ConocoPhillips Canada	RISK MANAGEMENT PROGRAM ALL-HSE-PGM-127	**Retention Code:** *CG01 - CA* **Revised:** *March 2018*
Owner: *HSE Performance Assurance*	**Approved By:** *Manager, HSE Performance Assurance*	**Review Frequency:** *Five years or less*

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1.0 Scope

The scope of this program includes risk assessment(s) of operations where ConocoPhillips Canada (CPC) is the Operator. This includes:

- All company activities and assets within Canada (including incidents and near misses) from inception through to decommissioning and abandonment. This includes, but is not limited to:
  - Routine, non-routine and abnormal operations
  - New projects and facility expansions,
  - Sustainable Development (SD), and
  - Procurement

In instances where the company is precluded or cannot directly apply risk assessment processes (e.g. non-operator); it will strive to influence those operations where practicable.

Specifically excluded from the scope are:

- Decision and risk analysis principles applied to exploration, reserves and associated economic analysis.
- Project risk management processes, (e.g. Capital Projects Management System (CPMS). CPMS requirements will be limited to projects managed through CPMS.)
- Calgary Office Operations - Potential impacts are addressed in the Business Continuity Plan.

2.0 Purpose

This document provides guidance and direction to CPC employees and contractors on the risk-based approach to be applied to decisions affecting company operations and activities.

3.0 Our Stand on Risk

We are managing risk effectively as an integral part of our business.

- We will identify, prioritize and manage risk to a reasonably practical level.
- We will apply sound analysis, judgment and action to manage risk.
- We will educate our employees and contractors in the methods and tools for risk management.

4.0 Roles and Responsibilities

Roles and responsibilities are established in accordance with HSE Management System, Element 5 – Structure and Responsibility. Key roles include:

4.1. Employees and Full Time Contractors

a) Participate in the identification of risks or hazards in your area.

b) Provide suggestions to eliminate or mitigate process safety hazards and other HSE&SD risks.
c) Follow the requirements of the ConocoPhillips Canada risk management program.
d) Assess, seek to reduce and communicate hazards that can impact work activities.

4.2. Supervisors

a) Ensure employees and Full Time contractors understand how to apply the risk matrix.
b) Verify identified risks are adequately managed
c) Ensure that risk assessment is included, as appropriate, in the MOC approval process for temporary and permanent changes.
d) Require hazard assessments prior to conducting work.
e) Ensure hazard identification processes are used to identify and mitigate risks.

4.3. Managers

a) Require risk assessments to be completed in accordance with company and regulatory standards.
b) Provide adequate resources to identify and manage risk in project proposals and ongoing operations.
c) Ensure risk acceptance process includes the retention of risk approvals for the life of the facility.
d) Be familiar with the CPC HSE&SD Risk Register and verify that identified significant and high HSE & SD risks are adequately managed.

4.4. Technical Safety Assurance Group

a) Lead the development and communication of training, tools, processes and the implementation of corporate and business unit risk management requirements.
b) Ensure legislative requirements with respect to risk are identified and complied with.
c) Support the organization in planning and execution of risk studies.
d) Create and maintain a CPC HSE&SD Risk Register of all identified Significant and High risk items.

4.5. HSE Production Operations / HSE Specialists

a) Provide first line guidance on risk management tools and the function of risk management within the HSE MS.
b) Actively participate in risk management as required.

5.0 Risk Management Process

The Risk Management Process follows the steps shown in the following flow chart. Additional detail on each step can be found Sections 5.1 through 5.5.

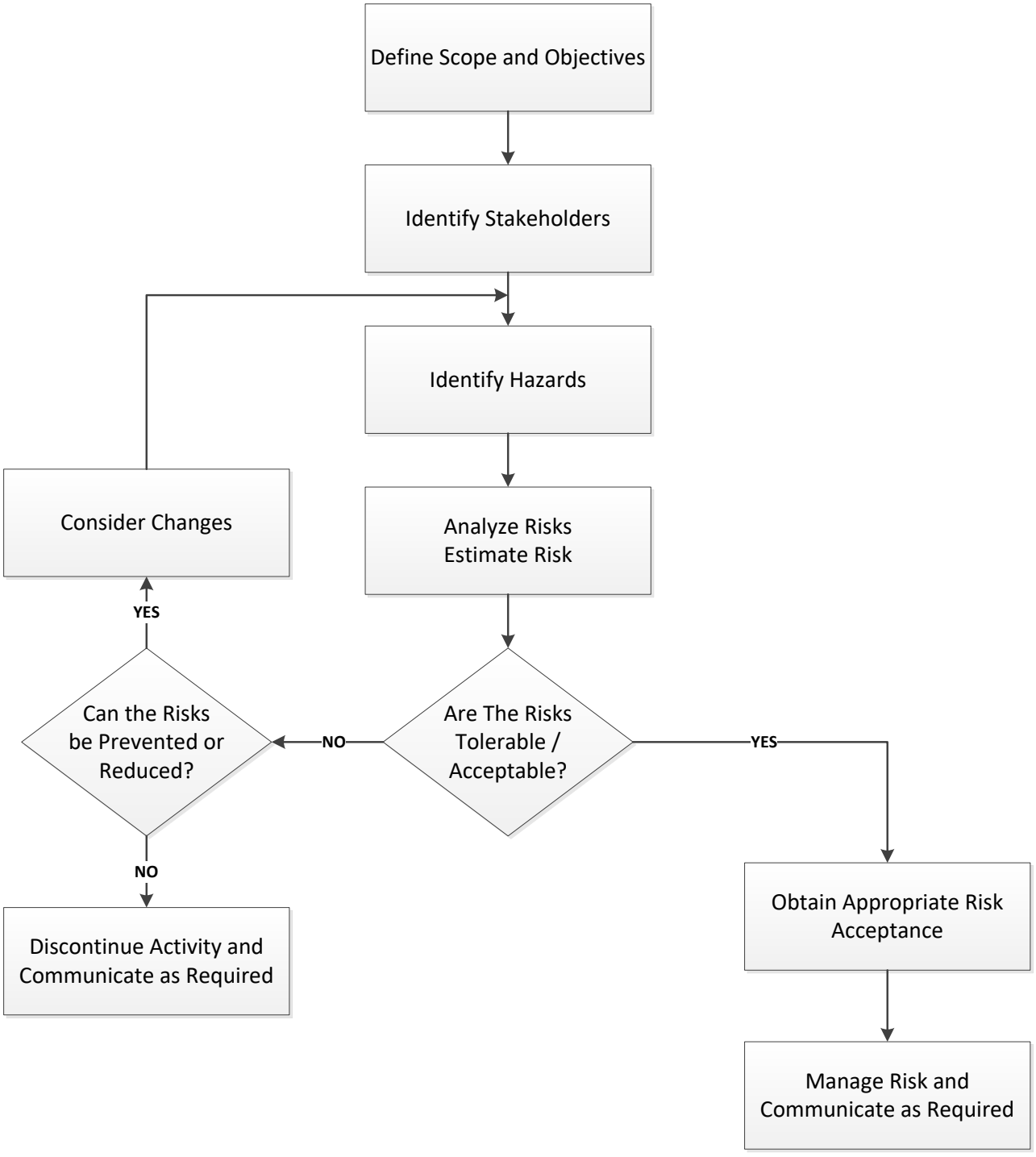

Figure 1 - Risk Management Process Flow Chart

5.1. Define Scope and Objectives

The first step is to assess the activity or project. The activity or project will have a particular scope associated with it. Developing a strong understanding of the planned activity or project will ensure the group is adequately prepared to assess the associated hazards and manage any risks.

5.2. Identify Stakeholders

Stakeholder identification includes determining who should be involved in the risk assessment, evaluation, and management processes; what degree of involvement is required; and how should dialogue be initiated and sustained. Including the right people, with a variety of expertise and experience, is key to the success of the assessment.

5.3. Hazard Identification

Hazard identification is the first step in the risk analysis process. It involves a systematic review of the defined system or activity to identify the type of hazards that are present, together with the ways in which they could be realized. Equipment failure, human or organizational error, and stakeholder intervention are examples of how a hazard may be realized.

Hazard identification techniques will be dependent on size and complexity of activity or process and the magnitude of potential hazards. Examples of these techniques include, but are not limited to, brainstorming sessions, Permit / Hazard Assessments; Checklist reviews; HAZOP and What-if studies. Once hazards have been identified through the various processes, they must be communicated to those potentially affected. Communication of hazards may occur during site orientations, safety meetings, personnel awareness of hazard databases, etc.

In practice, there may be hazards that are identified and controlled or eliminated while preparing to complete an activity or project. These hazards can be managed though tools such as pre job hazard assessments.

5.4. Risk Analysis and Estimation

Upon identifying the hazards, the associated risks are then determined by assessing the potential consequences and the probability of the events occurring. Risk estimation may be qualitative, semi-quantitative or quantitative, or a combination of these.

Estimating risk involves two separate steps; consequence analysis and likelihood analysis. Once the consequence and likelihood are established, a risk ranking can be determined.

Qualitative Analysis

Qualitative Analysis uses words to describe the magnitude of the severity of the consequences and the likelihood that the consequences will occur (e.g. safety consequences may be a serious injury or a fatality; the frequency of a serious injury may be described as rare or improbable).

In practice, qualitative analysis is often used first to obtain a general indication of the level of risk and to reveal the major risk issues (i.e Significant or High). Using the ConocoPhillips Risk Matrix is an example of qualitative analysis. It is applicable to single initiating event scenarios and their respective consequences. Should any major risk issues be revealed, then semi-quantitative or quantitative risk analysis should be considered.

Semi-Quantitative Analysis

Semi-Quantitative Analysis is more detailed and requires numerical inputs for frequency and probability of failure (likelihood), which are selected with the intent to prove conservative risk estimation. The objective is to produce a more refined risk estimation than is usually achieved in a qualitative analysis.

Layer Of Protection Analysis (LOPA) is an example of semi-quantitative analysis.

Quantitative Analysis

Quantitative analysis uses numerical values for both consequence and likelihood and uses data from a number of sources (e.g. modeling, relevant failure, and/or reliability data bases). The quality of the analysis depends on the accuracy and completeness of the numerical values and the validity of the models used. It is important that uncertainty and its effect on the analysis is clearly understood as a decision maker needs to know both the estimated level of risk and the degree of uncertainty assigned. The uncertainty and variability of both consequences and likelihood should be considered in the analysis work and often will result in a sensitivity analysis being conducted. The sensitivity analysis should test the effect of uncertainty in assumptions and data and can also be used as a means of testing the appropriateness and effectiveness of potential controls or risk mitigation measures.

When a quantitative analysis is performed, acceptance criteria can be found in the Capital Projects Management System (CPMS) Safety Case Framework Standard and in the Upstream CPMS Standard Buildings Design and Siting for Blast Overpressures, Fire and Toxic Exposure.

A Quantitative Risk Assessment (QRA) is an example of quantitative analysis.

5.4.1. Determine Consequence

The first step when estimating risk is to determine the potential consequences. There are different consequence categories to be considered. These categories, and their corresponding severity levels, are found in Appendix C, Table AC.1. There are also 4 additional sub-categories which are discussed in the COP 'Risk Matrix' Document.

When assessing the severity of a consequence, one should focus on the "consequence of interest" or "the most credible consequence" for the hazard scenario. There may be multiple consequence categories for a single hazard. Each category should be assessed.

Consequence is evaluated without safeguards in place.

Note: The safety consequence severity should not be compared monetarily to the other severity columns. For example, by no means is a fatality (5 severity) to be associated with the greater than $25 million shown in the other columns (Financial Loss, Business Interruption).

Where appropriate, the approver of a Business Interruption risk may delegate sign off to a level below on Table AC.4. This delegation must be documented and retained on file for the duration of the delegation.

5.4.2. Determine Likelihood

The purpose of likelihood analysis is to determine the Likelihood (or frequency) of each of the undesired events or incident scenarios identified at the Consequence Analysis stage

using Appendix C, Table AC.2. Likelihood is evaluated with consideration for safeguards currently in place.

There are two possible approaches:

1. Intuitive Determination - The use of past experience or relevant historical data (business unit, company or industry specific) to determine the frequency with which these events have occurred in the past and therefore to make judgments as to their frequency of occurrence in the future. The data used however, should be relevant to the type of system, activity and operations being assessed. Consideration should be given to advancements in safety barriers since the previous events.
2. Likelihood Adjustment – Initially, each scenario is evaluated without the existing safeguards in place. This should yield a high likelihood (4 or 5). Incrementally add in the existing safeguards and reduce the frequency appropriately.

Notes:

- Select the likelihood category for the Consequence of Interest specified, not the initiating cause.
- Likelihood Analysis in QRA is determined as described in CPMS-HSE-MS-003, ConocoPhillips Project Management (CPMS) Safety Case Framework Standard

5.4.3. Estimation of Risk

Use the consequence severity estimation on the horizontal axis and the likelihood estimation on the vertical axis to provide a risk ranking of 1 – 25 (Category 1 to Category IV) within the Risk Matrix in Appendix C, Table AC.3.

Note:

- When assigning the risk ranking, the highest consequence severity may not always result in the highest level of risk. It may be that a less severe consequence has a higher likelihood of occurrence and results in a higher risk ranking than a more severe consequence with a lower likelihood of occurrence. The higher risk ranking will drive any actions.

5.5. Are the Risks Tolerable / Acceptable?

For each risk ranking obtained, the actions or approvals required must be determined. This is determined using the table and supporting text from Appendix C, Table AC.4.

5.5.1. Yes

Obtain Appropriate Risk Acceptance
If the individual within the appropriate approval level for the identified risk determines the risk is acceptable, obtain required sign-off as per Appendix C, Table AC.4 and retain risk acceptance on file for the life of the facility. Communicate as necessary. If the risk level is determined to be significant or high, the risk must be forwarded to the Technical Safety Assurance group for possible inclusion in the CPC Risk Register. Additional details on the Risk Register Process can be found in Section 6.
Manage Risk

Ensure claimed controls are functioning and manage risk with reasonable care. Communicate as necessary.

In cases where additional barriers have been agreed upon but not yet implemented, the **current risk** must be approved at the appropriate level and managed. Once the additional risk reduction measures have been put in place, the new, reduced risk level is to be approved and managed.

5.5.2. No

Can The Risk Be Prevented Or Reduced?	**Yes – Consider Changes**
	Review the design and/or operations to define additional preventive and/or mitigative barriers/controls to eliminate or reduce the risk. Then follow through the risk analysis process once again to determine if risk acceptance can be attained. This process can be repeated until the risk is either accepted or the activity is discontinued.
	No - Discontinue Activity
	Stop the activity or do not proceed with the proposed activity. Communicate as necessary.

6.0 Risk Register

The Team Lead, Technical Safety Assurance, is responsible for the CPC HSE&SD Risk Register process, which is as follows:

- Technical Safety Assurance maintains the CPC HSE&SD Risk Register, which includes Significant (Risk Rank III) and High (Risk Rank IV) **HSE & SD** risks that CPC is carrying in its' Operations. Financial or Business Interruption risks may not be included if there is not an HSE or SD component to the activity or project.
- Significant and high risks, as determined through the Risk Management process, are forwarded to the Team Lead, Technical Safety Assurance, for possible inclusion in CPC HSE&SD Risk Register.
- Risks determined through PHA processes may or may not be included in the CPC HSE&SD Risk Register. They are included and managed in the appropriate PHA software database and further study may be required to more accurately determine the risk ranking. These risks should, however, be considered by Technical Safety Assurance as Risk Register is being validated (annual).
- Annually in the Second Quarter, the Risk Register is sent to managers with a request to review and make updates, where applicable, to their teams risk inputs to Risk Register. Management review should consider additional risks identified through ConocoPhillips and industry incidents or learnings, audits, risks that may not have previously been identified, and those which have been transferred from capital projects. Management should consider new technologies or learnings that can be applied to preventive or mitigative measures. Management should consider the claimed measures and how they have been strengthened or weakened.

- Technical Safety Assurance will compile feedback, and work with managers and their delegates to validate risks and update the Risk Register (3rd Quarter).
- Technical Safety Assurance will coordinate an annual meeting with appropriate Leadership teams to review the risks and controls (by end of the 3rd Quarter).
- Risk Register presented to Senior Leadership Team (SLT) (October).
- Final Risk Register distributed to managers. (November)
- Executive management to consider management of risks from Risk Register in goal planning for upcoming year.

7.0 References

7.1. ConocoPhillips Canada

1. CPC-ALL-HSE-FRM-2106, Risk Acceptance Form
2. HSE Roles and Responsibilities within the Canada HSE Management System

7.2. ConocoPhillips Corporate

1. ConocoPhillips Risk Matrix
2. Risk Ranking Guideline
3. Risk Matrix Training Reference
4. ConocoPhillips HSE Management System Standard
5. CPMS-HSE-MS-003, ConocoPhillips Project Management (CPMS) Safety Case Framework Standard
6. CPMS-FAC-ES-003, ConocoPhillips Project Management (CPMS) Building Design and Siting for Blast Overpressures, Fire and Toxic Exposure

7.3. External

1. ISO 31000 : Risk Management — Principles and Guidelines
2. APEGA Guideline for Management of Risk in Professional Practices
3. CSA Z0012-12 Occupational Health and Safety – Hazard Identification and Elimination and Risk Assessment and Control.

8.0 Document Retention

Records must be retained in accordance with ConocoPhillips' Document Retention Schedule.

Record	Owner	Classification	Retention
Risk Sign Off Form and Similar Tools	Business Units	HE08 - CA	For the life of the facility + 5 years

Appendix A – Acronyms

Common acronyms for HSE Management System are defined below:

ALARP	As Low As Reasonably Practicable
APEGA	Association of Professional Engineers and Geoscientists of Alberta
COI	Consequence of Interest
COP	ConocoPhillips
CPC	ConocoPhillips Canada
CPMS	Capital Projects Management System
CSA	Canadian Standards Association
E&SD	Environment & Sustainable Development
HAZOP	Hazard and Operability Study
HSE	Health, Safety & Environment
ISO	International Organization for Standardization
LOPA	Layer of Protection Analysis
MOC	Management of Change
PHA	Process Hazards Analysis
QRA	Quantitative Risk Assessment
SLT	Senior Leadership Team

Appendix B – Definitions

Terms that are important to understanding the Risk Management Program are defined below:

Abnormal Operations
When the operation departs from its established operating procedures or safe operating limits.

ALARP
As Low As Reasonably Practicable is the principle used to evaluate the advantages and disadvantages of any risk reduction measures to see whether the costs associated with implementing the measures are "grossly disproportionate" to the advantages gained in risk reduction.

Consequence
The impact on personnel, on or offsite property, offsite communities, the environment and the company. Consequences are analyzed independently of the event's likelihood of occurrence.

Consequence of Interest (COI)
A term used to define credible scenarios. Generally, a credible worst case scenario is identified first, and subsequent credible scenarios of concern follow. The COI is targeted at the most probable significant outcome.

Grossly Disproportionate
A judgment that the cost of a specific risk reduction measure is excessive, when compared to the risk reduction benefit achieved by the measure.

Hazard
Existing or potential conditions that, alone or with other variables, can result in death, injury, property damage, environmental damage, financial loss or damage to the company's reputation.

Hazard Identification
Process of finding, listing, and characterizing hazards.

Incident
An event that has occurred with undesirable consequences, such as, fire, injury, property damage, spill, release, personnel exposure event and regulatory enforcement action. It also refers to events related to human rights issues (e.g. contact with "un-contacted tribes") and unanticipated significant biodiversity or water impacts. By definition, an incident is not a near miss or other recognizable potential for failure.

Likelihood
A measure of the chance of something happening and can be described using general terms or mathematically (such as, a frequency over a given time period). Likelihood can be further defined as a measure of subjective expectation, a degree of confidence in an outcome whose numerical value can be estimated by logical reasoning, or the relative frequency with which an event occurs in a class of events.

LOPA
Layer of Protection Analysis (LOPA) is a risk-based semi-quantitative method to determine if there are sufficient layers of protection to safeguard against a hazard scenario.

Mitigative Measures (aka Barriers, Controls, or Safeguards)
Those which limit the consequence of a hazard which has been realized.

Non-Routine Operations
Non-routine operations are characterized by infrequent practice. Non-routine operations can be either planned and scheduled or can occur without an opportunity to schedule them. Examples of non-routine operations include: Start-up, shutdown, on stream maintenance, and purging operations.

PHA
A thorough, orderly, and systematic approach for identifying what could go wrong and what safeguards must be implemented to control the hazards of processes and prevent the release of hazardous chemicals. PHAs must be conducted by a competent team with experience in the methodology and the process being evaluated.

Preventative Measures (aka Barriers, Controls, or Safeguards)
Those which prevent a hazard from being realized.

Reasonably Practicable
The use of the 'reasonably practicable' concept entails a judgment decision to be made on how much effort should be spent on protecting or mitigating against a postulated scenario. This judgment should be weighted towards implementing the risk reduction option.

Residual Risk
The risk remaining after the proposed safeguards have been implemented.

Risk
Risk refers to the measure of how safe or how dangerous something is. The degree of risk (how safe or how dangerous) is measured by the consequence severity of the potential loss multiplied by the likelihood of that potential loss.

Risk Analysis and Estimation
A process for comprehending the nature of hazards and determining the level of risk through consequence analysis and likelihood analysis.

Risk Assessment
The overall process of hazard identification, risk analysis, and risk evaluation.

Risk Management
The systematic application of policies, procedures and practices to the tasks of analyzing, evaluating and controlling risk.

Risk-Reducing Measures
The measures to control and mitigate hazards and risks, so that risk exposure is reduced.

SLT
Senior Leadership Team. For the purposes of this document, a more senior management approval is required for higher risk levels.

Appendix C – Risk Analysis and Estimation (Determine Consequence, Likelihood and Risk Ranking)

Table AC.1 – Consequence Metrics

Step 1 - Estimating the severity of the consequence without safeguards for each applicable risk category (safety, environmental impact, business interruption, asset damage, negative public image exposure, and/or public notification).

Severity of Consequence

Level	Safety	Environmental Impact	Financial Loss (Asset Damage, Litigation & Environmental Remediation)	Business Interruption	Negative Public Image Exposure	Public Notification
5	Severe health effects (Fatality and/or multiple hospitalizations)	• High environmental impact • Catastrophic release impacting sensitive ecosystems, drinking water supplies, fishing and/or recreational areas	>25M (USD)	>25M (USD)	National Coverage	Complete Area Evacuation
4	Major health effects (Permanent impairment)	• Major environmental impact • Release affects large offsite area including sensitive habitats • Widespread surface/groundwater contamination	2.5M to 25M (USD)	2.5M to 25M (USD)	Regional Coverage	Selected Areas of Evacuation Notification
3	Significant health effects (Lost Workday Case without permanent impairment)	• Moderate environmental impact • Release affects surrounding area and impacts flora/fauna • Localized surface/ground water contamination	250K to 2.5M (USD)	250K to 2.5M (USD)	Provincial Coverage	Shelter in Place Notification
2	Minor health effects (Restricted Workday Case, Medical Treatment Case	• Minor environmental impact • Onshore release limited to facility and adjacent area • Offshore release mitigated through natural processes	25K to 250K (USD)	25K to 250K (USD)	Local Coverage	Local (Selected Phone / Leaf-Let Notice)
1	Minimal health effects (First Aid Case or less)	• Negligible environmental impact • Small contained release that stays on-site	0 to 25K (USD)	0 to 25K (USD)	No External Coverage	No Comms. to Public

Appendix C – Risk Analysis and Estimation (Determine Consequence, Likelihood and Risk Ranking)

Table AC.2 – Likelihood of Occurrence Description

Step 2 - Estimating the likelihood of that event/hazard occurring taking credit for safeguards currently in place and functional based on available statistics or participants' past experience.

The likelihood determined should represent the likelihood of occurrence of the scenario described and assessed under the consequence table taking account for safeguards. The likelihood should not be the likelihood of occurrence of the initiating event alone.

Likelihood

Level	Descriptor	Qualitative Description
5	Frequent	Occurs multiple times per year within the ConocoPhillips business unit.
4	Probable	Occurred within the ConocoPhillips business unit or more than once per year within ConocoPhillips.
3	Rare	Occurred within ConocoPhillips or more than once per year within the oil and gas industry.
2	Remote	Occurred or has been heard of within the oil and gas industry.
1	Improbable	Virtually unrealistic, never heard of in the oil and gas industry.

Note: The corporate ConocoPhillips Risk Matrix document has additional detail on quantitative likelihood values.

Appendix C – Risk Analysis and Estimation (Determine Consequence, Likelihood and Risk Ranking)

Table AC.3 – Risk Evaluation Matrix

Step 3 - Using the Qualitative Risk Matrix and correlating the severity estimation from Step 1 on the horizontal axis and the likelihood estimation from Step 2 on the vertical axis to provide a risk ranking of 1 – 25 (Category 1 to Category IV).

Risk Matrix

Likelihood of Occurrence						
	5 Frequent	5 II	10 II	15 III	20 IV	25 IV
	4 Probable	4 I	8 II	12 III	16 III	20 IV
	3 Rare	3 I	6 II	9 II	12 III	15 III
	2 Remote	2 I	4 I	6 II	8 II	10 II
	1 Improbable	1 I	2 I	3 I	4 I	5 II
Risk = Severity x Likelihood		1	2	3	4	5
		Severity of Consequence				

The Consequence, Likelihood and Risk Matrix tables are from the Corporate Risk Matrix standard of July 2017. Additional consequence classifications are provided in the corporate Risk Matrix documentation for the following: Socio Impact and Industrial Hygiene.

The risk management process shall not be used to justify acceptance of operations that do not comply with an applicable act, code, regulation etc.

Those evaluating the risk for a scenario shall endeavor to use knowledge of prior events and other information available to make a credible judgment as to the risk ranking. The risk decision maker must have the appropriate Designated Approval Levels as defined in Appendix C, Table AC.4.

Where controls cannot be verified as functional, then no credit shall be claimed for those safeguards in the risk assessment process. This will typically result in a scenario with a higher risk ranking.

Appendix C – Risk Analysis and Estimation (Determine Consequence, Likelihood and Risk Ranking)

Table AC.4 - Risk Level and Action Required

Risk Level	Action Required	Approval Levels For	
		Safety Consequence Category Only	Other Consequence Categories
Category IV High 20 - 25	Manage risk utilizing prevention and/or mitigation with highest priority.	President & VP HSE Operations	President
Category III Significant [4] 12 - 16	Manage risk utilizing prevention and/or mitigation with priority.	VP	VP
Category II Medium High Tolerable if ALARP 9 - 10	Verify controls functional Apply relevant good practice Tolerable if cost of risk reduction exceeds improvement gained	Field Mgr/Prod Ops Manager/ D&C Mgr / D&C Chief	Field Mgr/Prod Ops Manager/ D&C Mgr / D&C Chief
Category II Medium 8	Verify controls functional Apply relevant good practice	Ops Mgr / Ops Superintendent / Discipline Mgr [1]	Ops Mgr / Ops Superintendent / Discipline Mgr [1]
Category II Medium-Low 5 – 6	Verify controls functional Apply relevant good practice	Designated Supervisor [2]	Designated Supervisor [2]
Category I Low (1 – 4)	Broadly Acceptable No mitigation required	Broadly Acceptable Risk	No approval required

Notes:

>Category IV - Intolerable Risk. Short term risk reduction required. Long term risk reduction plan must be developed and implemented.

Notes:

1 - Oil Sands – Ops Superintendent
Montney – Operations Manager
Other – Discipline Mgr, D&C Chief

2 - Oil Sands – Shift Supervisor, Chief Steam, Chief Inspector, P. Eng.
Montney – Ops – Maintenance Leader, P. Eng.
D&C – Supervisor, Superintendent, Chief

Appendix C – Risk Analysis and Estimation (Determine Consequence, Likelihood and Risk Ranking)

AC.5 - Course of Action Dependent on Risk

Risk Scenario with a ranking from 1 – 4 (Low)

If the risk is ranked to be 4 or less then the risk is deemed broadly acceptable and 'No further risk reduction is required'

Risk scenarios with a ranking of 5-6 (Medium-Low)

For risk scenarios of 5 or 6, the risk is deemed to be acceptable, and the safeguards claimed shall be verified. The supervisor's approval should be completed in a manner which allows the approval to be tracked.

Risk scenarios with a ranking of 8-10 (Medium-High)

If the risk evaluation decision results in the risk being Medium-High then the responsible person shall:

- Verify that controls are functional and apply relevant good practice;
- Follow the As Low As Reasonably Practicable (ALARP) principle to determine if the cost of risk reduction exceeds the improvement gained (see Appendix D)
- Complete Risk Acceptance Form (CPC-ALL-HSE-FRM-2106) or some other form or process that allows the risk category, current controls, proposed controls, ALARP rationale, residual risk and approval to be tracked.

Risk scenarios with a ranking of 12 or greater (Significant and High)

Where a scenario risk has a ranking of Significant or High, then the appropriate level of management shall be informed and shall ensure that measures are taken to manage the current risk until a permanent solution to mitigate the risk is implemented. Options must be considered to reduce the risk to ALARP (see Appendix D).

The responsible person shall:

- Verify that controls are functional and apply relevant good practice;
- Complete Risk Acceptance Form (CPC-ALL-HSE-FRM-2106) or some other form or process that allows the risk category, current controls, proposed controls, ALARP rationale, residual risk and approval to be tracked.
- Should the risk be deemed ALARP, and no additional risk reduction measures are being implemented, then the appropriate level of management (defined in Table A1.4), on gaining a complete understanding of the risks, can approve the operation with the existing risk level.

Where a scenario has an associated Significant or High risk (a risk of 12 or greater), then the details, including the designated person responsible, shall be provided to the Team Lead, Technical Safety for possible inclusion in the Risk Register (see Section 6).

Safety Consequence Risk scenarios with a ranking of 20 or greater (High)

This risk is considered intolerable and short term risk reduction is required and a long term risk reduction plan must be developed and implemented. This must be approved by a SLT member responsible for the area and the VP HSE Operations.

Note: Risk rankings for IMPACT entries (i.e. incidents, near misses, audit findings) does not require documented risk acceptance/approval as these are regularly reviewed by leadership.

Appendix D – ALARP and Risk Acceptance

The person responsible for risk scenarios of greater than 6 shall follow the As Low As Reasonably Practicable (ALARP) principle and acquire the appropriate acceptance/sign-off.

ALARP

The ALARP principle considers practicality (can something be done?). It also considers the cost and benefits of action/inaction (is it worth doing something in these circumstances?).

The ALARP principle requires that all effective safeguards, including best practices that could be implemented without undue cost or risk (those that are reasonably practicable) are implemented. The alternative is that the responsible person justifies that the safeguard is not reasonably practicable to implement. The principle of ALARP should identify what more could be done (what additional measures could be installed) and considers why these measures are or are not required.

Risk Acceptance

For each scenario identified as a risk of greater than 6, the following process utilizing the associated Risk Acceptance form, or similar document or process, shall be followed as a minimum. The completed risk acceptance shall be retained for the facility lifetime.

1. The risk / action item should be clearly defined in terms of severity and likelihood. Credit shall be claimed for installed safeguards which have been verified as functional.
2. Identification of potential prevention and mitigation measures, from knowledge and experience.
3. Determine the potential risk reduction / safety benefit due to the combination of the selected safeguards. This is a matter of evaluation of the overall effect of the safeguards, which is not necessarily the same as the sum total of the individual safeguards. Not all safeguards have equal weight or importance in any given situation. Safeguards may also vary in importance from one situation to another.
4. Consideration of the risk, cost, time and effort involved in implementation of each preventive / mitigative measure. To avoid the cost of implementing the measure, the responsible person shall show that the cost of implementation greatly outweighs the associated risk reduction. This judgment shall be weighted toward implementation of the safety considerations. It may be necessary to repeat these steps until the safeguards to implement can be justified as reasonably practicable.
5. State the name of the person accepting the risk and sign and date the tool being used to capture acceptance.

   Once the record is completed, the responsible person shall:

   - Keep the original record to on file for facility lifetime.
   - Update appropriate database where applicable.
   - If the risk is significant or high, forward copy of the risk detail to the Technical Safety Assurance team for possible inclusion in Risk Register (see Section 6).

Appendix E – Management Tools and Processes

Tool	Purpose and Process	Application
1. Task Risk Assessment (TRA)	TRA is a combination of a HAZID used to screen out higher hazard tasks, followed by a basic risk assessment to evaluate the level of risk on routine day-to-day production operations and maintenance tasks.	TRAs will be used to identify where additional mitigation measures, such as additional engineered controls, should be implemented to reduce risk levels to workers, the public, equipment, or the environment. CPC-ALL-HSE-GUI-129 Task Risk Assessment Guide.
2. Permit / Hazard Assessment	Used in field and plant operations that ensures workers understand the specific work to be done and the hazards that may be encountered in performing the work or a task.	It is mandatory for all workers involved in the planned work to participate in the PJHA process so that they can identify all hazards, understand how they will be managed, and who has responsibility for managing them. CPC-ALL-HSE-PRC-387, Pre-Job Hazard Assessment SOP
3. Operations Hazard Review Process (OHRP)	A process used by WEO to allow for proper Risk Assessment of a well and ensure that hazards have been discussed and a mitigation plan is in place prior to any movement in the field.	This is the overall Operations Hazard Review Process used to risk wells in Canada and where team members identify, mitigate and sign off on potential hazards.
4. Process Hazard Analysis (PHA)	A formal structured process for identifying hazards and also performing qualitative risk analyses. Techniques include HAZOP and What-if/Checklist.	Used by Facility Engineering to review new designs or modifications to plants or facilities for the purposes of hazard identification and qualitative risk analysis. CPC-WCG-AOI-PRC-492, Facility Process Hazard Analysis. (WCBU) OLS-HSE-PRC-7018, Process Hazards Analysis (Oil Sands)

5. Management of Change (MOC)	Used to ensure that any change (i.e. any modification that alters the physical arrangement, process function or operational procedure of an asset), will be managed from a hazard and risk perspective.	When an operational or project MOC is initiated, the MOC procedure requires that a multi-discipline review be carried out, along with a suitable type of PHA to ensure all hazards have been identified and risks are deemed acceptable. CPC-ALL-HSE-STD-186 CPC-WCG-AOI-PRC-187 CPC-OLS-OPS-PRC-7006
6. Layers of Protection Analysis (LOPA)	LOPA is a risk-based semi-quantitative method to determine if there are sufficient layers of protection to safeguard against a hazard scenario. LOPA uses a calculation to measure the adequacy of different protection layers (e.g. relief valves, alarms and shutdown loops).	A LOPA study should be considered during the course of a PHA. As per CPC-WCG-AOI-PRC-492 and OLS-HSE-PRC-7018
7. Safety Integrity Levels (SILs)	SIL analysis is the method by which the safety integrity requirements of a safety instrumented system are specified. SIL levels are identified as levels 1 to 4, level 4 providing the most onerous requirements.	As per CPC-WCG-AOI-PRC-492 and OLS-HSE-PRC-7018
8. Facility Siting Evaluation for Permanent Buildings and Temporary and Portable Buildings	To establish the risks to personnel associated with occupied buildings in a plant or facility (e.g. control rooms, offices, maintenance shops, warehouses and portable trailers).	A semi-quantitative risk analysis methodology, which is required to be conducted at each major plant and facility in order to establish the Maximum Individual Risk (MIR) and Aggregate Risk (AR) for exposed personnel. If wooden trailers are to be used, they must be located outside of the 0.6 psi contour. Facility Siting Evaluation has been conducted in accordance with the Onshore Building Design and Siting for Blast Overpressures, Fire and Toxic Exposure, CPMS-FAC-ES-003.

9. Quantitative Risk Analysis (QRA) - Consequence Analysis and Frequency Analysis (Event Tree and Fault Tree)	A QRA is a systematic use of available information to identify hazards and to estimate the risk to individuals, the public, property or the environment. By performing a QRA, the risk is expressed numerically to assist management in the decision making process.	Most risk analyses within CPC will be based on the Risk Matrix and are therefore qualitative and semi-quantitative; however, there may be occasions (e.g. in a major project as part of a Safety Case activity or a Facility Siting Evaluation) when it is appropriate to conduct a QRA. CPMS-HSE-MS-003, ConocoPhillips Project Management (CPMS) Safety Case Framework Standard.

Appendix F – Revision Record

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