONSIBILITIES

Emergency Management Program Coordination:

- Ensure that contractors hired to support the emergency management program:
 - Identify known, and reasonably foreseeable hazards.
 - are trained, qualified and competent to complete the hazard planning calculations.

Contractors shall:

- Understand the emergency planning processes and specific responsibilities as they apply to each emergency response plan.
- Actively participate in the hazard planning process and ensure that an appropriate level of controls is documented in each emergency response plan.
- Communicate the results of the hazard planning to the emergency management program coordinator.

REQUIREMENTS

- NRM conducts risk and hazard assessments for all its facilities and business operations to identify risks and hazards to people, property and the environment arising from our business activities.
- Risk and hazard assessments are reviewed regularly to consider changing circumstances and situations and are used in all stages of emergency planning and response activities.
- NRM has developed & implemented a process for the identification of its Emergency Planning Zones (EPZs) associated with the hazards posed by its pipelines and associated facilities.
- NRM re-validates its EPZs on a regular basis.
- The Management of Change (MOC) process is in place where new assets, licensing changes, integrity issues (i.e. ESDs not working) are communicated and EPZ calculations are updated to reflect that.
- EPZs are being utilized in the development of other Emergency Management related activities including public awareness, emergency responder continuing education & liaison programs.

PLANNING AND RESPONSE ZONES

- The planning and response zone is based upon the greatest hazard present, or expected to be normally present, for which the Emergency Response Plan has been developed. In many cases, oil and gas operations will have several products associated with their operation, such as propane bullets, condensate storage, containment for produced water, etc. that create a hazard area. When present, H₂S is typically the greatest hazard and will often determine the extent of an EPZ.
- NRM calculates the hazard planning distance for fluids containing Hydrogen Sulfide (H₂S) using Schedule A of the EMR (for facilities), Schedule B of EMR (for wells) or Schedule C of the EMR (for pipelines).
- For pipelines carrying low volatility, low toxicity product with an EPZ distance equal to or less than the Right-of-Way, the right of way distance may be used, extending the length of the pipeline. In no case should the EPZ be less than the right of way.

- For pipelines carrying a high volatility or high-hazard product, the EPZ distance should be calculated from the edge of the right-of way.
- When multiple pipelines share a right of way, or when rights-of-way overlap, the EPZ distance must consider the cumulative effect of each pipeline, using maximum licensed values.
- For H2S, the calculations provided in Schedule C of the EMR must be used, however it may be possible with very low percentages of H2S that other hazards will determine the EPZ distance.
- NorthRiver calculates Planning Zones for all of its wells, pipelines & facilities based on the following methodologies:
 - **Alberta** - EPZ Calculations are completed for any well, pipeline or facility with hydrogen sulphide (H2S) concentration of 0.1 moles per kilomole (mol/kmol) (0.0001 mole fraction or 100 ppm). The EPZs are calculated using the ERCBH2S models.
 - **British Columbia** - Hazard Planning Zone (HPZ) calculations are completed for any sour well, pipeline or facility using the nomograph method (i.e. as per Schedule A of the ERM).
 - **Vapour Flammability HPZs** - are calculated utilizing the ALOHA modelling system for all sweet and sour wells and Thermal Radiation HPZs are calculated for all sweet and sour pipelines. The larger of the HPZs is applied as the final EPZ.
 - **HVP Pipelines** - EPZs for High Vapour Pressure (HVP) pipelines are determined using the Proposed EPZ Distances for Selected Pipeline Diameters provided by the *Working Group in Project No. 1022345 the Effects of HVP System Parameters on Dispersion and Thermal Radiation Hazard Extents*.

Pipeline Size		Ethane, Propane, and Butane Mix (No Ethylene)	Ethylene
3"	88.9 mm	250 m	250 m
4"	114.3 mm	300 m	350 m
6"	168.3 mm	500 m	550 m
8"	219.1 mm	700 m	750 m
10"	273.1 mm	900 m	1000 m
12"	323.9 mm	1100 m	1200 m
16"	106.4 mm	1600 m	1600 m

- **CER Regulated Pipelines** - EPZ Calculations are completed for any pipeline with hydrogen sulphide (H2S) concentration of 0.1moles per kilomole (mol/kmol) (0.0001 mole fraction or 100 ppm). The EPZs are calculated using the ERCBH2S models.
- **Thermal Radiation EPZs** are calculated utilizing the ALOHA modelling system for all sweet pipelines.
- **Environment Canada Regulated Facilities** - Hazard zones for Environment Canada regulated propane / butane / NGL bullets & condensate tanks are calculated utilizing RMP*Comp™.
- **Facility EPZs** - The facility EPZ is the largest of the following:
 - Largest EPZ of any pipeline entering or leaving the facility.

- Environment Canada calculated hazard zone.
- The EPZ of any well on-site at the facility
- NorthRiver ensures its HPZs / EPZs are kept current via the following methods.
 - HPZs / EPZs are calculated for all new assets.
 - HPZs / EPZs are re-calculated for any changes to licensing / operating conditions.
 - HPZs / EPZs are re-calculated due to any integrity issues.
 - A complete refresh of EPZs occurs during the annual update of the ERP.
- If there are changes to the HPZs / EPZs that result in an increase in the hazard zone and new members of the public are impacted, then the ERP will be updated immediately.
- If there are changes to the HPZs/ EPZs that do not impact new members of the public or reduce the HPZs / EPZs then these changes will be rolled into the annual ERP update when it comes due.
- If there is additional public impact, the ERP must be updated prior to NorthRiver bringing on any new assets, changing licensing or changing operating conditions.

DOCUMENTATION:

- NRM Emergency Response Procedures – Hazard Assessment
- NRM Emergency Response Plan – Asset Tables

REFERENCES

- Alberta Energy Regulator (AER) Directive 71 Part 3 Emergency Planning and Response Zones ss 3.1 to 3.4
- Canadian Association of Petroleum Producers – Companion Planning Guide to AER Directive 71 Part 3 Emergency Planning and Response Zones

3 Emergency Preparedness and Response

Emergency Response Planning

INTRODUCTION

This procedure is developed to support the company's requirement to have Site Specific Emergency Response Plans.

PURPOSE AND SCOPE

This procedure describes the requirements for each area to have a site-specific Emergency Response Plan.

RESPONSIBILITIES

People Leaders shall:

- Ensure the site-specific emergency plan is readily available for all locations.
- Ensure that emergency evacuation maps, phone contacts and other support documents are posted in prominent locations or available at each Company facility.
- Understand and follow the Crisis Communication and Media Response procedures.

Employees shall:

- Attend emergency response training, as required.
- Provide feedback following emergency drills or exercises.

Emergency Management Program Coordinator shall:

- Ensure development of site-specific emergency plans per the provincial requirements for all Company facilities.
- Ensure that all areas have access to the emergency response plans.
- Ensure the emergency response plans are maintain, reviewed, updated, and distributed as per this EMP.
- Ensure each ERP list key NRM contacts.

PROCESS TO DEVELOPING A CONTINGENCY PLAN FOR ABNORMAL CONDITIONS

1. Identify the abnormal condition or imminent hazard (e.g. hurricane) associated with the pipeline or facility.
2. Assess the risk associated with the potential impacts of the hazard being realized.
3. Develop the plan to implement the controls required to de-escalate the impact of the hazard.
4. Provide training to emergency responders on the imminent hazard.
5. Communicate the plan to affected stakeholders.
6. Test the effectiveness of the plan.
7. Review and update the plan as necessary.

REQUIREMENTS

Uncontrolled when printed. Controlled copy is on the NRM HS e-site.

General

- Each operating site must have a written emergency response plan that addresses the major unplanned events or exposures that could threaten the facility or public.
- Each plan will contain.
 - A statement of purpose, scope, and objectives.
 - A description of assets and operational activities covered by the ERP.
 - Emergency Response Plan Distribution List.
 - Emergency Response Map, with an appropriate level of detail to allow for effective planning and response.
 - Roles and responsibilities for each internal and external position in accordance with the incident management system.
 - Emergency contact information for an individual, group, or organization that has a role in the management of an emergency.
 - Emergency contact lists for:
 - Notifying directly impacted public; and
 - Enabling the public to contact the operator (e.g., 24-hour emergency contact phone number)
 - A method for classification of incidents and response actions for specific incidents.
 - Response procedures and guidelines to manage site-specific risks.
 - Command and coordination (reception) centers, and other facilities as appropriate.
 - Procedures for communication with response team, support services and government.
 - Procedures for communication with external stakeholders, public and media.
 - Critical resources, Equipment list, and a means of activation.
 - References to copies of mutual aid agreements.
 - Detailed hazardous product information.
 - Internal and external reporting requirements.
 - Documentation processes.
 - Processes and criteria for
 - Determining the incident classification, including escalation and de-escalation.
 - Activation of the ERP; and
 - Deactivation (downgrading and stand-down of emergency levels).
 - Processes for the preservation of evidence; and
 - Debrief procedures.
- The emergency response plan must conform to the requirements set forth by regulatory agencies and emergency response program requirements.
- The emergency contact list shall be reviewed quarterly to confirm the accuracy of the emergency response phone numbers and accuracy of individual names.
- Emergency planning provisions will be incorporated into each facility's Employee orientation training program.
- All facilities shall conduct an emergency exercise at least annually.
- Following the emergency exercise, the involved employees shall be debriefed, and the site emergency plan shall be revised as appropriate.

Emergency Response Procedures

- Each Emergency Response plan includes specific emergency response procedures for the following events
 - Public Protection Measures
 - Air Quality Monitoring
 - Shelter in Place
 - Evacuation
 - Ignition
 - Road and Airspace Closures
 - Establishing and Isolating a Perimeter (Isolation)
 - Spill Response
 - Medical Emergencies
 - Responder Safety
 - Fire/Explosion
 - Transportation Incidents
 - Weather and Natural Disasters
 - Earthquake
 - Floods
 - Thunderstorm and Lightning
 - Tornadoes
 - Winter Storms, Blizzards, Freezing Rain, Heavy Snow, Blowing Snow
 - Security Incidents
 - Bomb Threats
 - Suspicious Packages
 - Trespassing
 - Vandalism
 - Terrorism
 - Cyber-Attacks
 - Animal Encounters
 - Drinking Water Emergencies

Resources

- Each operating facility will identify appropriate emergency response resources available for deployment in an emergency.
- The location of personnel, equipment services will be described in the emergency response plan.
- Equipment identified will include:
 - Primary communication method (equipment, radio frequency etc.)
 - Back up emergency communications equipment
 - Roadblock kits
 - Ignition equipment
 - Gas monitoring equipment
 - Spill response equipment

Exemptions

When a facility is no longer in use, it may be excluded from consideration within an emergency management plan, provided that:

- A security assessment has been completed and;
- NRM confirms that there are no risk items remaining on the site such as, but not limited to:
 - processing chemicals.
 - unpurged propane or NGL bullets.
 - any link to an active pipeline or to any well that has not been abandoned.
 - any tanks, c-rings, or other containers (including abandoned pipelines) that may contain hydrocarbons, produced water, H₂S, or any other product introduced or extracted for which a Safety Data Sheet (SDS) sheet would be required, or any water storage for industrial use which includes an engineered containment system;
- NRM has complied with all other regulations and permit requirements applicable with respect to a suspension and abandonment of operations.
- A well may only be excluded when abandoned.
- A suspended well must continue to be included in a valid ERP. Only well sites granted a Certificate of Restoration will be recognized as abandoned.
- A pipeline may be excluded when abandoned in accordance with BC Emergency Management regulation.
- Should NRM wish to reactivate a well, pipeline or facility, a new ERP (or update to an existing plan) including any required hazard mapping, response resources, etc. must be provided to the BCER and other key recipients, prior to the commencement of any oil or gas operations.

Deactivated Pipelines

- In accordance with the BCBCER Oil and Gas Activities act – Pipeline Regulation, all pipelines being re-licensed to Deactivated status must be deactivated in accordance with CSA Z662. CSA Z662 states under section 10.15.1.1 Deactivation of piping:
- Operating companies deactivating piping shall:
 - Isolate the piping, using blind flanges, weld caps, or blanking plates suitable for the pressure from which the deactivated piping is being isolated.
 - Where required, provide a pressure-relief system; and
 - Fill the piping with a suitable medium, having regard for the intended duration of the deactivation, the effects of the medium on the integrity of the piping, and the potential consequences of a leak.
- Due to the processes required in re-licensing pipelines to deactivated status, there will be no hazards associated with deactivated pipelines and thus will not have HPZs or EPZs associated with them.

DOCUMENTS

- NRM Emergency Response Plans
- BCER ERP Content Checklist Guidance
- BCER Field/Facility/Downstream ERP Supplemental Content Checklist Guidance

REFERENCES

- Alberta Occupational Health and Safety Code Part 7 Emergency Preparedness and Response
- BC Occupational Health and Safety Regulations Part 4.13 Emergency Preparedness and Response
- Emergency Management Regulation - British Columbia
- Alberta Emergency Management Agency

4 Management of Change

Management of Change (MOC) Procedure

INTRODUCTION

Management of Change is a systematic approach to ensuring proposed changes are assessed for risk, and that change is effectively implemented to achieve targeted results.

PURPOSE AND SCOPE

Disciplined Management of Change identifies and mitigates risks associated with changes to operations, procedures, site standards, facilities, and the organization to ensure that risks associated with change are well understood and addressed.

A Management of Change (MOC) process is in place to address the risks introduced into the workplace through changes (e.g., materials, people, vendors, procedures).

This procedure applies to changes for requests to procedures in this Manual.

RESPONSIBILITIES

People Leaders shall:

- Follow all management of change procedures.

Workers shall:

- Follow the management of change procedure to request changes to:
 - Emergency Response Plans
 - Emergency Planning Zones (EPZs)
 - Public Awareness brochures
 - Liaison Information
 - Mutual Aid Agreements

Emergency Management Program Coordinator shall:

- Review pipeline and facility MOCs to determine if there is an impact to an existing Emergency Planning Zone.
- Ensure all Emergency Planning Zones are updated as a result of changes to:
 - Pipeline design,
 - Flow,
 - Pressure,
 - Product,
 - Size (diameter),
 - Length,
 - Location,
 - Activation or deactivation.

- If there are changes to the HPZs / EPZs that result in an increase in the hazard zone and new members of the public are impacted, then the ERP will be updated immediately.
- If there are changes to the HPZs/ EPZs that do not impact new members of the public or reduce the HPZs / EPZs then these changes will be rolled into the annual ERP update when it comes due. If there is additional public impact, the ERP must be updated prior to NorthRiver bringing on any new assets, changing licensing or changing operating conditions.

REQUIREMENTS

- All NRM programs shall follow the NRM Management of Change processes.

DOCUMENTS

- NRM Management of Change Procedure

REFERENCES

n/a

5 Competence and Training

Competence

INTRODUCTION

Competency assurance is using a variety of means to ensure that individuals have the necessary qualifications, training, and experience to safely respond to emergencies.

PURPOSE AND SCOPE

The purpose of competency assurance activities is to ensure individuals on NRM worksites are sufficiently qualified, trained, and experienced for the duties they are assigned; or that they are receiving sufficient supervision, training, and experience for duties they will be expected to perform in the future.

NorthRiver's *Training Matrix* identifies the training required for those that may fill Emergency Response Roles to ensure that personnel have the appropriate knowledge and skills to comply with regulations and respond to emergencies as per NorthRiver's Emergency Response Plans. This includes levels of ICS training, participation in emergency response exercises, role specific training, media training and emergency response related software training.

NorthRiver utilizes a rolling Three Year Training Schedule to ensure that staff are moving towards achieving these training targets. Training requirements and completion rates for everyone are tracked utilizing NorthRiver's Learning Management System housed in the HR Success Factors system.

RESPONSIBILITIES

People Leaders shall:

- Assess the competency of Workers who report to them through a variety of means as applicable, including but not limited to:
 - Confirming any specialized and/or regulated qualification for work assignments has been achieved by the person assigned this type of work.
 - Performing an annual review of Training requirements, matching training assignments to the work assigned, and ensuring training was completed as per required deadlines.
 - Regular worksite visits and/or inspections to allow for firsthand observation of worker competency.
- Ensure that new, inexperienced, or transferred workers work under the direct supervision of another Worker who is sufficiently competent until such a time as they are deemed to be competent in the work assigned at a given worksite.
- Ensure Workers are encouraged to raise concerns about competency, especially if they believe they are not qualified or sufficiently experienced to manage the hazards of an assigned task.

Contractors shall:

- Provide Workers with sufficient competency for the work they are assigned. To that end, Contractors must provide proof of qualification and training records for individual Workers upon demand.

Employees shall:

- Participate in competency assessment or assurance exercises as requested.
- Report to their People Leader(s) any concerns regarding competency issues, especially if they believe they may not be sufficiently qualified or experienced for an assigned task and the hazards it represents or if a required qualification has or is about to expire.

REQUIREMENTS

- NorthRiver Midstream utilizes a learning management system (LMS) called Success Factors. The system provides the mechanism to register, deliver, track and record learning completions.
- NorthRiver's HR department provides support to all departments for the development of departmental training course content and programs and each department manages the content of programs housed in the LMS.
- Workers must be deemed competent by their People Leader / Supervisor in an assigned task to be allowed to perform this task independently.
 - Workers not yet deemed competent may only perform this task under the supervision of another Worker who is deemed competent.
- People Leaders and Supervisors shall assess the competency of Workers under their control. This should include activities such as:
 - Confirming existing qualifications, training, and experience through the onboarding process for new or transferring workers.
 - Performing an annual review of H&S Training requirements for individual workers, matching training assignments to the work assigned, and ensuring training was completed as per required deadlines.
- The Key Response Personnel Document in Section 2 of each ERP identifies those likely to fill specific positions on the Field Response Team.

DOCUMENTATION

- NRM Training and Competency Program
- NRM Training Matrix
- NRM Training Course Catalog

REFERENCES

- British Columbia OHS Regulations 3.22-3.25

Alberta

- The AER requires an annual tabletop exercise to be conducted for each regulated Area ERP and a full mobilization exercise to be conducted every three years. External agencies are invited to attend Full Mobilization exercises as required.

British Columbia

- The BCER requires an annual tabletop exercise to be conducted for each Operating Area and a full mobilization exercise to be conducted every three years. External agencies are invited to attend Full Mobilization exercises as required.

Environment Canada

- Requires an annual tabletop exercise to be conducted for each hazard category identified at each registered facility. Additionally, Environment Canada requires each licensee to complete a full scale exercise every five years for each registered facility. The exercise must involve the registered tank / substance. NorthRiver invites local response authorities to observe at the exercises where feasible.

Canadian Energy Regulator (CER)

- Emergency response exercises should:
 - Be held with sufficient frequency.
 - At least one simulated exercise annually (e.g., tabletop, functional) and a full-scale exercise (involving all agencies identified in the company's liaison) should be held at least every three years.
 - Be varied to confirm that all aspects of potential emergencies are tested; and
 - Simulate a wide range of potential geographic and weather conditions as well as worse-case spill or gas release scenarios.
- External agencies are invited to attend Full Mobilization exercises as required.

Emergency Response Training

INTRODUCTION

The purpose of this procedure is to establish expectations for Emergency Response Training. This procedure will assist in ensuring company personnel receive appropriate emergency response training.

PURPOSE AND SCOPE

Emergency response training is provided to NRM employees who may be involved in responding to an incident. Training is provided in various forms such as, formal training, table-top exercises, plan reviews, and workshops.

External agencies, stakeholders and subject matter experts are invited to participate in training when applicable to ensure a comprehensive and cohesive response effort. Training requirements are determined by operational and regulatory requirements.

NRM Incident and Emergency Management team collaborates with the NRM Training department in the development of training materials.

NRM EMS Team regularly attends workshops, courses, and conferences for professional development to review industry best practices with a view to continually develop, enhance and improve the Program. to emergencies.

RESPONSIBILITIES

People Leaders shall:

- Ensure Employees under their direction are assigned and complete the Emergency Response Training that is:
 - Required based on the type of work they do or where they do their work.
- Support Learning and Development processes and requirements related to training completion records.
- Provide feedback to the Emergency Management Program Coordinator:
 - Whether the Training is relevant and meeting the needs of Employees.
 - Whether additional or different Training offerings are required to meet the needs of these Employees.

Employees shall:

- Complete the training assigned to them within the required timelines.
- Alert Supervisors if they believe their training on a specific workplace hazard or topic is insufficient for the work they do.
- Provide feedback on the training programs they complete.

Area Safety Advisor shall:

- Provide support as needed for area operations to:

- deliver instructor led training as required.
- Assist with Emergency Response training delivery issues.
- Provide feedback on existing Emergency Response training and training needs arising that should be addressed by the Program and/or Area Management or People Leaders.
- Provide support in assessing the quality of Emergency Response training content and delivery.

Emergency Management Program Coordinator shall:

- Revise the NRM Training Matrix in consultation with:
 - Area Operations personnel.
 - Area Safety Advisors.
- Ensure applicable regulatory requirements regarding training are being met by Training program.
- Provide oversight on Emergency Response Training content to ensure accuracy, quality and consistency.
- May, under certain circumstances, coordinate and/or conduct Emergency Response Training.

TRAINING OBJECTIVES

- NorthRiver completes Emergency Response Exercises in a frequency that meets or exceeds regulatory requirements as per NorthRiver's 6 Year Exercise Schedule. Each exercise has specific learning and coordination objectives that are measured as being achieved / not achieved for each exercise. Attendance at emergency response exercises is tracked for each individual employee via NorthRiver's learning management system.
- A Functional/Full Scale Exercise Audit Form or Tabletop Exercise Audit Form is shared with each area at the next Safety Meeting following each emergency response exercise to review the positive observations, opportunities for improvement, other learnings, and action items.
- All training exercise corrective and preventive action items are tracked in the CAPA system and reviewed quarterly to ensure the action items are being

The objectives of the Emergency Response training include:

- Review of response actions and priorities.
- The emergency response program.
- Review of the Incident Command System (ICS) - structure, roles, and responsibilities.
- Hazards and risk identification, including on-scene assessment.
- Use of the [BC Energy Regulators incident classification matrix](#).
- Public protection measures used during an emergency.
- Ignition as mitigation.
- Communication methods.
- Map reading / use of mapping tools.
- When and how to report a security threat or incident.
- Use of equipment (both owned, as well as that provided by third parties such as Western Canada Spill Services (WSSC) or other agencies) used to contain and control an incident.

REQUIREMENTS

- The NRM Training Catalogue shall provide the following for each course or training activity in the Training Matrix:
 - Description of course or training activity.
 - Applicable pre-requisites.
 - Training Determination Question (to ensure training is assigned where applicable).
- Training Requirements will be set out in the NRM Training Matrix. This matrix provides the following:
 - Training requirements for Employees by operations type and role. Individual training courses or activities will be broken into two categories:
 - REQUIRED: This includes any Training that is mandatory for all NRM employees, an Asset Area or operation type in NRM due to core Company commitment or regulation that affects all Workers in each operation type.
 - OPTIONAL: These are any training activities that are only applicable to a subset of Workers within a type of operation or facility. For example, on facilities with a forklift and then only forklift operators within those facilities would be required to take “Forklift Operator” training.
 - These are assigned by People Leaders for Employees that report to them based on the direction provided by the course or activity determination question.
 - If the determination question applies, the Employee is assigned the training and must complete this training to meet their training requirements (i.e., this is not “optional” training).
- Training timing and frequency.
 - Each course or training activity on the Training Matrix will specify whether it needs to be provided on initial hire or on taking on a new role.
- Any course or training activity that must be completed prior to arriving on the jobsite or starting to do a task for the first time will be flagged as such in the training matrix.
 - It needs to be repeated or renewed and how frequently (e.g., annually, biennially, triennially).
- People Leaders must review the training assigned to Employees under their direction:
 - At least once a year and timed to allow assignments to take affect the following calendar year.
 - Whenever operations change, and new hazards introduced or when Employees under their direction change their role or duties.
- All completed Training by an Employee must be electronically recorded.
- The specific processes and requirements for electronic recording are specified by Learning and Development.
- Hard copy training documentation may be used as part of instructor-led training, but all records must be transferred to the Learning and Development electronic system to allow for accurate Training reporting.

- In the event evidence of training is in hard copy (e.g., training sign in sheet), these should be maintained at the trainees' local area office or facility and in accordance with any applicable record retention requirements.
- In the event a regulator requires additional record keeping requirements, Learning and Development will make provisions for this.
- The Emergency Management Program Coordinator must perform a review of the Training requirements and potentially individual courses or training activities:
 - At least once a year and timed to allow any changes made to take affect the following calendar year.
 - In consultation with Operations Support and Area Operations input.
 - when any of the following occurs:
 - New regulatory requirements.
 - Revised procedures.
 - Incident reviews, investigation findings, or action plans.
 - Audit results.

TRAINING REQUIREMENTS

- General Training Requirements

Frequency / Action	Upon Hire	Semi-Annually	Annually*	Every Three (3) Years**	Every Five (5) Years***
Training					
Employee Orientation New / Transfer	✓			✓	
On-the-job Training	✓		✓	✓	
Response Discussion During Pre-Job Meetings	✓		✓		
Drills	✓		✓		
Tabletop Exercise			✓		
Communication / Partial Mobilization Exercises			Exercises		
Major (Full Scale) Exercise				✓	✓
Post Incident (Actual) Review	✓				
ERP Review / Self Audit		✓			

* Must be held annually.

** CSA Z246.2-18, CER, BCER & AER requires Major Exercises be held every three (3) years.

***** Environment & Climate Change Canada (ECCC) requires Major Exercises be held every five (5) years for facilities with E2 required substances.**

- NRM will provide training in the Incident Command System (ICS) for any incident response personnel.

Role	Training
All Response Personnel	ICS 100
Incident Command Post (ICP) Personnel	ICS 100 ICS 200
Emergency Operations Centre (EOC) Personnel	ICS 100 ICS 200 ICS 300
Emergency Management Coordinator	ICS 300

- NRM will ensure that assets with Environmental Emergency (E2) requirements meet the following training requirements.

Role	CEPA Required Table Top Exercise (Annually)	CEPA Required Full Scale Mobilization Exercise (Every 5 years)
Incident Commander	✓	✓
Emergency Management Program Coordinator	✓	✓
Public Safety Staff	✓	✓
On-Site Area Supervisor	✓	✓

EXERCISES

Emergency exercises are designed to evaluate and validate NRM emergency response plans. NRM utilizes tabletop, drill based, functional and full-scale exercises in the emergency exercise program in order to test and evaluate the full range of the Company’s emergency processes and procedures that ensure response priorities are achieved and regulatory requirements are met.

These exercises simulate disruptive events and provide the participants with the opportunity to practice their individual roles and responsibilities.

Typical aims of the exercises can be but are not limited to:

- To develop the necessary skills for individuals and organizational units to effectively respond to and manage emergency situations.
- To familiarize individuals and organizations with their roles under the relevant Emergency Response Plans.
- To validate existing plans and identify areas of opportunity.
- To build employees’ confidence with respect to making decisions in an emergency situation.

- To practice and enhance interagency cooperation and communication.

Note: The BC Energy Regulator (BCER) requires 30 days advance notice of the exercise.

Note: Alberta Energy Regulator (AER) requires 30 days advance notice of scheduled exercise via the AER Digital Data (DDS) System.

NOTE: It is integral we register all NRM Alberta based ERP drills through the AER DDS. Failure to use the DDS may result in a formal non-compliance.

Annual exercise plans are developed, outlining exercise dates, locations, and types, based on organizational needs and regulatory requirements.

EXERCISE SCENARIO DEVELOPMENT

Operations leadership will meet annually for a series of meetings to discuss, review, and develop exercise content, determine responsibilities and tasks, and make logistical arrangements and finally participate.

- **Tabletop Exercises (Annual)**

Tabletop exercises are semi-formal, facilitated discussions where participants discuss responses to a theoretical/simulated emergency. The focus is to have participants apply specific plans, policies, procedures, and training by discussing how they would respond to a specific emergency event. This type of exercise is designed to validate procedures and to familiarize participants with their roles under the plan. These exercises may test and validate coordination between the Emergency Operations Centre and other entities such as internal departments (e.g. Operations Support). Tabletop exercises may include representatives from stakeholder organizations such as emergency services and government agencies.

- **Functional Exercises (Annual)**

Functional exercises validate and evaluate multiple functions at a single site. The focus is to have participants apply plans, policies, procedures, and training in responding to a specific simulated emergency scenario. Functional exercises may test and validate coordination between the Emergency Operations Centre and other entities such as internal organizations (e.g. Operations Support) and external stakeholders (e.g. fire departments).

- **Drills (Annual)**

Drills are exercises that validate and evaluate a specific operation or function (e.g. Fire Drill or Muster Drill). The focus is to have participants display a level of proficiency and comfort when executing a response plan. Regular drills are scheduled in the field to ensure that immediate actions and emergency response can become second nature for potential responders.

- **Full Scale Exercises (Every three Years)**

Full-scale exercises are the most complex and involved exercises. The focus is to have participants at multiple locations apply plans, policies, procedures, and training in response to a simulated large-scale emergency event. These exercises test both the on-site, tactical response to an emergency by operational personnel and the deployment and coordination of corporate-level and external resources in supporting the site event. Full Scale Exercises thoroughly test and evaluate emergency response procedures across the Company, as well as identify areas of opportunity that serve improve interagency cooperation and communication. The roles of other agencies are filled by representatives from those agencies when possible, however some roles are simulated in order to minimize real-time operational impacts on external emergency organizations. Exercise scenarios

generally include an incident at a NRM facility or asset and where appropriate, have an impact on external stakeholders and other third parties to test possible outcomes.

DOCUMENTS

- BCER Functional/Full Scale Exercise Audit Form
- BCER Tabletop Exercise Audit Form

6 Documents and Records Management

Document Control

INTRODUCTION

The purpose of this section is to outline the requirements for retention all emergency management related documentation to comply with regulatory and Company policies.

Documentation must be made readily available hard copy or electronic.

PURPOSE AND SCOPE

The section applies to emergency management program related material at all Company facilities. Onsite retention establishes a trend of compliance and management review. Once a record has exceeded its onsite retention period, the records management department begins the process of offsite record retention.

RESPONSIBILITIES

Supervisors shall:

- Request changes to procedures or practices when required.
- Ensure all required documentation is stored at facility locations.
- Ensure all documentation is readily available hard copy or electronic.
- Contact records management department once the onsite documentation retention period has expired.

Employees shall:

- Know the location where documentation is stored.
- Store documentation in the correct location.

Emergency Management Program Coordinator:

- Assist in the evaluation of changed Emergency Management procedures and plans.
- Assist operations with emergency management documentation storage. (Location, length of time to keep records etc.)

Deviations:

- Any Variance or Deviation to a section, practice or requirement from this Manual is required to be approved by the owner of the manual.
- All Deviations are applicable only to a specific project or requirement and do not create policy.
- A Deviation shall always comply with Applicable Legislation.

REQUIREMENTS

- Documentation should be reviewed and revised annually and immediately where changes are required because of legal requirements or where failure to make immediate changes could result in negative consequences. Documentation should include:

- a) Organizational structure.
 - b) Roles and responsibilities.
 - c) Policies, processes, and procedures.
 - d) Emergency response plans.
 - e) Exercise plan; and
 - f) Training plan.
- The company's Corporate and Site-Specific ERPs are to be updated annually and submitted to the CER on or before April 1st of each year, or when significant changes (either operational or identified from exercises/incidents and resulting debriefs) occur or are identified.
 - If an update occurs outside of the January 1st to April 1st period, a letter must be submitted to the CER indicating that there have been no changes to operations since the ERP was last submitted.
 - ERP updates are performed by a third-party company, whose expertise in the field provides company personnel with the education, training, and resources to excel in Emergency Response.
 - Approvals for ERP updates will be carried out by the company's Emergency Management Coordinator.

REFERENCES

- NRM Document Control Procedures

Records Management

INTRODUCTION

The purpose of this procedure is to establish expectations for the management of Emergency Response Records.

PURPOSE AND SCOPE

This procedure applies to all records identified in this Manual.

RESPONSIBILITIES

Program Coordinator shall:

- Maintain all records of activities and decisions related to the EMP; and
- Follow the NRM records management procedure for the identification, storage, protection, retrieval, retention and disposition of records.

REQUIREMENTS

General Requirements

Records should include, but not be limited to

- a) Actions taken to prepare for emergencies.
- b) Actions taken to respond to emergencies.
- c) Debrief reports.
- d) Training records.
- e) Response equipment records.
- f) Changes or improvements made to the EMP; and
- g) Reports of exercises conducted by the operator.

Form Descriptions

Incident Command System (ICS) Forms

- ICS 201 Incident Briefing ICS 202 Incident Objectives
- ICS 203 Organization Assignment List ICS 204 Assignment List
- ICS 207 Incident Organization Chart ICS 208 Safety Message / Plan
- ICS 209 Incident Status Summary ICS 211 Check-In / Out List
- ICS 214 Activity Log
- ICS 215 Operational Planning Worksheet ICS 215A IAP Safety Analysis
- ICS 221 Demobilization Checkout ICS 230 Meeting Schedule
- ICS 231 Meeting Summary
- ICS 233 Incident Open Action Tracker

Emergency Forms

- A1 Initial Emergency Report Form A2 Odor Complaint Script
- A3 Regulatory First Call Communication A4 Incident Action Plan Checklist
- A5 Air Monitoring Log
- A6 Threatening Call / Bomb Threat A7 STARS Landing Zone Card

Resident Forms

- B1 Reception Centre Registration Log B2 Resident Compensation Log
- B3 Resident Contact Log B4 Roadblock Log
- B5 Evacuation Notice
- B6 Early Notification / Voluntary Evacuation Phone Message B7 Shelter-In-Place Phone Message
- B8 Evacuation Phone Message

Media Forms

- C1 Preliminary Media Statement C2 Media Contact Log
- C3 Government Agency Contact Log C4 Media Centre Site

REFERENCES

- NRM Records Management Procedure

7 Incidents

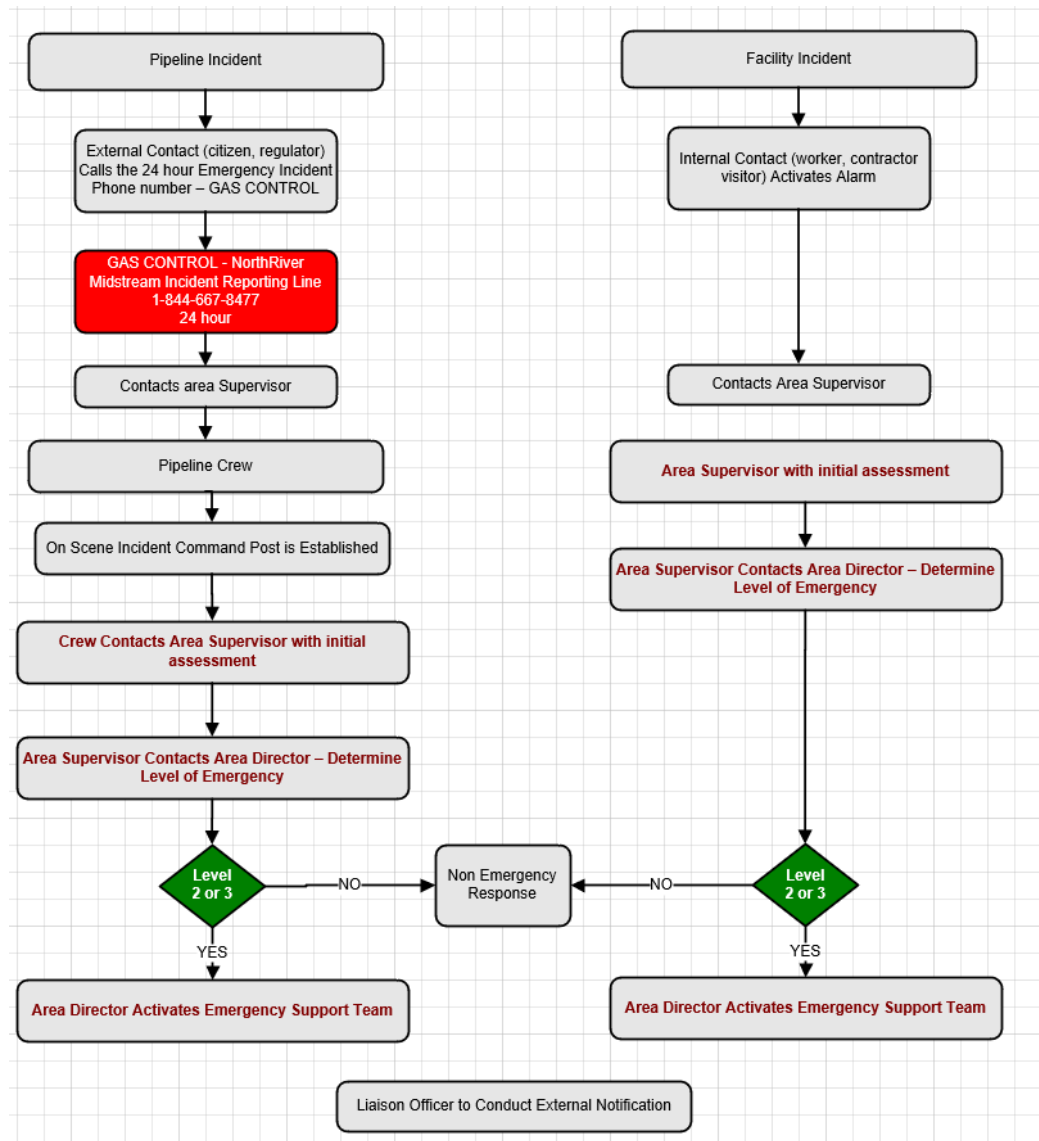
Responding to an Emergency Incident

INTRODUCTION

The purpose of this section is to ensure that all incidents and events that occur on Company property or while conducting Company business are reported and investigated. The procedures found in this section will help ensure that accurate and up-to-date incident records are documented, maintained, posted, submitted, and that notifications are made as required.

PURPOSE AND SCOPE

This procedure provides a systematic process for the responding to incidents. This section applies to all Workers that may be involved in any incident or event occurring in NRM.



RESPONSIBILITIES

NRM will respond to incidents and Emergencies in accordance with following order of priorities:

1. Protection of emergency response staff.
2. Protection of employees.
3. Protection of the public.
4. Protection of property.
5. Protection of the environment.

NRM is responsible for carrying out the response activities until the incident is resolved.

People Leaders shall:

- Ensure this procedure is implemented and followed by all Workers.
- Communicate this procedure to all personnel under their supervision.
- Assume the role of Incident Owner.
- Ensure all incidents are reported to the proper levels of management.
- Ensure the incident is entered into the Incident Database.
- Consult with Regional Health and Safety in the proper incident classification and risk ranking.
- Provide appropriate resources to ensure Corrective and Preventive Actions (CAPA) are identified and resolved in a timely manner.

Workers shall:

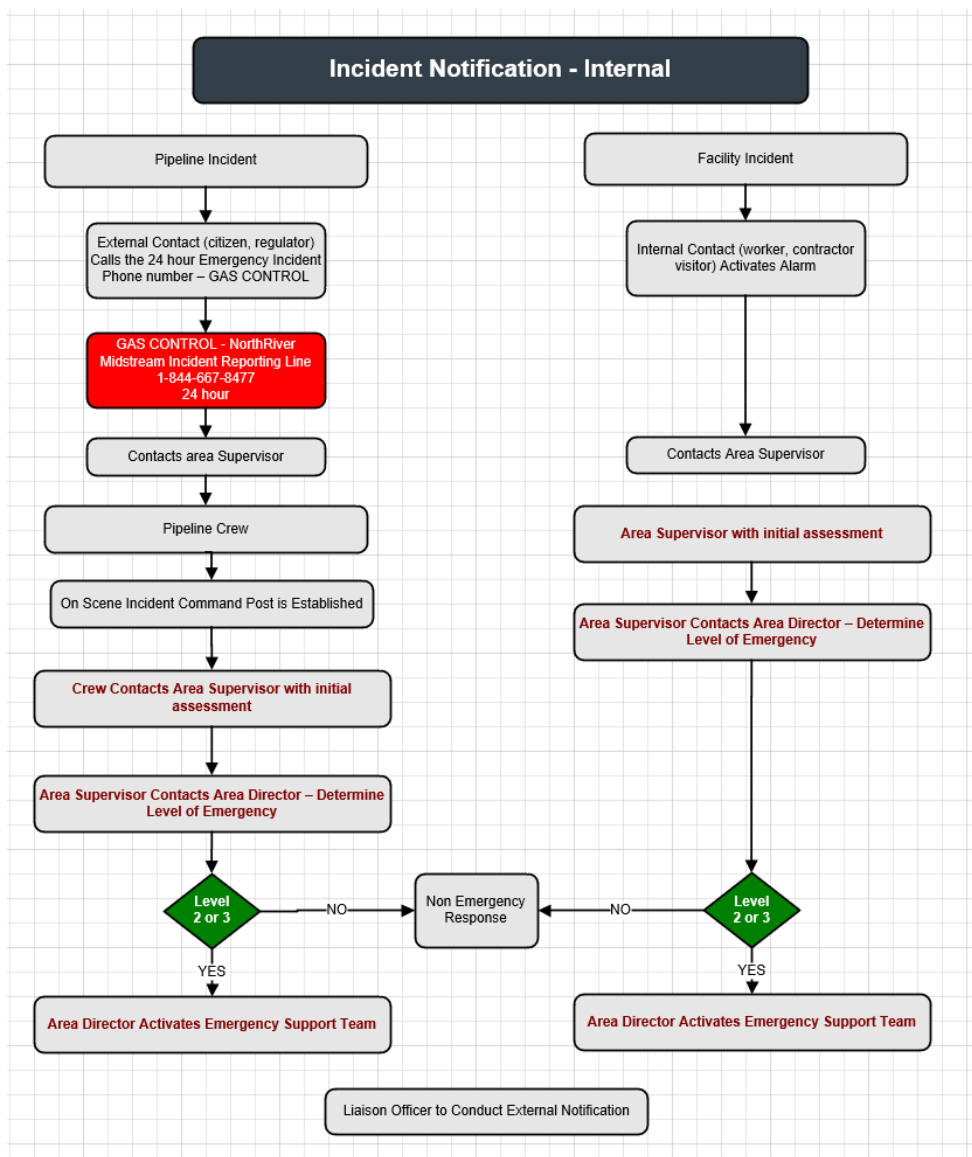
- Immediately report all incidents to your immediate Supervisor.
- Assist with the incident investigation process.

Emergency Management Program Coordinator:

- Assist in the development of any Corrective and Preventive Actions (CAPA) resulting from the emergency response.
- Assist in the proper incident classification and risk ranking.
- Ensure post incident reports are submitted to the appropriate regulatory within 60 days of the event.

REQUIREMENTS

Incident Notification - Internal:



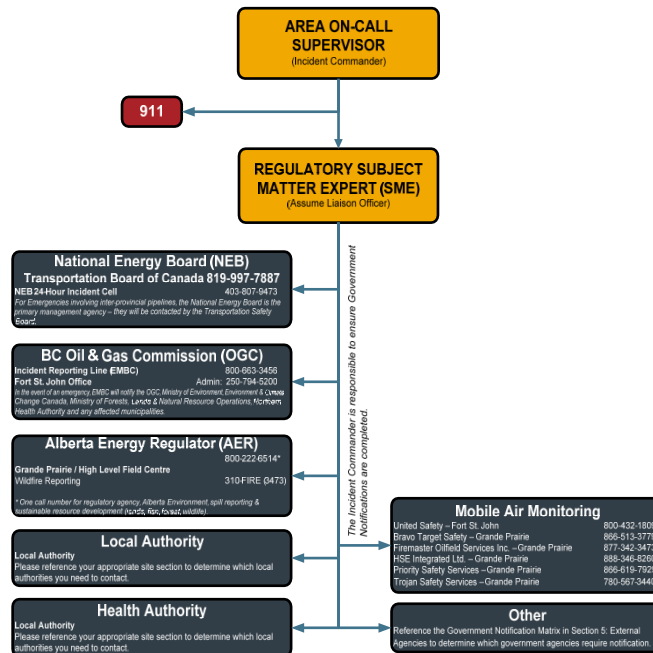
Immediate Response

- If the event is an emergency or requires immediate response, the Incident Owner will initiate the Emergency Response Plan and if required the regulatory reporting process. Examples include:
 - Injuries or illnesses requiring medical treatment.
 - Exposures to chemicals, biohazards or radiation.
 - Unplanned Fires or Explosions.
 - Spills, leaks, unplanned/uncontrolled emissions.
 - Emergency flaring from processing plants.
 - Contact with, or damage to a pipeline, equipment or facility.

- Unauthorized Activity(s) (e.g., Ground Disturbance, Construction of a Facility, Vehicle Crossings).
- Events involving or affecting pressure equipment.
- Events involving electrical equipment.
- Maximum operation pressure (MOP) excursions.
- Events impacting wildlife.
- Public complaints.
- Security related incidents (any Police, Sherriff, or RCMP contact).
- Environmental Permit or license deviations.
- Events involving a major structural failure or collapse of a building, bridge, tower, crane, hoist, temporary construction support system or excavation; or TDG occurrences

External Emergency Notification Flowchart

Prior to commencing contact of the agencies below, make sure a completed A1 Initial Emergency Report Form is available and at hand for reference.



NRM Reportable Event: An event is an unplanned occurrence that interrupts a work activity. NRM requires these events to be tracked in the Incident Database.

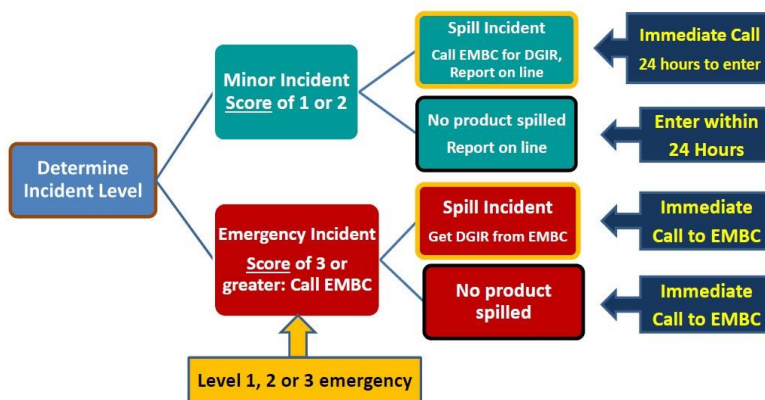
- Reportable events include:
 - People:
 - Injuries or illnesses to Workers or Visitors.
 - Environment:
 - Unauthorized or unplanned releases; or
 - Impacts to air, land, water, or wildlife.
 - Property Damage:

- Ruptures, fires, or explosions.
- Motor Vehicle, aircraft, or watercraft incidents involving NRM Workers.
- Damage to NRM, Contractor, or third-party property; or
- Theft or vandalism.
- Regulatory and Other:
 - Government agency visits or contact.
 - Permit / license contraventions.
 - Unauthorized activity on ROW.
 - Landowner / public complaints; or
 - Security Threats.
- Near Misses involving any of the above.

Incident Reporting

- A Worker who identifies, or is involved in, a reportable event will immediately notify the People Leader and Site Supervisor.
- The Incident Owner is responsible to escalate incident information to management.

Incident Reporting: Systems and Processes



- An incident that meets a Severity Rating of 3 or higher (actual or potential) must be reported to the appropriate operations Director.

Regulatory Notification

- The Incident Owner is accountable to complete regulatory reporting on time. They may delegate the actual call to an appropriate SME.
- Refer to the *Regulatory Reporting Requirements* document.
- Refer to the *Environmental Program* for environmental reporting requirements.
- Refer to the *Security Program* for security reporting requirements.

For Emergencies involving inter-provincial pipelines, the Canadian Energy Regulator is the primary management agency – they will be contacted by the Transportation Safety Board.

For Emergencies involving inter-provincial pipelines, the Canadian Energy Regulator is the primary management agency – they will be contacted by the Transportation Safety Board.
**A pipeline is CER-regulated due to the fact that it crosses a Provincial Border. **

This must be your first call




Transportation Safety Board (TSB)	24 HR Incident Line	819-997-7887
	Facsimile	819-953-7876
	Email	PipelineNotifications@tsb.gc.ca

Call the TSB 24 HR Incident Line when an incident meets the Immediately Reportable Events (see page 2 for criteria) for all Canadian Energy Regulator (CER) regulated pipelines and facilities.
Both the phone notification and the input of information into the **CER’s Online Event Reporting System (OERS)**: <https://apps.cer-rec.gc.ca/ers>
Are required to occur as soon as possible and no later than three hours of the incident being discovered. For all other events (non-immediate) companies are only required to input the information via the OERS.

Secondary Calls
Contact as needed **AFTER** contacting the TSB and CER.

BC Energy Regulator (BCER)	24 HR	800-663-3456
Alberta Energy Regulator (AER)	24 HR	800-222-6514

Hazardous occurrences (under Part XVI of the Canada Oil and Gas Occupational Safety and Health Regulations) and incidents requiring medical evacuations are to be reported to the CER immediately.

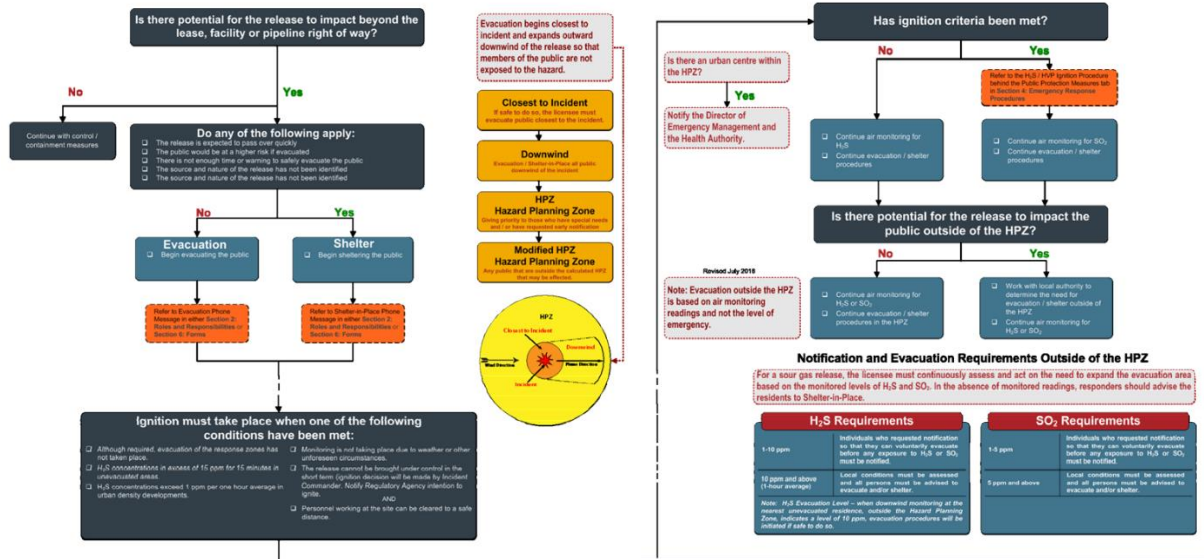




Emergency Response Mapping

Under ss. 13 (2) (b) of the BC EMR, and S. 5.7.4 of the Oil and Gas Activity Applications Manual, an emergency response map must show all the following applicable information:

- The location of the oil and gas activity that is the subject of the plan.
- The EPZ and Emergency Awareness Zone.
- The location of roads, including oil and gas roads, within the EPZ.
- If the area, feature, structure, or location may be affected by an emergency or may affect the response to an emergency the emergency response map must also show all of the following information:
 - The area adjacent to the EPZ.
 - Surface and environmental features and structures, including stream crossings and lakes within the EPZ.
 - The location of commercial, industrial, or critical infrastructure operations within the EPZ.
 - The location of a registered trap line, guiding territory or Crown range within the EPZ.
- The location of any other areas within the EPZ that may be used by the public, including, without limitation, dwellings, schools, churches, community centers and public facilities, campgrounds, fair grounds and recreation areas.

- For pipelines, the map should include tie-ins (including the name of the upstream company, if different) block and ESD valve locations. Project and segment numbers should be shown.
- Distances must be accurately measured if an occupied dwelling is located within a 2-kilometre radius from the proposed activity. In remote areas, the BCER does not require applicants to search a large radius to identify the nearest occupied residence. It is acceptable to ground truth the area out to the edge of the Emergency Awareness Zone (EAZ) and estimate the distance to the nearest occupied dwelling when it is outside of the larger of the EPZ or 2km radius.



Incident Management Database Entry

- The Area Director is accountable to ensure all incidents are recorded into the Incident Management Database within 24 hours.
- The Incident Management Database record must include:
 - Identification of the Incident Owner.
 - Objective and factual description of the incident without speculation as to cause.
 - Events leading up to the incident; and
 - Any actions taken in response to the incident.
- The Area Safety Advisor is an internal resource to all parties on incident investigation. In addition to their support role, they verify the information in the Incident Management Database and that the event is properly classified and categorized.

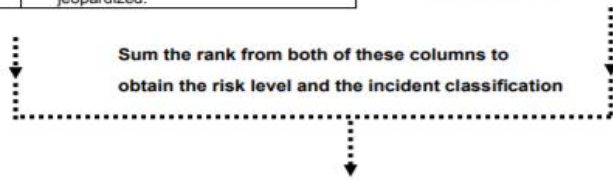
Incident Classification (Assessment Matrix)

In Alberta, NRM will classify incidents as per AER Directive 071 Assessment Matrix for Classifying Incidents, (Appendix 4, and page 101-102)

Rank	Category	Example of consequence in category
1	Minor	<ul style="list-style-type: none"> No worker injuries. Nil or low media interest. Liquid release contained on lease. Gas release impact on lease only.
2	Moderate	<ul style="list-style-type: none"> First aid treatment required for on-lease worker(s). Local and possible regional media interest. Liquid release not contained on lease. Gas release impact has potential to extend beyond lease.
3	Major	<ul style="list-style-type: none"> Worker(s) requires hospitalization. Regional and national media interest. Liquid release extends beyond lease—not contained. Gas release impact extends beyond lease—public health/safety could be jeopardized.
4	Catastrophic	<ul style="list-style-type: none"> Fatality. National and international media interest. Liquid release off lease not contained—potential for, or is, impacting water or sensitive terrain. Gas release impact extends beyond lease—public health/safety jeopardized.

Rank	Descriptor	Description
1	Unlikely	The incident is contained or controlled and it is unlikely that the incident will escalate. There is no chance of additional hazards. Ongoing monitoring required.
2	Moderate	Control of the incident may have deteriorated but imminent control of the hazard by the licensee is probable. It is unlikely that the incident will further escalate.
3	Likely	Imminent and/or intermittent control of the incident is possible. The licensee has the capability of using internal and/or external resources to manage and bring the hazard under control in the near term.
4	Almost certain or currently occurring	The incident is uncontrolled and there is little chance that the licensee will be able to bring the hazard under control in the near term. The licensee will require assistance from outside parties to remedy the situation.

* What is the likelihood that the incident will escalate, resulting in an increased exposure to public health, safety, or the environment?



Risk level	Assessment results
Very low 2-3	Alert
Low 4-5	Level-1 emergency
Medium 6	Level-2 emergency
High 7-8	Level-3 emergency

Incident Response Table

	Incident classification			
Responses	Alert	Level-1 emergency	Level-2 emergency	Level-3 emergency
Communications				
Internal	Discretionary, depending on licensee policy.	Notification of off-site management.	Notification of off-site management.	Notification of off-site management.
External public	Courtesy, at licensee discretion.	Mandatory for individuals who have requested notification within the EPZ.	Planned and instructive in accordance with the specific ERP.	Planned and instructive in accordance with the specific ERP.
Media	Reactive, as required.	Reactive, as required.	Proactive media management to local or regional interest.	Proactive media management to national interest.
Government	Reactive, as required. Notify AER if public or media is contacted.	Notify local AER field centre. Call local authority and health authority if public or media is contacted.	Notify local AER field centre, local authority, and health authority.	Notify local AER field centre, local authority, and health authority.
Actions				
Internal	On site, as required by licensee.	On site, as required by licensee. Initial response undertaken in accordance with the site-specific or corporate-level ERP.	Predetermined public safety actions are under way. Corporate management team alerted and may be appropriately engaged to support on-scene responders.	Full implementation of incident management system.
External	On site, as required by licensee.	On site, as required by licensee.	Potential for multi-agency (operator, municipal, provincial, or federal) response.	Immediate multi-agency (operator, municipal, provincial, or federal) response.
Resources				
Internal	Immediate and local. No additional personnel required.	Establish what resources would be required.	Limited supplemental resources or personnel required.	Significant incremental resources required.
External	None.	Begin to establish resources that may be required.	Possible assistance from government agencies and external support services, as required.	Assistance from government agencies and external support services, as required.

In British Columbia, NRM will classify incident as per the BC Energy Regulator incident classification matrix.



Incident Classification

Table 1. Consequence Ranking

Rank	Consequence (any one of the following)
4	<input type="checkbox"/> Major on site equipment or infrastructure loss <input type="checkbox"/> Major act of violence, sabotage, or terrorism which impacts permit holder assets <input type="checkbox"/> Reportable liquid spill beyond site, uncontained and affecting environment <input type="checkbox"/> Gas release beyond site affecting public safety
3	<input type="checkbox"/> Threats of violence, sabotage, or terrorism <input type="checkbox"/> Reportable liquid spill or gas release beyond site, potentially affecting public safety, environment, or property <input type="checkbox"/> HAZMAT worker exposure exceeding allowable <input type="checkbox"/> Major on site equipment failure
2	<input type="checkbox"/> Major on site equipment damage <input type="checkbox"/> A security breach that has potential to impact people, property or the environment <input type="checkbox"/> Reportable liquid spill or gas release potentially or beyond site, not affecting public safety, environment, or property
1	<input type="checkbox"/> Moderate on site equipment damage <input type="checkbox"/> A security breach that impacts oil and gas assets <input type="checkbox"/> Reportable liquid spill or gas release on location <input type="checkbox"/> **Occurrence of magnitude 4.0 or greater induced earthquake within 3 km of oil and gas operations or any earthquake which is felt on surface within a 3 km radius of oil and gas operations
0	<input type="checkbox"/> No consequential impacts

**** For this consequence criteria, a probability score of 2 or higher must be used.**

Table 2. Probability Ranking

Rank	Probability (any one of the following)
4	<input type="checkbox"/> Uncontrolled, with control unlikely in near term
3	<input type="checkbox"/> Escalation possible; under or imminent control
2	<input type="checkbox"/> Escalation unlikely; controlled or likely imminent control
1	<input type="checkbox"/> Escalation highly unlikely; controlled or imminent control
0	<input type="checkbox"/> Will not escalate; no hazard; no monitoring required

Table 3. Incident Risk Score and Classification

Consequence _____ + Probability _____ = Risk Score _____ (this must be completed)

Risk Score	Assessment Result
Minor (1-2)	Notification Only ; permit holder must notify the BCER online within 24 hours using the Form A: Minor Incident Notification Form (http://www.bcer.ca/node/11188/download) . In addition to Form A, spills must also be reported to EMBC.

Moderate (3-4)	Level-1 Emergency; immediate notification (call EMBC)
Major (5-6)	Level-2 Emergency; immediate notification (call EMBC)
Serious (7-8)	Level-3 Emergency; immediate notification (call EMBC)

BCER Incident Classification Matrix		Probability					
		4	3	2	1	0	
		Uncontrolled, with control unlikely in near term	Escalation possible; under or imminent control	Escalation unlikely; controlled or likely imminent control	Escalation highly unlikely; controlled or imminent control	Will not escalate; no hazard; no monitoring required	
Consequence	4	<input type="checkbox"/> Major on site equipment or infrastructure loss <input type="checkbox"/> Major act of violence, sabotage, or terrorism which impacts permit holder assets <input type="checkbox"/> Reportable liquid spill beyond site, uncontained and affecting environment <input type="checkbox"/> Gas release beyond site affecting public safety	Level 3	Level 3	Level 2	Level 2	Level 1
	3	<input type="checkbox"/> Threats of violence, sabotage, or terrorism <input type="checkbox"/> Reportable liquid spill or gas release beyond site, potentially affecting public safety, environment, or property <input type="checkbox"/> HAZMAT worker exposure exceeding allowable <input type="checkbox"/> Major on site equipment failure	Level 3	Level 2	Level 2	Level 1	Level 1
	2	<input type="checkbox"/> Major on site equipment damage <input type="checkbox"/> A security breach that has potential to impact people, property or the environment <input type="checkbox"/> Reportable liquid spill or gas release potentially or beyond site, not affecting public safety, environment, or property	Level 2	Level 2	Level 1	Level 1	Minor Notification Form
	1	<input type="checkbox"/> Moderate on site equipment damage <input type="checkbox"/> A security breach that impacts oil and gas assets <input type="checkbox"/> Reportable liquid spill or gas release on location <input type="checkbox"/> ** Occurrence of magnitude 4.0 or greater induced earthquake within 3 km of oil and gas operations or any earthquake which is felt on surface within a 3 km radius of oil and gas operations	Level 2	Level 1	Level 1	Minor Notification Form	Minor Notification Form
	0	<input type="checkbox"/> No consequential impacts	Level 1	Level 1	Minor Notification Form	Minor Notification Form	No Notification Required

Minor Incidents

The permit holder must report the minor incident to the BCER within 24 hours, by electronic submission through the Online Minor Incident Reporting System, operated through KERMIT. The incident must be reported by electronic submission by the permit holder incident representative.

A copy of the **Form A: Minor Incident Notification Form** and the Incident Classification Matrix can be found on the Emergency Response and Safety section of the BCER's website to help the permit holder gather the information required before entering it online.

If the minor incident involves a spill, EMBC must be called immediately at 1-800-663-3456 for a DGIR number to be assigned.

If the incident receives a score of Level 1, 2, or 3, it must be reported to the BCER immediately (**within 1 hour**) through EMBC's incident reporting line at 1-800-663-3456.

BCER staff will enter initial incident information and follow up with permit holder contacts to obtain more information.

Local Indigenous nations must be notified as soon as possible after any immediate actions are taken to ensure public safety or minimize immediate environmental impacts.

Form C outlines the information that will be requested by BCER emergency management staff following any Level 1, 2 or 3 incident, as defined in the BCER Incident Classification Matrix found on the BCER's website.

"All incidents involving a **pipeline** must submit a **Form D**:

Permit Holder Post Incident Report Form within 60 days by email to BCER EMP@bc-er.ca. A Permit Holder Post Incident Report Form may be required to be submitted for other minor incidents upon request by a BCER employee." The form can be found on the Regulator's website.

Incident Ownership

- The Area Director is responsible for the completion of an investigation. They are the People Leader most familiar with Workers and operations, can access information, assign personnel, and have the authority to take immediate action. All other groups act in a support role.
- The Incident Owner is responsible to:
 - Accept or transfer ownership of the event.
 - Verify the severity or potential severity.
 - Select a Lead Investigator and provide them sufficient resources.
 - Updates management on Incident investigation progress within 10 days of the event for incidents that meet a Severity Rating of 3 or higher (actual or potential).
 - Update the Incident Database.
 - Perform causal analysis.
 - Review and accept the investigation report.
 - Implement CAPA.
 - Verify completion of CAPA.
 - Present Investigation Report to MCR; and
 - Communicate results (findings/lessons learned/CAPA).

Share Learning

- To create a learning organization, it is critical to share learnings across the organization. We can learn the lesson once, in one location, and share that learning with the entire organization.

Identify Lessons Learned

- Not all lessons learned have organization wide application. The Incident Owner, with support from: Leadership; SME; and technical staff, will review the investigation learnings and identify the lessons to share. Early engagement of the Legal Department is critical, as their approval is required for wider distribution.
- Consider the following when selecting lessons:
 - CAPA that affect organization-wide systems; and
 - Risk tolerance factors and human factors, uncovered in an investigation that have broad applicability to the organization.

Communication Tools:

- Initial Incident Alert

- Use the Initial Incident Alert when timely action is required to prevent similar events. The intent of the Initial Incident Alert is to:
 - Notify the organization that an event has occurred.
 - Identify the issues; and
 - Outline interim actions.

Bulletin

- Use a Bulletin when the investigation is complete, and action is required to prevent similar events.
- Use the Bulletin template for general communications.

DOCUMENTATION

- BCER Incident Reporting Instructions and Guidance
- BCER Online Minor Incident Reporting System Users Guide
- BCER Form A: Minor Incident Notification Form
- BCER Form C – Emergency Incident Form
- BCER Incident Classification Matrix
- BCER Incident Reporting PowerPoint July 2018
- BCER Online Minor Incident Reporting System Q&A

REFERENCES

8 Evaluation and Continual Improvement

Evaluations

INTRODUCTION

This section explains the process for evaluation and continual improvement.

Evaluation serves several purposes:

- Improves field operations compliance.
- Helps meet regulatory and corporate requirements.
- Promotes consistency across field operations.
- Provides a method of integrating new operations into existing operations.
- Helps to familiarize operation employees with emergency management compliance requirements.

PURPOSE AND SCOPE

This section applies to all emergency response evaluations. The Company will conduct assessments to evaluate the emergency response capacities and capabilities.

NRM has determined that the federal (CER) and provincial (BC and AB) regulatory requirements are substantially the same. This determination will enable NRM to hold single exercise to which several regulators can attend and evaluate.

RESPONSIBILITIES

People Leader shall:

- Assist the Emergency Management Program Coordinator during the assessment process.
- Resolve any assessment findings.
- Complete an Assessment Review Report to document the actions to be taken to resolve any deficiencies.

Emergency Management Program Coordinator:

- Complete Exercise Assessment Reports discussing all deficiency resolutions and items still outstanding.
- Ensure exercise assessment reports are submitted with 30 days of completion of event.
- Develop the schedule to complete the assessments.
- Perform the assessment with the Assessment Team members.
- Write the assessment report documenting the assessment findings.
- Assist operations personnel with the Assessment Review Report.

Area Safety Advisor shall:

- Assist People Leader with resolving any assessment findings.
- Assist People Leader with the Assessment Review and Final Assessment Reports.

REQUIREMENTS

Exercise Evaluation Process.

- All emergency response exercise will be evaluated.
- NRM Emergency Management Program Coordinator will use the BCER's exercise evaluation form (full scale and tabletop version)
- When Regulatory Bodies are present (BCER, AER or CER) they will use their exercise evaluation processes and form.
- Evaluations will be used to confirm knowledge, skills and ability of field emergency response teams to respond effectively to incidents relevant to their operations.
- The evaluation will also consider:
 - Complexity of scenario,
 - Potential worse-case scenario,
 - Gaps in training,
 - Gaps in plans,
 - And emergency program capacity.
- Exercise evaluations will grade the components of the emergency response as:
 - Satisfactory – meaning NRM has demonstrated an effective emergency management process.
 - Satisfactory with conditions – meaning most elements of a competent emergency management process are in place and corrective actions are required.
 - Unsatisfactory – meaning NRM needs significant effort to meet regulatory requirements and corrective and preventive actions are required.
- The exercise evaluation report shall be submitted to the BCER or other regulatory bodies within 30 days of completing the exercise.

DOCUMENTS

- BCER M3 Exercise Notification Form
- BCER Functional/Full Scale Exercise Audit Form
- BCER Tabletop Exercise Audit Form

REFERENCES

Corrective and Preventive Action

INTRODUCTION

Corrective and Preventive Action (CAPA) are taken to systematically resolve non-conformances and continuously improve the Emergency Management Program (EMP).

PURPOSE AND SCOPE

To describe the process, by which the NRM follows to address non-conformances to the Emergency Management program, identified from incidents, evaluations, audits, assessments, management reviews and through stakeholder engagement.

RESPONSIBILITIES

Management shall:

- Generate a CAPA from planned or unplanned assurance activity such as:
 - Management review meeting
 - Recurring problems with procedures
 - Previous corrective or preventive actions are no longer effective.
 - Audit findings
 - Assessment findings
 - Incidents
- Use the CAPA tools provided by the Assurance team.

Emergency Management Program Coordinator shall:

- Report identified program non-conformances to the Director EHS.
- Initiate corrective and preventive actions to address non-conformances within the Emergency Management Program.

REQUIREMENTS

There are seven steps to an effective CAPA procedure:

1. Initiate the CAPA.
2. The program owner (Director EHS) acknowledges the non-conformance.
3. An investigation into the systemic cause of the non-conformation is completed.
4. A plan to correct the non-conformation is developed, proposed, approved, and implemented.
5. The CAPA plan at a minimum should list:
 - The action
 - Assigned to an individual.
 - A due date
6. The program owner (Director EHS) verifies the effectiveness of the CAPA.
7. The CAPA is then closed.

DOCUMENTS

NRM Corrective and Preventative Action Process

9 Public Awareness and Involvement

Communicating Emergency Information to the Public and Stakeholders

INTRODUCTION

NRM is committed to an open dialogue and informed decision making through regular communication with all person and stakeholders (***indigenous peoples, communities, municipalities, or other stakeholders***) in the Emergency Planning Zones (EPZs).

Frequent and consistent communication is an integral part in achieving a safe work environment and is an effective way of raising emergency management awareness.

PURPOSE AND SCOPE

To ensure that all persons or entities (***indigenous peoples, communities, municipalities, or other stakeholders***) within our emergency planning zones (EPZs) have information about NRM's emergency response program and plans and how they will be impacted or effected in the event of an emergency.

NRM is required to share information with persons or entities (***indigenous peoples, communities, municipalities, or other stakeholders***) in our Emergency or Hazard Planning Zones (EPZs).

RESPONSIBILITIES

People Leaders Shall:

- Ensure that each facility has signs posted that clearly display the 24-hour emergency contact number at the primary entrance.
- Ensure that all calls to the 24-hour emergency number initiate immediate action.
- Carry out public and local authority notification and consultation when required.

People Leaders Shall:

- Ensure that each facility has signs posted that clearly display the 24-hour emergency contact number at the primary entrance.
- Ensure that all calls to the 24-hour emergency number initiate immediate action.
- Carry out public and local authority notification and consultation when required.

Emergency Management Program Coordinator will:

- Consult and cooperation with ***indigenous peoples, communities, municipalities, or other stakeholders*** in the development of new emergency response plans.
- Ensure that NRM provides a copy of the current emergency response plan to all entities (***indigenous peoples, communities, municipalities, or other stakeholders***) annually.
- Develop and maintains a First Responder information presentation to provide upon request.
- Provide details of the emergency response procedures in place and to address questions and concerns that may arise; and address any request for additional information or for modifications to the ERP by the individual consulted.

- Contact municipalities, industry, and other agencies or organizations (e.g., police, fire departments, emergency medical services, 911 call centers, mutual aid partners, contractors, spill cooperatives, etc.) to ensure sufficient resources are available to respond effectively and efficiently to a major incident (e.g., a fire or a large-volume hydrocarbon release), as determined by the company's hazard assessments.

NRM Lands and Right of Way Department:

- NRM will consult and coordinate with the public and other entities on the development of emergency response plans and information pamphlets.
- Will ensure that NRM provides information pamphlets to all persons or entities located with the EPZs regarding the potential hazards of our activities.
- Will develop, maintain, and deliver public information pamphlets to all residents and persons living within an EPZ or if they are required to transit an EPZ to access their residence or tenure.
- Will maintain a list of residents and stakeholders in each EPZ.
- Will exchange information with residents and stakeholders to ensure that there is a process to contact persons or other entities in an EPZ and if necessary, evacuate them in the event of an emergency.
- Ensure that consultation, cooperation, and notification is completed prior to applying for an oil and gas activity in British Columbia, Alberta or with the Federal Regulator.

Persons or Entities (*indigenous peoples, communities, municipalities, or other stakeholders*) within the EPZ shall:

- Be consulted during the development of all new emergency plan development.
- Be provided an updated emergency response plan annually.
- Be provided with Emergency response information (plan or pamphlet) providing information on what to do in the event of an emergency.

REQUIREMENTS

Notification and Consultation (*indigenous peoples, communities, municipalities, or other stakeholders*)

- NRM will carry out public and local authority notification and consultation (face to face visits, letters, telephone contact) as required by AER Directive 71 and BCER Emergency Management Regulation and CER.
- NRM will consult and cooperate with communities, municipalities, and other stakeholders when enacting evacuation plans through telephone and face to face meetings.
- The emergency response plans and pamphlets contain the area specific notification procedures.
- Those notification procedures are provided to residents, schools, industry, government agencies, and businesses within the EPZs that may be impacted during an incident.
- NRM will maintain a list of any concerns raised by persons and entities during the development of emergency response plans, public consultation, and during emergency response.
- Those concerns will be addressed through a corrective and preventive action plan and used to ensure continual improvement of the NRM Emergency Management Program.

Situation	Notification and consultation requirements	
Developing a site-specific ERP - sour well - sour operations - HVP pipeline - cavern storage facility	<p>Notification of and consultation with members of the public within the EPZ are required prior to submitting an application to the AER for approval when</p> <ul style="list-style-type: none"> - developing a sour well site-specific drilling and/or completion ERP - developing a sour operations ERP - developing an ERP for HVP pipeline and cavern storage facilities <p>Consultation is required with the local authority and others listed in section 4.2 to confirm and coordinate each party's roles and responsibilities.</p> <p>Notification and consultation are required if an existing EPZ either increases or decreases from its current size based on the following:</p>	
	Change	Action
Change in EPZ size	New EPZ is smaller than current EPZ	Residents who are no longer within the EPZ and the local authority are to be notified and informed of the change.
	New EPZ is larger than current EPZ	Residents within the expanded portion of the EPZ and the local authority are to be notified and informed of the change in accordance with the requirements in section 4.3.

Public Awareness and Involvement

- NRM will request that person or entity (*indigenous peoples, communities, municipalities, or other stakeholders*) within the EPZ provide:
 - Name and contact information that can be used for ongoing communications and for contact in the event of an emergency.
 - Provide the preferred method of contact for regular communications and emergencies. It should include:
 - 24-hour telephone number.
 - Legal address of any residence, business, or facility.
 - In the event the legal address is not tied to the actual location being occupied the address or location that should be used by emergency responders.
 - Email address for non-emergency communications.
 - Any other method of communication as identified by the person or entity.
 - Additional relevant information regarding other occupants and their contact information.
- Persons or other entities will be given the opportunity to identify concerns, vulnerabilities or make requests to NRM regarding response procedures and individual emergency response requirements.
- Issues that should be considered and noted include:
 - Health sensitivities.
 - Mobility Issues.
 - Effects on and needs of pets and livestock.
 - Concerns about security of premises during an emergency.
- NRM will prepare an information pamphlet to provide to each person or entity that contains information to assist them in the event of an emergency. The pamphlet will contain:
 - Overview,

- Why you are being contacted,
 - What to do during an emergency,
 - Warning signs,
 - Levels of emergency,
 - Emergency Procedures,
 - Shelter In-Place Procedure,
 - Procedure for Evacuation,
 - Ignition Procedure,
 - 24-hour emergency number,
 - Company overview,
 - Key Government Contacts,
 - Reception Center Location,
 - And any Potential Health Impacts.
 - A map of the emergency planning zone that indicates how the person or other entity can get to safety in the event of an emergency.
- NRM will ensure that the emergency communication system (cell phone, telephone, and radio) can enable communications between:
 - Emergency response staff (employee and contractor).
 - The public (persons and other entities).
 - The regulator (BCER, AER or CER).
 - Other government departments (provincial health, environment or safety) or Supporting Agencies (Transport Canada)
 - NRM will contact all municipalities when any part of the EPZ is located within the right of way of an arterial or municipal highway within that municipality.
 - NRM will contact any Rights Holders within the EPZ. (Forestry License Holder, Grazing Permit Holder, Guide License Holder, Mineral Claim Holder, Water License Holder)
 - NRM will contact any federally owned installation or federally regulated land within the EPZ including:
 - **Indigenous Peoples / First Nations.**
 - Military Installations.
 - Railways.
 - National Parks.
 - Information collected from the person or other entity may be personal information as defined by the Personal Information Protection Act (PIPA). Private sector organizations that collect personal information in British Columbia are subject to the Act, which sets out the rules for how personal information may be collected, used, or disclosed.
 - NRM will comply with PIPA when collecting information from persons or entities within the EPZ.

Conducting Consultation and Cooperation

- NRM will conduct public consultation through face-to-face visits with persons and other entities in the EPZ.
- Offer to conduct the consultation by telephone if residents do not wish to meet with NRM representatives face to face.
- Offer to send residents the NRM public awareness pamphlet by regular or registered mail if they do not wish to participate in the consultation process.

- Review key emergency response information with members of the public identified in the EPZ who wish to participate in the consultation process, to familiarize them with potential emergencies and corresponding public protection measures pertaining to emergency response procedures.
- The Emergency Management Program Coordinator will provide details of the emergency response procedures in place and to address questions and concerns that may arise; and address any request for additional information or for modifications to the ERP by the individual consulted.

DOCUMENTS

- Resident Contact Information Sheets - within each Emergency Response plan that indicates.
 - Permanent and Part time residents.
 - Business owners, operators and industrial operators including all oil and gas operators with staffed facilities.
 - Private and public recreation property owners and/or operators (campgrounds, trapper cabins, private cabins) in an adjacent to the EPZ.
 - Users of public facilities, such as schools and community centers adjacent to the EPZs.
 - Non-Resident landowners or famers renting land who do not dwell on the property but whose lands are within an EPZ.
- NRM Public Awareness Pamphlets (Public Information Package).
- NRM Natural Gas Awareness PowerPoint for First Responders.

10 Management Review

Management Review

INTRODUCTION

Management review can help improve the quality of the emergency management program.

PURPOSE AND SCOPE

The Management Review is a quality control process whereby the management reviews and evaluates the continued suitability, adequacy, and effectiveness of the emergency Management program.

The objectives are:

- To review:
 - The status of actions from previous management reviews.
 - Changes in external and internal issues that are relevant to the emergency management program including:
 - Legal requirements
 - Risk and opportunities
 - The extent to which the policy and aims have been met
 - Incident, non-conformances, corrective actions, and continual improvement
 - Monitoring and measuring results.
 - Audit results
 - Consultation with workers
 - Adequacy of resources
- The management review findings may result in corrective action recommendations which, when implemented, will help eliminate unsafe behaviors, and improve work practices and conditions.

RESPONSIBILITIES

Leadership and Management:

- Review management review information provided by Emergency Management program owner.
- Attend and participate in management review meetings.
- Make recommendations for continuous improvement to the Emergency Management program.

Requirements

Initiation

- The Emergency Management program must be reviewed as a minimum every three years or more often if there is a change in circumstances at the work site that create or could create a hazard to workers and revise as appropriate. (AB OHS Act Part 5 section 37 (4))

Proceedings

- The Integrated Management System Coordinator:
 - Set a date, time, and location for the review,
 - Distribute the agenda.
- The Director EHS or designee will:
 - Prepare data for review,

Recommended Action Items

- The Area Management is accountable for seeing that all recommended action items are completed and documented within an approved timeline as agreed upon during the review.
- Action items will be added and tracked in the data management systems.

Summaries

- Director EHS or designee will develop a summary after each review giving a brief description findings and recommendations.
- This summary is provided to the senior leadership and the Operations Managers.

Information Sharing

- Learnings from management reviews will be shared via other communication avenues such as presentations, etc. as determined by the operations management team.
- These communications will be distributed in a timely manner and are geared to share learnings broadly across the organization through all employee meetings.

11 Appendix:

Acronyms

Acronym	Meaning	Acronym	Meaning
ABSA	Alberta Boilers Safety Association	IIZ	Initial Isolation Zone
AEMA	Alberta Emergency Management Agency	ISC	Indigenous Services Canada
AER	Alberta Energy Regulator	LA	Local Authority
BCER	British Columbia Energy Regulator	LBV	Line Block Valve
AHS	Alberta Health Services	LEL	Lower Explosive Limit
AT	Alberta Transportation	LPG	Liquefied Petroleum Gas
BLEVE	Boiling Liquid Expanding Vapour Explosion	MARS	Mapping and Response System
CANUTEC	Canadian Transport Emergency Centre	MD	Municipal District
CAPP	Canadian Association of Petroleum Producers	MEP	Municipal Emergency Plan
CEPA	Canadian Environmental Protection Act	MOP	Maximum Operating Pressure
CERC	Corporate Emergency Response Centre	CER	Canadian Energy Regulator
CISD	Critical Incident Stress Debriefing	NGL	Natural Gas Liquids
CPE	Communications and Public Engagement	NOTAM	Notice to Airmen
CSA	Canadian Standards Association		
DFO	Department of Fisheries and Oceans	OHS	Occupational Health and Safety
EAZ	Emergency Awareness Zone	OSCAR	Oil Spill Containment and Recovery
ECCC	Environment & Climate Change Canada	OSCP	On-Site Command Post
EMBC	Emergency Management BC	PAD	Protective Action Distance
EMO	Emergency Measures Organization	PAZ	Protective Action Zone
EOC	Emergency Operations Centre	POC	Provincial Operations Centre
EPZ	Emergency Planning Zone	PPB	Parts Per Billion
ERAC	Emergency Response Assistance Canada	PPE	Personal Protective Equipment
ERP	Emergency Response Plan	PPM	Parts Per Million
ESD	Emergency Shut Down	RCMP	Royal Canadian Mounted Police
ESDV	Emergency Shut-Down Valve	RD	Rural District
ETA	Estimated Time of Arrival	REOC	Regional Emergency Operations Centre
FH Order	Fire Hazard Order	RHA	Regional Health Authority
FNIHB	First Nations and Inuit Health Branch – Health Canada	RM	Rural Municipality
GEOC	Government Emergency Operations Centre	SABA	Supplied Air Breathing Apparatus
HPZ	Hazard Planning Zone	SCBA	Self-Contained Breathing Apparatus
HVAC	Heating Ventilation Air Conditioning	SDS	Safety Data Sheet
HVP	High Vapour Pressure	SO ₂	Sulphur Dioxide
HVPL	High Vapour Pressure Liquid	STARS	Shock Trauma Air Rescue Society
H ₂ S	Hydrogen Sulphide	TDG	Transportation of Dangerous Goods
IAP	Incident Action Plan	WCSS	Western Canadian Spill Service
ICS	Incident Command System	WHMIS	Workplace Hazardous Materials Information System

Appendix: ERP Reference Material,

Glossary of Terms

Adjacent to

Within 25 m.

Air Quality Monitoring

Measurement of atmospheric concentrations of a hazardous substance, such as H₂S or SO₂.

Alberta Energy Regulator (AER)

The AER ensures the safe, efficient, orderly, and environmentally responsible development of hydrocarbon resources over their entire life cycle. This includes allocating and conserving water resources, managing public lands, and protecting the environment while providing economic benefits for Albertans.

Alert (Alberta specific)

An incident that can be handled on-site by the licensee through normal operating procedures and is deemed to be a very low risk to members of the public.

Auto-ignition temperature

All NGL products are flammable and will flash at extremely low temperatures. An open flame or spark is not necessary to cause ignition. Any hot surface which exceeds the auto-ignition temperature of a product can cause a fire if the vapours reaching the hot surface are within their flammable range.

Best practices

A technique or methodology that, through experience and research, has proven to reliably lead to a desired result. A commitment to using the best practices in any field is a commitment to using all the knowledge and technology at one's disposal to ensure success.

Body of water

Streams, lakes, and rivers.

Boiling Liquid Expanding Vapour Explosion (BLEVE)

Boiling Liquid Expanding Vapour Explosion, which is associated with natural gas liquids and high vapour pressure liquids.

Boiling point

This is the temperature that a liquid changes to a gas. NGL products change to a gas at extremely low temperatures and will absorb heat from the surrounding environment during the phase change. Therefore, caution must be used when working with NGLs because contact with flesh can reduce the temperature of the flesh to the NGL boiling point and cause severe frostbite.

BC Energy Regulator (BCER)

The BCER is the lead agency for all regulated oil and gas related activities within British Columbia.

British Columbia Emergency Management (EMBC) (*British Columbia specific*)

Aids local governments in analyzing hazards and risks, develop and test emergency plans, train and organize emergency staff and volunteers. EMBC also manages all agencies in the event of an emergency or disaster, which cannot be handled locally.

Businesses

Industrial operators, retail outlet operators, suppliers, residents, outfitters, foresters and other entities that normally operate within the Emergency Planning Zone, but do not necessarily reside in the Emergency Planning Zone.

Closure order (*British Columbia specific*)

When the BCER believes that, because of hazardous conditions in a field or at a well, it is necessary or expedient to close an area and to shut out all persons except those specifically authorized, the BCER may make an order in writing setting out and delimiting the closed area. For Alberta see Fire Hazard (FH) Order.

Corporate Emergency Response Plan

This Emergency Response Plan is to facilitate a coordinated response by company executive and management personnel to an emergency, which may affect the company or its affiliated companies. The Corporate Emergency Response Plan is an integral part of all site-specific company Emergency Response Plans and procedures.

Critical Incident Stress Debriefing (CISD)

Critical Incident Stress Debriefing is a specially structured counselling process between a counselor and those who are directly involved and/or impacted by an incident.

Critical sour well (*Alberta specific*)

A well with an H₂S release rate greater than 2.0 m³/s or wells with lower H₂S release rates in close proximity to an urban centre as defined in ID 97-6: Sour Well Licensing and Drilling Requirements.

Emergency

A present or imminent event outside the scope of normal operations that requires prompt coordination of resources to protect the health, safety, and welfare of people and to limit damage to property and the environment.

Emergency Operations Centre (EOC)

An Emergency Operations Centre is a designated facility in a suitable location (i.e. head office, regional office, etc.) established by the permit holder to support Incident Command and to manage the larger aspects of an emergency. In a high-impact emergency, there may be a number of EOCs established to support the response. They may include the Incident Command Post, regional and corporate EOCs, a municipal EOC (MEOC), and the provincial government EOC (POC).

Emergency Awareness Zone (EAZ) (*British Columbia specific*)

A distance outside of the EPZ where public protection measures may be required due to poor dispersion of the hazard. This area is twice the radius of the Emergency Planning Zone (EPZ).

Emergency Planning Zone (EPZ)

The geographical area that surrounds a well, pipeline or facility containing hazardous product that requires specific emergency response planning by the licensee.

Emergency Response Plan (ERP)

A comprehensive plan to protect the public that includes criteria for assessing an emergency situation and procedures for mobilizing response personnel and agencies and establishing communication and coordination among the parties.

Emergency Support Team (EST)

Provides advice and logistical support to the Field Response Team and Incident Commander in particular. The team is comprised of head office personnel and any contract emergency experts.

EOC Director

The EOC Director activates the Corporate Emergency Operations Centre with staff to provide advice and support to the Incident Commander (Field Response Team).

EOC Director, continued

Note: If the emergency happens outside an area that has a site-specific Emergency Response Plan, only then will the EOC Director assume or appoint the role of Incident Commander and dispatch a Field Response Team to the incident site.

ERCBH2S (*Alberta specific*)

A software program that calculates site-specific EPZs using thermodynamics, fluid dynamics, atmospheric dispersion modelling and toxicology.

Evacuation

Organized, phased, and supervised withdrawal of members of the public from dangerous or potentially dangerous areas to safe areas.

Tactical Evacuation – A measure to immediately move people to a safe area as part of emergency response and operations. Does not require approval from local authority but the local authority may enact an evacuation order, if required, and local authority must be advised if a tactical evacuation has occurred.

Planned Evacuation – An evacuation coordinated by local government authority that can authorize evacuation alerts and orders.

Explosive Limits (Lower and Upper)

Each gaseous hydrocarbon substance has a minimum (Lower Explosive Limit or LEL) and a maximum (Upper Explosive Limit or UEL) percentage in air below or above which combustion will not take place. Explosive limit and flammability limit are used interchangeably. The terms "Too Lean" and "Too Rich" are used for levels outside of the explosive range.

Facility

Any building, structure, installation, equipment, or appurtenance that is connected to or associated with the recovery, development, production, handling, processing, treatment, or disposal of hydrocarbon-based resources or any associated substance or wastes. This does not include wells or pipelines.

Field Response Team (FRT)

Company and contractor personnel directly involved in controlling the incident at the emergency site and from the EOC.

Fire Hazard (FH) Order (*Alberta specific*)

An order issued by the AER during an emergency to restrict public access to a specified area.

Functional Exercise

As described in CAN/CSA Z246.2-18, an activity designed to evaluate capabilities and multiple functions using simulated response. A functional exercise will simulate the deployment of resources and rapid problem solving. Participants will evaluate management of the command and coordination centers and assess the adequacy of emergency response plans and resources.

Gathering system

The network of pipelines, pumps, tanks, and other equipment that carries oil and gas to a processing plant or to other separation equipment.

Hazard

A situation with potential to harm persons, property, or the environment.

Hazard Planning Zone (HPZ) (*British Columbia specific*)

A geographical area (a) determined by using the hazard planning distance as a radius, and (b) within which persons, property or the environment may be affected by an emergency. Defined in Emergency Management Regulation.

Hazardous product

A substance released in quantities that may harm persons, property, or the environment.

High Vapour Pressure Liquids (HVPLs)

HVPLs have a vapour pressure greater than 240 kPa at 38°C (34.8 PSIG @ 100°F) and include ethane, propane, butane, and pentanes plus, either as a mixture or as a single component.

Note: Comparisons

Gasoline - Vapour pressure between 55 and 100 kPa at 38°C (8 - 14.5 PSIG @ 100°F).

Condensate - Often a component of a propane/butane mixture, has a vapour pressure of 59 to 72 kPa at 38°C (8.6 - 10.4 PSIG @ 100°F).

High Vapour Pressure (HVP) plume dispersion geometry

An uncontrolled release of NGL product on flat terrain will form a vapour plume as it disperses. If the vapour plume formed at the leak site has not been ignited, it will most likely reach its maximum size within the first half hour of the leak occurrence. Two unique features of an NGL plume are:

The downwind edge of the plume tends to spread out significantly forming a broad frontal edge. Under certain conditions, the plume will travel upwind for a short distance.

High Vapour Pressure (HVP) pipeline

A pipeline system conveying hydrocarbons or hydrocarbon mixtures in the liquid or quasi-liquid state with a vapour pressure greater than 110 kilopascals absolute at 38°C. Some examples are liquid ethane, ethylene, propane, butanes, and pentanes plus.

High Vapour Pressure (HVP) products

HVP products have a vapour pressure greater than 240 kPa at 38°C (34.8 PSIG at 100°F) and include ethane, propane, butane and pentanes plus, either as a mixture or as a single component. A leak from a vessel or pipe containing HVP products can result in a BLEVE.

Hydrogen sulphide (H₂S)

A naturally occurring gas found in a variety of geological formations and also formed by the natural decomposition of organic matter in the absence of oxygen. H₂S is colourless, has a molecular weight that is heavier than air, and is extremely toxic. In small concentrations, it has a rotten egg smell and causes eye and throat irritations. Depending on the particular gaseous mixture, gas properties, and ambient conditions, a sour gas release may be:

Heavier than air (dense), so it will tend to drop towards the ground with time, Lighter than air (buoyant), so it will tend to rise with time, or

About the same weight as air (neutrally buoyant), so it will tend to neither rise nor drop but with time disperse.

Hydrogen sulphide (H₂S) release rate

The rate that sour gas escapes into the atmosphere is often calculated for sour gas wells. It is usually defined in cubic metres per second (m³/s). The size of the emergency planning zone is estimated from the H₂S release rate.

Hydrogen sulphide (H₂S) release volume

The volume of sour gas that escapes into the atmosphere is often calculated for facilities that have a defined retention volume, usually defined in cubic metres. Emergency planning zone sizes are often estimated using the volume of H₂S that may be released from a facility. More sophisticated models may also incorporate the rate at which the release could occur and the nature of the gas and the atmospheric conditions when determining the emergency planning zone size.

Hyper-susceptible

A person or persons who may be abnormally reactive to a given exposure to toxins and whose reaction may occur in orders of magnitude greater than that of the susceptible population. Hyper-susceptible include those persons with impaired respiratory function, heart disease, liver disease, neurological disorders, eye disorders, severe anemia, and suppressed immunological function.

Ignition

Process of setting a hydrocarbon release on fire.

Ignition Team

Consists of at least two personnel trained in plume ignition.

Imminent Hazard

Means a situation that is likely to cause an immediate threat to human life, an immediate threat of serious physical injury, an immediate threat of serious adverse health effects, or a serious risk of

irreparable damage to the environment if no immediate action is taken. (e.g., wildfire, hazardous waste release, tornado, flood, etc.,) **These are described in the Emergency Response Plans.**

Incident

An unexpected occurrence or event that requires action by emergency personnel to prevent or minimize the impacts on people, property, and the environment.

Incident classification

A system that examines the risk level to members of the public following an incident and assigns a level of emergency based on the consequence of the incident and the likelihood of the incident escalating.

Incident Command Post (ICP)

A designated place where the Incident Commander and staff is located. The ICP should be located outside of the hazard area, but close to the incident. The ICP may be a vehicle, trailer, fixed facility or any location suitable to accommodate the function.

Incident Commander

Manages the overall response to emergency incidents. The Incident Commander is responsible for: developing objectives, strategies and tactics that guide the response; assigning personnel to fill necessary positions; ensuring the safety of all personnel; keeping internal and external stakeholders updated; coordinating with other response agencies.

Incident Command System (ICS)

A standardized, on-scene, all-hazard incident management system. The Incident Command System (ICS) is flexible in that it can be adapted for large and small incidents.

Initial Isolation Zone (IIZ)

An area in close proximity to a continuous hazardous release where indoor sheltering may provide limited protection due to proximity of release.

Incident Management System

A system used to coordinate preparedness and incident management.

Isolating the release

Ensuring access to the hazard area is controlled.

Level 1 Emergency (Alberta specific)

There is no danger outside the licensee's property, there is no threat to the public, and there is minimal environmental impact. The situation can be handled entirely by licensee personnel. There will be immediate control of the hazard. There is little or no media interest.

Level 1 Emergency (British Columbia specific)

There is no immediate danger to the public or environment as no H₂S has been released; the emergency is confined to the lease or company property.

Level 2 Emergency (Alberta specific)

There is no immediate danger outside the licensee's property or the right-of-way, but there is the potential for the emergency to extend beyond the licensee's property. Outside agencies must be notified. Imminent control of the hazard is probable but there is a moderate threat to the public and/or the environment. There may be local and regional media interest in the event.

Level 2 Emergency (*British Columbia specific*)

There is potential risk to the public or environment, as the emergency could extend beyond company property. However, control is still possible.

Level 3 Emergency (*Alberta specific*)

The safety of the public is in jeopardy from a major uncontrolled hazard. There are likely significant and ongoing environmental impacts. Immediate multi agency municipal and provincial government involvement is required.

Level 3 Emergency (*British Columbia specific*)

An immediate danger to the public or environment exists; control of the situation has been lost.

Licensee

The responsible duty holder as specified in legislation.

Liquid to gas expansion

NGL products will expand greatly when released to the atmosphere. For example, propane expands 272 times its liquid volume. Other products expand at different rates, but all have a high gas to liquid ratio.

Liquefied Petroleum Gas (LPG)

Mixture of heavier, gaseous hydrocarbons (butane and propane), liquefied as a portable source of energy.

Local Authority

A local authority is considered to be:

- 1) The council of a city, town, village or municipal district;
- 2) in the case of an improvement district or special area, the Minister of Municipal Affairs;
- 3) for a national park, the park superintendent or the park superintendent's delegate;
- 4) the settlement council of a Métis settlement; or
- 5) The band council of a First Nations Reserve.

Local State of Emergency

See State of local emergency.

Lower Explosive Limit (LEL)

The lowest concentration of gas or vapour (per cent by volume in air) that explodes if an ignition source is present at ambient temperatures.

M.D.

Municipal District

Major (full-blown) exercise

As described in CAN/CSA Z246.2-18, a multi-agency, multi-jurisdictional activity involving actual deployment of resources in a coordinated response, as if a real emergency had occurred. The full-scale exercise includes the mobilization of units, personnel, and equipment. Participants will assess plans and procedures and evaluate coordinated responses under crisis conditions.

Maximum Operating Pressure (MOP)

The maximum licensed operating pressure for a vessel or pipeline or a section of it.

Mobile air quality monitoring

Use of sophisticated portable equipment to track substances such as H₂S or SO₂ at very low parts per billion atmospheric concentrations.

Municipality

See local authority.

Municipal Emergency Operations Centre (MEOC)

The centre from which responsible municipal officials manage and support emergency operations within their jurisdiction, as well as formulate protective actions and provide public information. The centre has adequate workspace, maps, status boards, and communications capability.

Municipal Emergency Plan (MEP)

The emergency plan of the local authority.

Natural Gas Liquids (NGL)

These are hydrocarbons liquefied under pressure in field facilities or in gas processing plants. Natural gas liquids include ethane, propane, butane and pentanes plus and normally occur as a mixture of these compounds.

Physical Properties of NGL Products:

Colour - NGL products are colourless except when they include a condensate component, which gives them a light-yellow appearance. Releases during winter conditions can discolour snow. NGL products may appear as a white cloud when released to the atmosphere. This white cloud is formed by the condensing of moisture in the air.

Odour - Most NGL products have a mild petroleum odour. During pipeline transport NGL products are almost odourless.

Vapour Density - A measure of the mass per unit volume of the vapour (i.e. kg/m³). All NGL products transported by the company have a vapour density greater than air or a relative vapour density greater than 1.0.

NAV Canada

Canada's civil air navigation services provider, with operations coast to coast. NAV Canada provides air traffic control, flight information, weather briefings, aeronautical information services, airport advisory services, and electronic aids to navigation.

Notice to Airmen (NOTAM)

An order issued by Transport Canada restricting access to airspace in a defined area.

Notification

The distribution of project-specific information to participants that may be directly and adversely affected by the proposed energy development.

Odour complaint

A report that someone smells an offensive odour (may be sour gas) in the area.

Oil Spill Containment and Recovery Unit (OSCAR)

Trailer containing oil spill equipment for containment and recovery.

On-site command post (OSCP)

An emergency operations centre established in the immediate vicinity of the incident to provide immediate and direct response to the emergency and initially staffed by licensee personnel.

Partially controlled flow

A restricted flow of product at surface that cannot be shut off at the licensee's discretion with equipment on-site.

Personal consultation

Consultation through face-to-face visits or telephone conversations with all requisite individuals.

Petroleum industry

Refers to all petroleum industry operations.

Plume (gas plume)

An elongated mobile column of gas or smoke.

Protective Action Zone (PAZ)

An area downwind of a hazardous release where outdoor pollutant concentrations may result in life threatening or serious and possibly irreversible health effects on the public.

Protective Action Distance (PAD)

The distance from the incident to the EPZ outer boundary.

Provincial Operations Centre (POC)

An operations centre with the capacity to accommodate representatives from each government department.

Public

The group of people who may be or are impacted by an emergency (e.g., employees, contractors, neighbours, emergency response organizations, regulatory agencies, the media, appointed or elected officials, visitors, customers, etc., as appropriate).

Public facility (*Alberta specific*)

A public building, such as a hospital, rural school, or major recreational facility, situated outside of an urban centre that can accommodate more than 50 individuals and/or that requires additional transportation to be provided during an evacuation.

Public protection measures

The use of sheltering, evacuation, ignition, and isolation procedures to mitigate the impact of a hazardous release on members of the public.

Public Safety Group Supervisor

Member of the field response team. Individual charged with the responsibility of coordinating the evacuation or shelter of people in the emergency hazard Area. The Public Safety Group Supervisor reports to and may be located in the same location as the Incident Commander.

Publicly used development (*Alberta specific*)

Places where the presence of 50 individuals or less can be anticipated (e.g., places of business, cottages, campgrounds, churches, and other locations created for use by the non-resident public).

Publicly used facility (British Columbia specific)

Places where the presence of people can be anticipated. Examples include places of business, cottages, campgrounds, churches, and other locations created for use by the public. Includes any similar development the BCER may designate as a public facility.

Publicly used facility

Places where the presence of people can be anticipated. Examples include places of business, cottages, campground, churches, and other locations created for use by the public.

Reception centre

A centre established to register evacuees for emergency shelter, to assess their needs, and, if temporary shelter is not required because evacuees will stay elsewhere, to ascertain where they can be contacted.

Regional Emergency Operations Centre (REOC)

An operations centre established in a suitable location to manage the larger aspects of the emergency that is manned jointly by government and industry staff.

Residence

A dwelling that is occupied full time or part time.

Resident

Individual living in the area at a fixed location.

Resident data record

Form used to track the contact made with residents, businesses and transients.

Response zones (*Alberta specific*)

The Initial Isolation Zone (IIZ), Protective Action Zone (PAZ) and Emergency Planning Zone (EPZ).

Roadblock Crew

Personnel responsible for controlling access to the Emergency Hazard Area, reporting to the Public Safety Group Supervisor.

Rover

Member of the field response team. Individual responsible for assisting in the evacuation of the Hazard Area, reporting to the Public Safety Group Supervisor. May also be directed to shut-in / shut down equipment that may cause future safety hazards.

Rover Kit

A briefcase containing maps, forms, supplies and instructions needed by the Rover to carry out their duties.

S.A.B.A.

Supplied Air Breathing Apparatus.

S.C.B.A.

Self Contained Breathing Apparatus.

Serious injury

A serious injury includes the following:

- an injury that results in death;
- fracture of a major bone;
- amputation other than a portion of a finger or toe;
- loss of sight in an eye;
- internal hemorrhage;
- third degree burns;
- unconsciousness;
- An injury that results in paralysis (permanent loss of function).

Shelter-in-Place

Remaining indoors for short-term protection from exposure to toxic gas releases.

Sour gas

Natural gas, including solution gas, containing hydrogen sulphide (H₂S).

Sour gas release

An uncontrolled release of natural gas containing hydrogen sulphide (H₂S).

Sour multiphase product (*British Columbia specific*)

Any liquid that contains H₂S in the gas phase.

Sour multiphase pipeline (*British Columbia specific*)

A pipeline that transmits a multiphase product that contains more than 10 moles of H₂S per kilomole of natural gas in the gas phase.

Sour pipeline

Pipeline that conveys gas and/or liquid that contains sour gas.

Sour production facility

Facility that processes gas and/or liquid that contains sour gas

Sour well

An oil or gas well expected to encounter during drilling formations bearing sour gas or any oil or gas well capable of producing sour gas.

Special needs

Those persons for whom early response actions must be taken because they require evacuation assistance, requested early notification, do not have telephones, require transportation assistance, have a language or comprehension barrier, or have specific medical needs. Special needs also include those who decline to give information during the public consultation process and any residences or businesses where contact cannot be made.

Special sour well (*British Columbia specific*)

A designation that reflects the proposed well's proximity to populated centers and its maximum potential H₂S release rate during the drilling state. The casing or open-hole flow configuration is used in arriving at this designation.

Standing well

A well that has been drilled and cased but not perforated. A company is generally allowed to leave the well as standing for up to one year.

State of local emergency

A declaration by a local authority providing the necessary authority, resources, and procedures at the municipal level to allow an emergency to be resolved effectively and efficiently.

Sulphur dioxide (SO₂)

A colourless, water-soluble, suffocating gas formed by burning sulphur in air; also used in the manufacture of sulphuric acid. SO₂ has a pungent smell similar to a burning match. SO₂ is extremely toxic at higher concentrations. The molecular weight of SO₂ is heavier than air; however, typical releases are related to combustion, which makes the gaseous mixture lighter than air (buoyant).

Surface development

Dwellings that are occupied full-time or part-time publicly used development, public facilities, including campgrounds and places of business, and any other surface development where the public may gather on a regular basis. Surface development includes residences immediately adjacent to the EPZ and those from which dwellers are required to egress through the EPZ.

Susceptible

The subpopulation of persons who may be considered more sensitive to the effects of H₂S and SO₂, including the elderly, pregnant women, and the very young, particularly preschool-aged children.

Tabletop exercise

As described in CAN/ CSA Z246.2-18, an informal exercise generally used to review resource allocations and roles and responsibilities of personnel and to familiarize new personnel with emergency operations without the stress and time constraints of a major exercise.

Technically complete Emergency Response Plan (ERP)

A plan that meets all applicable requirements.

Telephoners

Telephoners place calls to residents as directed by the Public Safety Group Supervisor.

Transient

An individual that is temporarily in the area (e.g. camper, cross-country skier).

Trapper

The holder of a provincial licensed and registered trapline for the purpose of hunting and trapping fur bearing animals.

Uncontrolled flow

A release of product that cannot be shut off at the licensee's discretion.

Urban centre

A city, town, village, summer village, or hamlet with no fewer than 50 separate buildings, each of which must be an occupied dwelling, or any similar development.

Unrestricted country development

Any collection of permanent dwellings situated outside of an urban centre and having more than eight permanent dwellings per quarter section.

Urban density development

Any incorporated urban centre, unincorporated rural subdivision, or group of subdivisions with no fewer than 50 separate buildings, each of which must be an occupied dwelling.

Vapour pressure

The pressure exerted by the vapour when the rate of evaporation is equal to the rate of condensation of the vapour. All NGL products have vapour pressure greater than atmospheric pressure air and therefore have to be kept under pressure or else they will vaporize.

Vapour-air plume / vapour cloud

When released to atmosphere, products form a vapour-air plume that is colourless, heavier than air and has a faint gasoline odour. Depending on the product released and the atmospheric conditions, water vapour may condense to form a cloud.

Water body

Natural or manmade; contains or conveys water continuously, intermittently, or seasonally. A natural water body is any location where water flows or is present, whether the flow or the presence of water is continuous, seasonal, intermittent, or occurs only during a flood. This includes, but is not limited to, the bed and shore of a river, stream, lake, creek, lagoon, swamp, marsh, slough, muskeg, or other natural drainage, such as ephemeral draws, wetlands, riparian areas, floodplains, fens, bogs, coulees, and rills. Examples of a manmade water body include, but are not limited to, a canal, drainage ditch, reservoir, dugout or other manmade surface feature.

Well servicing

The maintenance procedures performed on a producing or injecting well after the well has been completed and operations have commenced. Well servicing activities are generally conducted to maintain or enhance well productivity or injectivity.

Workover

The process of re-entering an existing well to perform remedial action that will restore or improve the productivity or injectivity of the target formation.