Petroleum Development Oman L.L.C.

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Authorization, History and Related Processes and Documents

i Document Authorization

Document Authorization		
Document Owner	**Document Custodian**	**Document Author**
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Note: This document shall be reviewed as necessary at least every 3 years by the document custodian.

ii Revision History

The following is a brief summary of the 4 most recent revisions to this document. Details of all revisions prior to these are held on file by the issuing department.

Version No.	Date	Author	Scope /Remarks
5.0	Dec 2022	Mishal Al-Zadjali MSE46 Ahmed Al Masruri MSE31	Document rewrite to include the simplified flowchart and the supporting text from revision 3.1 Document number changed from PR-1418 to SP-1418.
4.0			Process flow - CP-122 simplification
3.1	Jan 2014	Chris Evans MSE54	Various upgrades including investigation methodology, timings, AIPS advice, templates, PIM.
3.0	Nov 2012	Chris Evans MSE54	Total rewrite.
2.2	Oct 2009	Nivedita Ram MSE5	Update in AI-PSM definitions.
2.1	Sep 2008	Nivedita Ram MSE5	Updated in line with the Yellow Guide – issue Dec 31, 2007. Inclusion of the RAM, OSHA Guidelines.
2.0	Dec 2003	Ohimai Aikhoje CSM4	Updated in line with new SIEP Standard for Health, Safety and Environmental Management Systems – Incident reporting and Follow up EP 2005-0100-29. Follows new EP global procedure for Incident Reporting and Follow Up.
1.0	Jany-03	Andrew Ure MSE4X	Update Procedure to bring it into line with PIM Incident Management tool, and with PDO re-organization.

iii Related Business Processes

Code	Business Process (EPBM 4.0)
CP-122	Health, Safety, and Environment Code of Practice
SP1157	HSE Training Specification

iv Related Corporate Management System (CMS) Documents

The related CMS Documents can be retrieved from the Corporate Management Portal (CMS).

Contents

1. Introduction

1.1 Background

Investigation of incidents under PDO scope (including contactors) covering Personal and Process Incidents to identify the Causes, Management system shortfalls, Corrective actions, and Learnings. This specification contains the minimum requirements for Notification, Classification, Investigation, Analysis, Actions, Reporting and the implementation of the Learnings from Incidents.

1.2 Purpose

The purpose of an investigation is to identify the findings, the causes and contributing factors and actions and learnings to prevent re-occurrence of incidents, near misses or hazardous situations. To ensure this:

- All incidents under PDO scope including near misses and hazardous situations are to be reported, investigated, and analyzed, to identify where management controls failed and recommendations to identify new or restore controls are implemented. The level of investigation however depends on the severity of the incident.
- Corrective actions need to be taken to correct shortfalls and where similar situations can occur in other parts of the organization.
- Direct learnings need to be discussed with the relevant teams to assure flawless design, project delivery and operations.
- Fundamental learnings need to be agreed and implemented in PDO Systems, Processes and Procedures.

1.3 Scope

This specification sets the minimum requirements in PDO for the notification, reporting, classification, investigation, report writing, remedial actions, incident analysis and sharing of learning's from incidents to bring about the continual improvement in the HSE performance.

1.4 Roles and Responsibilities

It is important to establish single point responsibility for an incident to ensure the incident is investigated, reported and followed-up effectively.

Ownership is first assigned to a PDO directorate and then delegated to the appropriate level. In disputes between two Directors, MSEM will decide. If the incident occurs within an area where Custodianship was transferred in a written agreement, then ownership rests to the reporting line of the Custodian. For more details see Attachment 2.

Table 1.1 Main Roles and Responsibilities

Role	Function	Responsibility
Incident Owner	PDO Director (or to delegated Manager)	Final responsible for the investigation and follow up.
Investigation lead	Appointed by the Incident Owner	Lead the investigation team.
Contract Holder	Represents the Incident Owner	Liaising between PDO and Contractor.
Site Representative	Represents the Incident Owner	Liaising between PDO and Contractor.
Incident Review Committee IRC	MSE3	Quality Assurance and Quality Control for Personal Safety Incidents.
Incident Review Committee IRC	MSE8	Quality Assurance and Quality Control for Process Safety Incidents.
Process Owner	MSEM	Ensure the Investigation process is followed.

Note: Detailed description of roles and responsibilities have been included in Attachment 2.

1.5 Distribution/ Target Audience

The targeted audience is PDO management, Incident owners, Investigation leads, Contract holders, Site representatives, Contractor management and others involved in the incident investigation and learning process.

1.6 Schedule

The following schedules shall be met:

- Table 1.2 Personal Incidents: Fatalities, NADs, LTI's, High Potential incident (HiPo), selected High Value Learnings (HVL), followed up by MSE3.
- Table 1.3 Asset Integrity Process Safety Incidents: Tier1/Tier2, HiPo (RAM4+), selected High Value Learnings (HVL), followed up by MSE8.

Table 1.2 Personal Incidents

No	Timing (hr/day+)	Description	Note
1	24 hr	Reported in PIM, RAM assessment, classification, Identification Incident Owner	Reported after the incident occurred. PIM notification shall be moved to open within 72 hours
2	48 hr	MD/Director notification	Notification for Fatality, NAD, LTI and Tier 1
3	1 day	Kick-off meeting	Responsibility of the Incident owner
4	10 days	First draft	
5	16 days	Second draft	
6	21 days	Final draft	
7	24 days	MSE3 IRC	
8	30 days	Director IRC	
9	42 days	MD-IRC	
10	1 week after (M)D-IRC	Actions to be uploaded into PIM with action parties and deadlines agreed	Responsibility of the Incident owner
11	2 weeks after (M)D-IRC	Final Investigation Report to be uploaded in LTI data book	Responsibility of MSE3

Note: The timing for the two tables starts after the initial notification. For injury related incidents this is considered when the injury consequence is closed in PIM and, for other incidents when MSE3/MSE8 became aware of the incident, with both counters to start during working days.
Incidents that are reported late, will be considered as a hidden incident, and will be reviewed by MD-IRC until proven otherwise.

Table 1.3 Process Safety Incidents

No	Timing (hr/day+)	Description	Note
1	24 hr	Reported in PIM, RAM assessment, Identification Incident Owner	Reported after the incident occurred. PIM shall not be in draft after 72 hours.
2	48 hr	MD/Director notification	Notification for Tier 1
3	3 days	Kick-off meeting	Responsibility of the Incident owner
4	10 days	MD-IRC Initial Update	Tier 1 and selected incidents (e.g., Tier 2)
5	40 days	Final draft	
6	50 days	Relevant CFDH approval of LFI	Fundamental learnings only
7	52 days	MSE8 IRC	
8	62 days	Director IRC	
9	70 days	MD-IRC	Tier 1 and selected incidents (e.g., Tier 2)
10	1 week after (M)D-IRC	Actions to be uploaded into PIM with action parties and deadlines agreed	Responsibility of the Incident owner
11	2 weeks after (M)D IRC	Final Investigation Report to be uploaded in LKB	Responsibility of MSE8

Note: In case of Process Safety Incidents with personal injuries. The process Safety Incident time schedule is used.

1.7 Quality Assurance

Incident investigation report quality check passed (MSE3/ MSE8 IRC) for all incidents listed in paragraph 1.6.

1.8 Process Assurance

The assurance of the Incident Investigation, Reporting and Learning process will be done by MSE3 and MSE8 on an annual basis by monitoring the compliance with the specification in an annual review.

1.9 Escalation

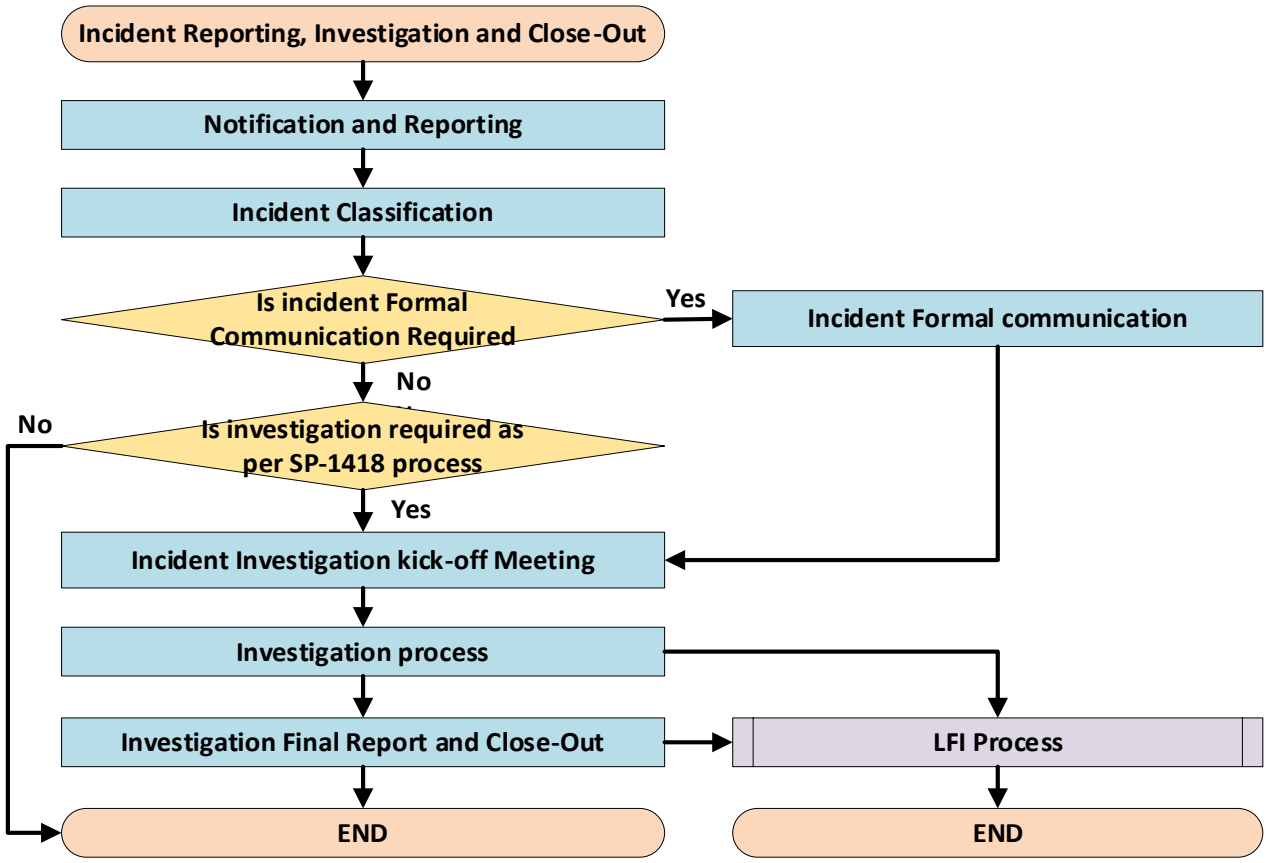
Below conditions will lead to escalate non-compliance to SP-1418 to the Incident Owner and Director.

- Failure to provide verified input information for the incident classification on time.
- Failure to submit report on time.
- Poor quality investigation.

It is the responsibility of the Incident Owner and Director to take appropriate actions for corrections.

2. Overall Investigation and Close Out Process

This chapter and the flow chart below give an overall view of the Incident Reporting, Investigation and Close out process. Further details are provided in chapters 3 to 10.



2.1 Notification and Reporting

In the event of an incident with consequences, near miss or selected potential incident, the first step, the first step in the process is to notify appropriate team/personnel and report all incidents in PIM within 24 hours. Responsible for reporting the incident in PIM:

- PDO Supervisor.
- Company Site Representative (CSR).
- Contract Holder (CH).

2.2 Classification

The classification of a people-related incident will be done by MCO.

The classification of a work-related incident will be done by MSE3.

The classification of a Process Safety Incident will be done by MSE8.

MSE3 and MSE8 will notify the incident owner accordingly.

2.3 Communication

2.3.1 Internal PDO Communication

Communication is mandatory for the following incidents:

Personal Incidents via notification to MSE3:

- Fatalities,
- Non-Accidental Death (NAD),
- Lost Time Incident (LTI),

Process Safety Incidents via notification to MSE8:

- Tier1,
- Tier 2,
- High Potential Incidents (HiPo).

Loss of Process Containment (LoPC) below Tier 2 level and not identified as HiPo to be communicated within 3 days via PIM notification in “Status Open” (not Draft).

All communication to PDO staff occurs via MD or the relevant Director. In general, this will be for Fatalities, NAD, LTI and Tier 1 incidents.

2.3.2 Formal Communication

Formal communication from PDO to external stakeholders e.g., ministry, shareholders etc. will be done with support of the EVX team.

- Fatalities are reported to the Ministry the Shareholder and the Business by MD.
- Non-Accidental Death (NAD) and Lost Time Incident (LTI) are reported to the Ministry and the Shareholder and the Business by the relevant Director.
- Tier 1 are reported to the Ministry, the Shareholders and business by MD.

2.4 Investigation Criteria

The following incidents will require to follow the MSE3/MSE8 investigation process:

Personal Incidents

- Fatalities
- NAD
- LTIs
- HiPo
- HVL
- Hidden incidents (incidents not reported as per the specification)

Any incident from the above which meet at least two of the criteria below will no longer follow MSE IRC process and will require to complete Directorate IRC process. MSE3 Team will send an official email to inform on that and the responsible Directorate HSE Team lead/Incident Owner will be required to share final investigation material with MSE3 for the records and learning sharing:

- All simple/common LTIs such as Hands & Fingers, Slip, Trip & Fall.
- Repeated incident as per criteria
- High Potential Events HPE

For a repeated incident, investigation need to identify why the incident is repeated.

Process Safety Incidents

- Tier-1
- On-plot Tier-2
- Selected off-plot Tier-2
- High Potential Incident (HiPo)
- High Value Learning (HVL)

For Tier 1, Tier 2 and HiPo (and selected HVL) Process Safety Incidents, the asset director is responsible to appoint an Incident Owner. The Incident Owner will appoint an Incident Investigation Lead, who is responsible for conducting the investigation. The investigation Lead will form a team of specialists to conduct the investigation.

LoPC below the Tier 2 level and not identified as HiPo will be investigated internally by:

- Operations coordinator.
- Operations readiness coordinator.
- Contractor.

Investigation reporting of the LoPC will be via PIM.

2.5 Kick-off Meeting

A kick of meeting shall be conducted for all incidents that require investigation as per § 2.4, where:

- The classification to be agreed on.
- An investigation lead identified.
- The members of the investigation team including specialists identified.
- The relevant CFDH identified and invited.
- Timeline for the investigation is specified.

See attachment 6 and 7 for the Kick-off templates. The members of the investigation team need to be selected based on the required skill to support the investigation. The relevant CFDH mandatory needs to be included in the Kick-off meeting.

2.6 Final Report and Close-Out

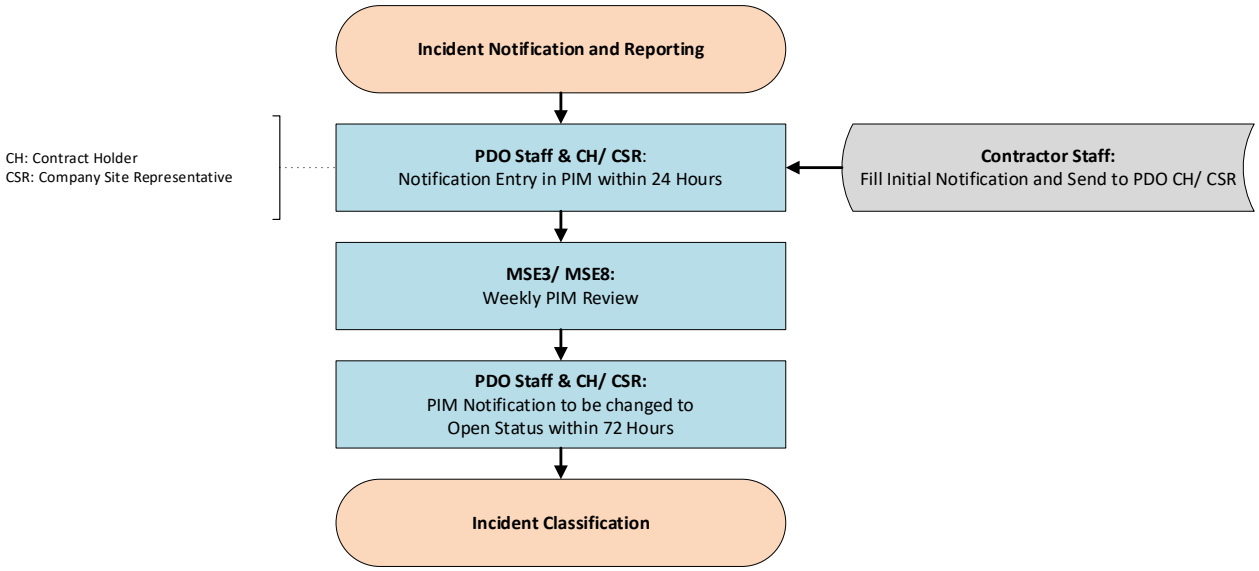
The final report produced by the investigation team shall be quality checked before presenting it to the Director's IRC or the MD-IRC for selected incidents. All endorsed actions from the investigation report shall be entered in PIM within 7 working days by the Investigation Lead.

2.7 Learning From Incidents Process

The learnings from the investigation report shall follow the Learning from Incidents (LFI) process. The investigation team generates the following:

- Direct short-term actions with the purpose to resolve the immediate issue.
- Long term actions to resolve similar issues within PDO (all assets).
- Reminders of an established process that should have been followed.
- Learnings to improve PDO processes and systems that need to be implemented by the relevant CFDH.

3. Incident Notification and Reporting



3.1 Notification in PIM

The first step in the process is to provide the reporting in PIM within 24 hours. This is the responsibility of the incident owner.

For Fatalities, LTI, NAD, LTI, Tier 1, Tier 2 and HiPo, the following persons need to be notified:

- PDO Manager, Director.
- Company Site Representative (CSR).
- Contract Holder (CH).

3.2 First Actions

This takes place directly after emergency response and making the location/ situation safe.

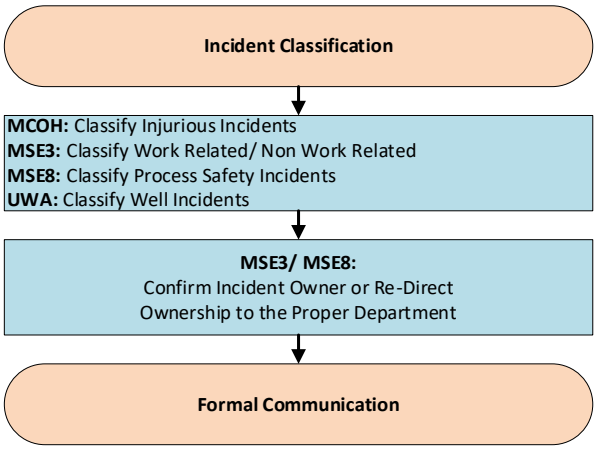
As part of the incident investigation the following needs to be completed by local PDO management or Contractor (including contract holder) within 72 hours:

- Notification of the incident in PIM in open “Status Open” including:
  - Description
  - Contractor name
  - Damage
  - Equipment number
  - Spilled volume (use spill calculator in PIM)
  - Release parameters (Hole size, Operating pressure, Composition and Release duration)
- The contractor will send the information to the PDO contract holder or PDO representative.
- Spills with a volume above 10m^3 need to be reported to MSE2.
- Inform PDO management of the incident if it is expected to meet the criteria as per § 3.1. If not sure, report to PDO management.
- Make sure that the evidence is safe, do not disturb the incident location and if safe to do so, take pictures of the location.
- If there is an unsafe location, make sure it is barricaded.

3.3 Notification Form

All contractors shall complete the notification form (Attachment 5) for the Company Site Representative (CSR) or Contract Holder (CH) to enter in PIM.

4. Classification



4.1 Authority

The injury classification will be decided by MCOH. Process Incidents will be classified by MSE8. MSE3 and MSE8 will notify the incident owner accordingly. UWA will confirm the Well Control Incidents.

4.2 Types of Classification

Below are the six classifications following a reporting.

4.2.1 PIM Classification

PDO Incident Management system

- Unsafe Act/Unsafe Condition (potential incident)
- Near Miss (incident with no consequence)
- Incident with consequence

Note: An incident in PIM needs to be in open status within 72 hours.

4.2.2 RAM Classification

The Incident Investigation Lead is responsible/accountable to complete the Actual and Potential Risk Rating with the investigation team using the RAM from CP-122, item 31 Risk Matrix.

Company Risk Assessment Matrix (RAM): People (P), Environment (E), Asset (A) Reputation (R).

- Actual Severity (1-5)
- Potential Severity (1-5) and Likelihood (A-E)

Note: The worst Credible Scenario is used to determine the Potential Severity and Likelihood. Attachment 10 provides examples.

The PDO RAM is in CP-122 in the PDO document management system. An example is included in attachment 10.

4.2.3 Injury Classification

For more info see attachment 4.

- Fatality
- Lost Work Case/ Lost Time Incident (LTI)
- Restricted Work Case
- Medical Treatment Case
- First Aid Case

4.2.4 API RP-754 Process Safety Event Tier Classification

Refining and Petrochemical Industries guideline (Attachment 11).

- Tier 1
- Tier 2
- LoPC (Loss of Primary Containment)

Note: API PR-754 can be downloaded from the Information Handling Services (IHS) Markit website (PDO only).

4.2.5 Well Control Incident (WCI) Classification

Wells activities related (drilling, work-over) For more info see “Well Control Incident Reporting Document” (SP-1213 for more details).

- Level 1 WCI
- Level 2 WCI
- Level 3 WCI
- Level 4 Well Process Safety Incident (WPSI)

4.2.6 Work and Non-work Related

An incident is considered work related until the investigation team have sufficient justification to prove it is not work related.

All incidents linked to work related activities are work related (The classification rules do not limit the recording of occupational injuries and illnesses to those cases that are preventable, fall within the employer’s control, or are covered by the employer’s safety and health program. The issue is not whether the conditions could have, or should have, been prevented or whether they were controllable, but simply whether they are occupational, i.e. are related to work)

All third-party fatalities that are resulting (or suspected to result) from work related activities, shall be notified and investigated.

Two types of third-party fatality are recognized and recorded:

- Incidents recorded by PDO (and Contractor). If PDO or Contractor Management System Controls failed that should have been in place and contributed to the incident. This can only be revealed during the investigation.
- Incident will not be recorded by PDO (and Contractor), if the investigation reveals that the incident was caused wholly by the action of the third party.

All work-related third-party fatalities resulting from assault, sabotage, and/or theft shall be included in the PDO statistics.

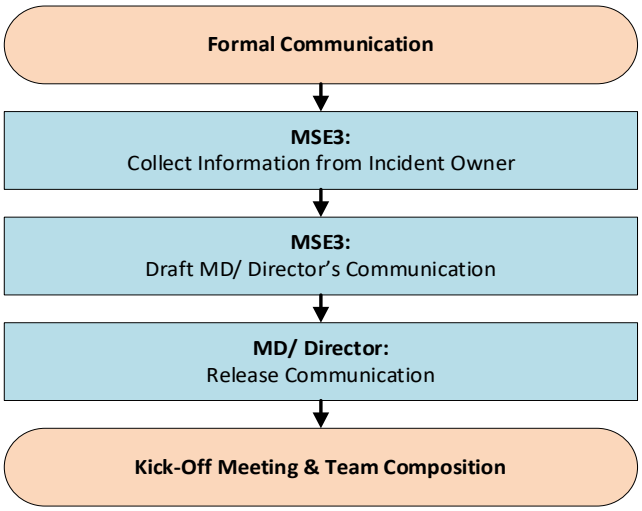
Note: Third party injury will not be recorded in the statistics for injuries. However, if a third-party fatality results from a failure in PDO management system controls, then the third-party fatality will be recordable.

The investigation team is responsible for determining the classification regarding work relatedness and recordability. The final confirmation of classification shall be the responsibility of MSEM or delegate.

There are three possible classifications relating to the work relatedness of an incident:

- Work related reportable and recordable.
- Work related reportable but non recordable.
- Non work related.

5. Formal Communication



5.1 Requirement of Formal Communication

Formal communication within 2 working days is required for the following incident classification:

Table 5.1 Communication

Incident Type	Report to
Fatalities.	MSE3
Non-Accidental Deaths (NAD).	MSE3
Lost Time injuries (LTI's).	MSE3
AIPS Tier-1 incidents.	MSE8
Spills and leaks exceeding $10m^3$.	MSE2

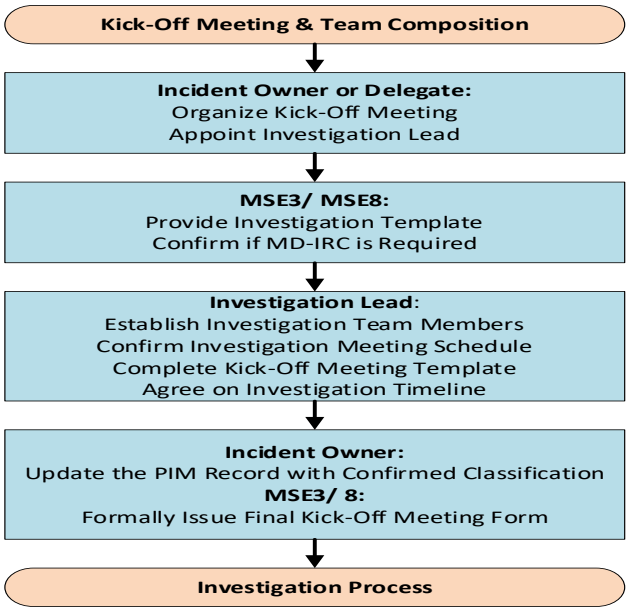
Incident owner, Director or Manager level, shall ensure that the required information is gathered and shared within 2 working days as per the schedule above to formalize the communication. For external communication the EVX team needs to be involved.

5.2 Reporting of Spills and Leaks

Where an oil leak/spill exceeds $10m^3$ the management Director or Operations Manager shall report the incident within 2 working days to the MSE2 who shall in turn inform MECA as legally required. Where spills exceed 50 tonnes, the shareholders will be informed by the Managing Director. A spill calculator for liquids is available in PIM using the following input parameters: Pressure, Duration, Water cut, Hole diameter.

Link:
https://www.pdo.co.om/hseforcontractors/DataManagement/SiteAssets/PipelineLeaksCalculator.aspx

6. Kick-off meeting and Team Composition



6.1 Kick-off Meeting

The Incident Owner is responsible to initiate a kick-off meeting. The Investigation Lead needs to be present to nominate investigation team members. MSE3 shall be invited for personal safety incidents. MSE8 shall be invited for process safety incidents. For personal injury or fatality as a consequence of a process safety incident MSE3 shall be involved. See Attachment 6 and 7 for the Kick-off Templates.

Note: Preliminary MD-IRC are required for Fatality, AIPS Tier-1, Actual RAM 4+ severity, MDC recommendation.

6.2 Level of Investigation and Team Composition

The Incident Owner shall nominate an investigation team leader who has to establish an investigation team based on relevancy to the incident.

Personal Incidents:

- If a PDO employee is involved in the incident, the investigation shall be led by a PDO Investigation Lead.
- If a PDO contractor employee is involved in the incident, the investigation shall be led by the contractor with support from the PDO Contract holder or Site Representative.

Note: For any work-related Fatality, investigation shall be led by PDO.

The level of support and resource will be based on the severity of the incident and the contractor's ability/capability to conduct the investigation.

Process Safety Incidents investigation shall be led by PDO Investigation lead.

Well Incidents investigation shall only be led by PDO Investigation lead if the Well operation was performed by PDO. Otherwise, the investigation shall be led by the contractor with support from the PDO Contract holder or Site Representative.

Note: for subsurface incidents, investigation shall be led by PDO Investigation lead.

DBOOM investigation shall only be led by PDO Investigation lead if there is a link with operations e.g. causes, consequences or direct interfaces with PDO operations. Otherwise, the investigation shall be led by the DBOOM contractor with support from the PDO Contract holder. The DBOOM contractor shall inform PDO about Tier 1 and Tier 2 incidents, providing the final incident reports and Learnings.

6.3 Investigation Lead

The investigation lead is selected based on the incident's actual severity or potential risk rating whichever is higher. To select the Incident investigation Lead, the Incident Owner shall follow below tables.

Table 6.1 Personal Incidents

Investigation Lead	Actual Severity [RAM]	Potential Risk Colour [RAM]
Director	5	Red 5
Manager	4	Red 3 & 4 and Yellow 5
Team Leader	3	Green 3 & 4/ Yellow 3 & 4
Coordinator	0,1,2	Yellow 2/ Green 2,1, 0

Note: Investigation and reporting of a non-accidental death can be delegated to the Team Leader level, provided there are no apparent unusual circumstances surrounding the death.

Table 6.2 Process Safety Incidents

Investigation Lead	Actual Severity	Note
Director	RAM 5	Red 5
Manager	Tier 1	Release, fire, or explosion meeting the Tier 1 threshold
Team Leader	Tier 2/ HiPo/ HVL	Release, fire, or explosion meeting the Tier 2 threshold
Coordinator	LoPC	Internal investigation

6.4 Team Membership

The following membership is strongly suggested based on who shall lead the investigation.

Note: All investigation Team members shall be made available during the investigation process as per approved TOR.

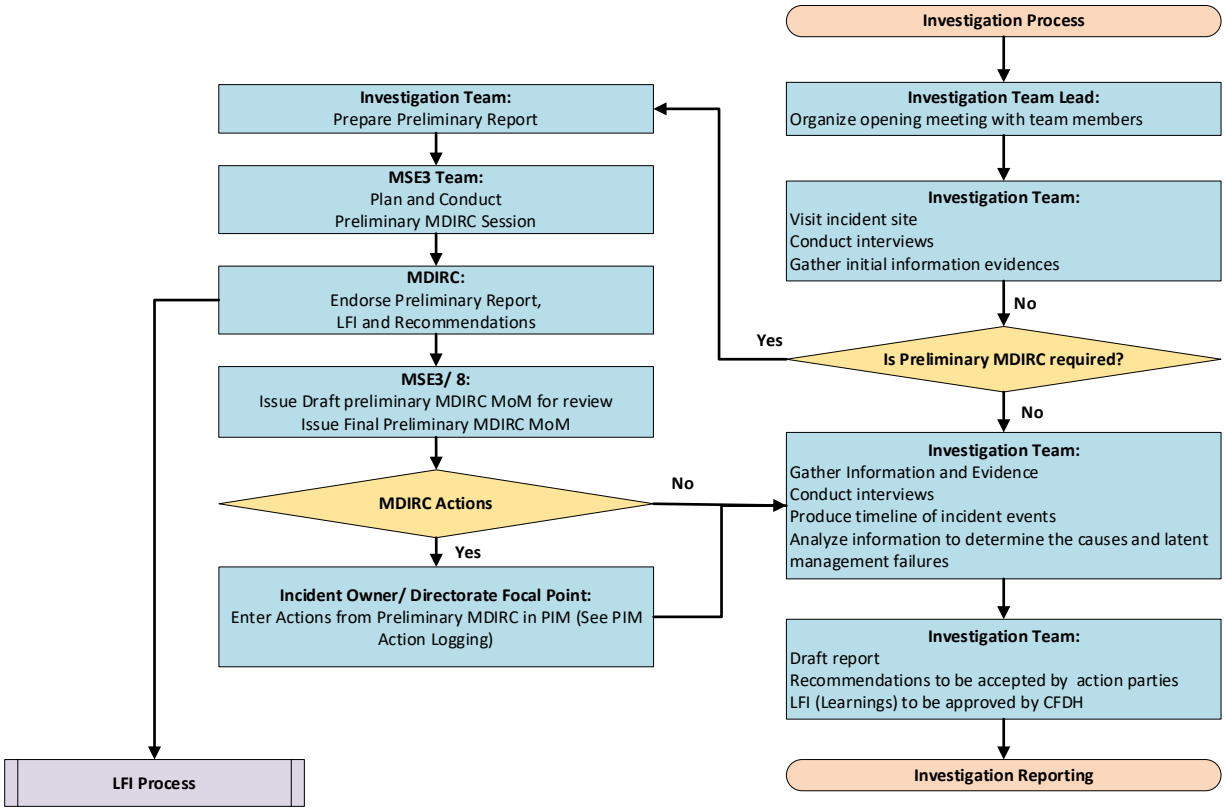
Table 6.3 PDO Investigations

Investigation Lead	Minimum Investigation Team
Director	PDO Managers, Functional Discipline Head, Team Leaders, PDO HSE Adviser, Directorate HSE Team Leader, MSE3/ 8 members, Qualified (HI Trained) Incident Investigator, Senior TSE (for AIPS Incidents).
Manager (Director minus one)	Team Leader; Functional Discipline Head representatives, Directorate HSE Team Leader, PDO HSE Adviser, TSE (for AIPS Incidents).
Team Leader	Functional Discipline Head representatives, HSE Adviser, Coordinator, TSE (for AIPS Incidents).
Coordinator	Discipline Heads, HSE Adviser, Supervisors, TSE (for AIPS Incidents).

Table 6.4 Contractor Investigations

Pot. Risk Class.	Minimum Investigation Team
Low	Contractor HSE Adviser, Contractor Operational Manager, Contract Holder, PDO HSE Adviser. HII trained Incident investigator.
Medium	Contractor HSE Manager, Contract Manager, PDO Manager, Team Leader, Contract Holder, PDO HSE Adviser, Directorate HSE Team Leader, HII trained Incident investigator.
High	Contractor CEO/MD, Contract Manager, Department Manager, Contractor HSE Manager, Directorate PDO Manager, Team Leaders, Contract Holder, Directorate HSE Team Leader, MSE3 for fatality. HII trained Incident investigator.

7. Investigation Process



7.1 Investigation Process

Investigations should take place as soon as possible after the incident. The quality of evidence can deteriorate rapidly, and delayed investigations are never as conclusive as those performed quickly. Important evidence can be gained from observations made at the location, particularly if the area remains undisturbed after the incident. In the case of fatal incidents, the scene must not be disturbed until permission is obtained from local ROP officers.

The investigation process consists of two main parts:

- Information gathering
- Information analysis

Roles and responsibilities will be determined by the investigation lead. Focal points shall be assigned for information gathering from the team members, storing it in a central place and for report writing. “The following additional roles and responsibilities are proposed and should be selected on an as needed basis:

- HSE Focal Point
- Causal Learning/Reasoning facilitator
- Incident Cause Analysis Method (ICAM) trained facilitator
- Subject matter experts (CFDH input required)
- Contract Holder (if applicable)

A field visit needs to be conducted in the early phase of the investigation. Ideally the investigation lead and the subject matter expert will be part of the field visit.

Interviews need to be scheduled with victims, witnesses, management, maintenance, operations etc.

Regular alignment meetings need to be scheduled to share the evidence with the team members and to determine additional leads for information.

7.2 Information Gathering

The first step in the incident investigation is information gathering. As every incident is unique, only high-level steps have been provided.

- Directorate, Asset, Incident Owner, Location
- PIM number
- Incident date and time
- Incident type
- Actual and potential RAM rating
- Incident description
- Injury, damage, loss
- Immediate cause
- Physical evidence, Pictures,
- Incident sequence (timeline)
- Field visit data
- Witness and victim statements
- Documents such as Procedures, Specifications, PEFS, Layout drawings, MSDS, etc,
- Vendor, contractor documents etc.
- Samples of fluids, materials, etc.
- Weather data
- Etc.

In general, the investigating team should consider the following points:

- Confirmation/correction of the initial potential risk and actual severity of the incident.
- Establish facts and establish the sequence of events.
- Where information is fact then state this and give supporting evidence.
- If information is by supposition, then state this.
- Keep asking 'why' until no more fundamental reasons or causes can be found.
- Determine the critical factors and the key causational factors.
- Establish the immediate causes, the underlying causes, and the management system failings.
- Fatalities will often be investigated by the ROP as well as by the Company.
- The construction of a diagram showing the connections between the various events and conditions leading up to the incident (an incident tree) is a useful tool in determining the underlying causes and conditions leading to an incident.

In some incidents components or equipment may be damaged or have failed. In these cases, the equipment should be stored in a secure place pending more detailed analysis.

Complex incidents can require specialists to determine causes of failure e.g. air crashes, crane failures and explosions. The need for and use of specialists should be determined and organized quickly with requests being made to the appropriate Corporate Functional Discipline Head(s). The investigation team should ask whether the ROP or the relevant medical officer have conducted any tests to determine if alcohol or drugs may have contributed to the incident.

7.3 Information Analysis

The second step is the incident analysis. Different methods are available.

Personal Incidents

Incident Cause Analysis Method (ICAM) is mandatory to be used for the investigation of personal incidents by contractors. Training has been provided to the contractors to use the ICAM. The purpose of the analysis is to determine the root causes and the management system failures of the incident. The ICAM tables have been imbedded in Attachment 12.

Note: Only for selected personal Incidents Causal Learning can be used. This will be on guidance of MSE3. In this case a specialist for leading the workshops is mandatory.

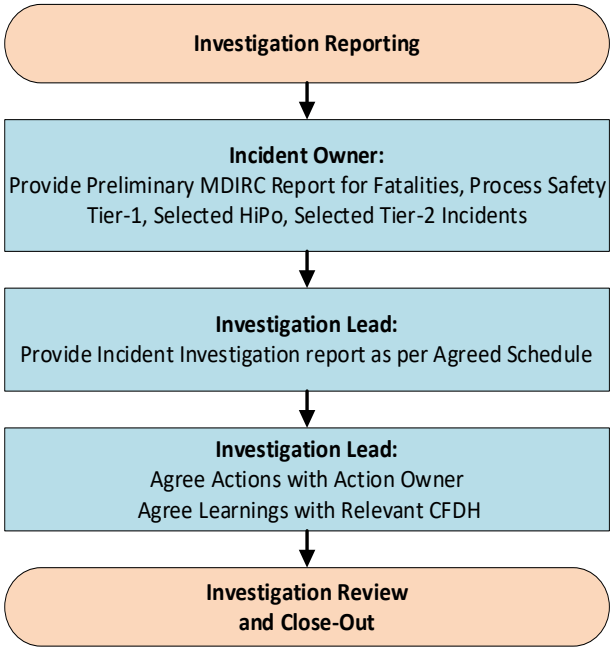
Process Safety Incidents

For Process Safety Incidents several methods can be used for analyzing the incident. The methods used in PDO are:

- ICAM: Mandatory for Wells incidents conducted by the contractor as per Personal Incident investigations. Can be used for other investigations.
- Causal Learning/Reasoning: A specialist for leading the workshops is mandatory.
- Root Cause Analysis: For internal investigations where the Tier1, Tier 2 or HiPo threshold is not met.
- 5Why: Can be used for LoPC not meeting the Tier 2 level.

The purpose of the analysis is to determine the root causes and the management system failures. PDO has committed to the Center for Chemical Process Safety (CCPS) Guidelines for Risk Based Process Safety. The main elements have been provided in Attachment 9.

8. Investigation Reporting



8.1 Preliminary MD-IRC Report

The Preliminary MD-IRC report must be developed for Fatalities, Selected HiPo's, Process Safety Tier 1 and selected Tier 2 Incidents. This report will contain the Incident description and the preliminary findings. Templates will be made available by MSE3 for personal incidents and by MSE8 for Process Safety Incidents.

8.2 Incident Investigation Report

The Investigation Lead is responsible for the investigation report. Templates will be made available by MSE3 for personal incidents and by MSE8 for Process Safety Incidents. For incidents with a low severity the template from attachment 5 can be used, unless otherwise required by MSE3 or MSE8.

All reports shall be written in English and any statements or records attached in Arabic, shall be accompanied with an English translation.

The report shall contain as a minimum:

- Place, time, date, and description of the incident.
- Classification of incident (incident type).
- Actual consequences and Potential Risks.
- Incident timeline.
- Pictures.
- Key Findings.
- Supplemental findings.
- Immediate causes.
- Underlying causes.
- Latent Management System failings.
- Action items to correct the issue or to prevent reoccurrence.
- Learnings.

8.3 Actions

There are two types of actions resulting from an Incident investigation:

1) Actions to mitigate the immediate causation.
2) Actions to correct the management system and to prevent similar incidents in PDO for the future. All causes relating to Management System failures require an action.

Actions from the investigation need to consider the Hierarchy of controls and meet the following criteria:

- Specific (S) Objectives should specify what they want to achieve.
- Measurable (M) It should be able to measure whether the objectives are met.
- Achievable (A) Objectives set must be achievable and attainable.
- Realistic (R) Objectives must be realistically achievable with the available resources.
- Timebound (T) When can the set objectives be achieved, and the action closed.

It is mandatory to upload all agreed actions from incident investigations in PIM within 7 working days after (M)D-IRC. The Incident Owner is responsible to enter the actions in PIM. All actions need to be agreed upfront with the action party. The PIM numbers need to be included in the investigation report.

Note: If there is a dispute between the Investigation Lead and the Action owner, this will be escalated to the Director level by the Investigation Lead.

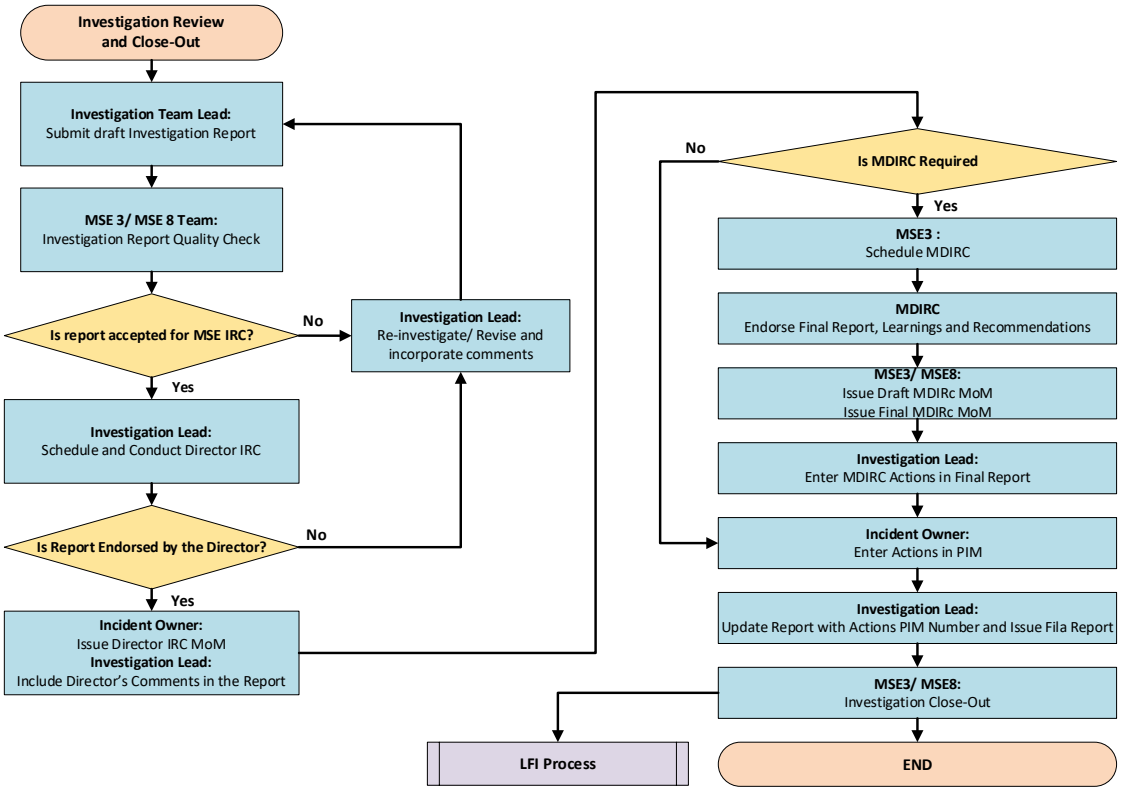
8.4 Learnings

There are two types of main type learnings from an Incident Investigation that can be subdivided in specific types of learnings:

1) Items that have been covered in the PDO Management System but are missed.
2) Items that have not been covered in the PDO Management System and require an update of specifications, procedures etc. These Learnings need to be agreed with the relevant CFDH.

Both types of learnings will be shared with the relevant stakeholders.

9. Incident Review and Close Out



9.1 Incident Review Committee (IRC)

After finalizing the Incident report the Investigation Lead is responsible for issuing the document for IRC. In PDO 3 levels of IRC are available:

1) MSE3/ MSE8 IRC.
2) Director IRC.
3) MD-IRC.

9.2 MSE3/MSE8 IRC

The Investigation Lead is responsible for issuing the Investigation report for IRC. The purpose of the MSE3/ MSE8 IRC is to verify if the investigation process is followed and the report is of an acceptable quality.

Table 9.1 MSE3/MSE8 IRC

Incident type	IRC
Fatalities.	MSE3
Non-Accidental Deaths (NAD).	MSE3
Lost Time injuries (LTI's).	MSE3
Personal Incident HiPo's	MSE3
Hidden incidents	MSE3
AIPS Tier-1 incidents.	MSE8
AIPS Tier-2 incidents.	MSE8
AIPS HiPo incidents.	MSE8
High Value Learnings (HVL)	MSE8

After the MSE3/MSE8 IRC completion, the Investigation Lead will schedule the Director IRC.

9.3 Director IRC

The Investigation Lead is responsible for issuing the Investigation report for Director IRC. The Incident Owner is responsible for the Directors IRC Minutes of meeting.

It is at the discretion of the incident owner and MSE3/MSE8 to initiate the Director-IRC for the selected High Value Learnings based on the relevance for the business. The purpose of the Director IRC is to inform the Director and to verify if the learnings help to improve the respective organization and the PDO management system.

9.4 MD-IRC

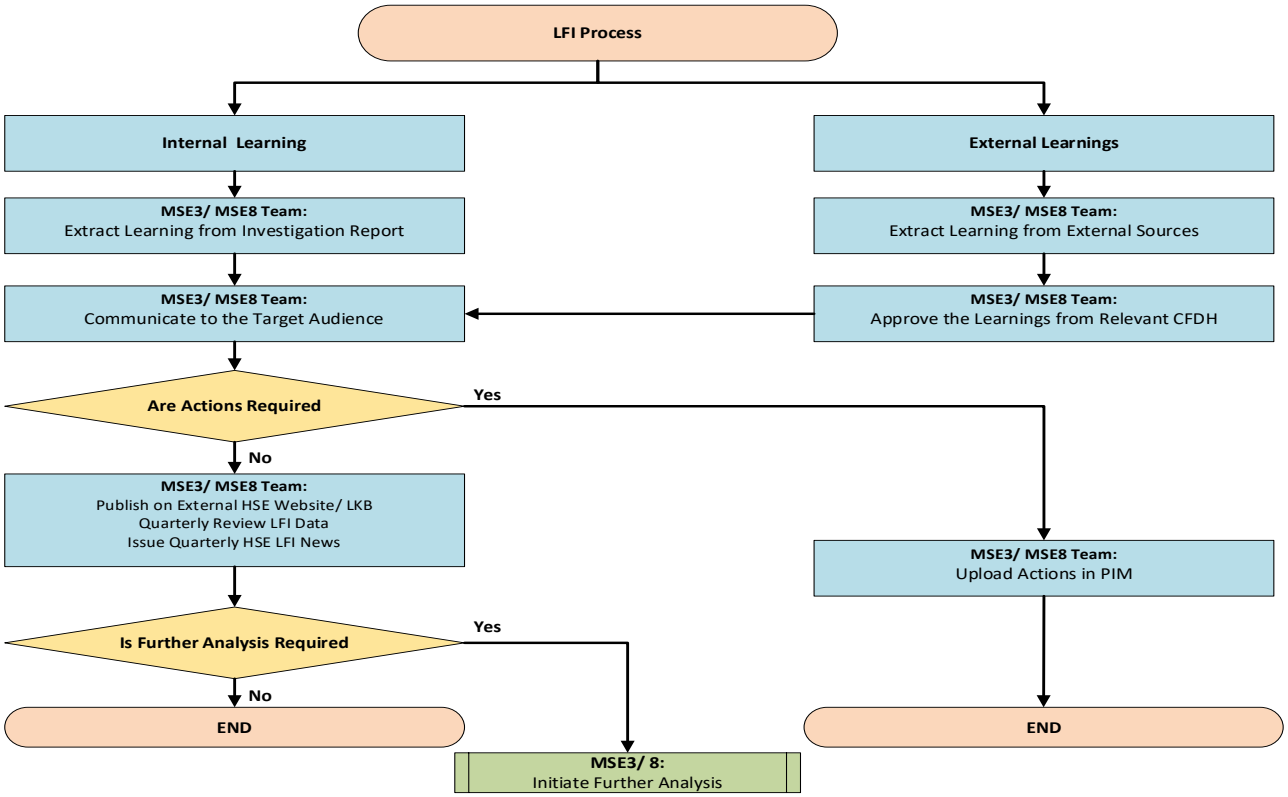
The Investigation Lead is responsible for issuing the Investigation report for IRC for the following incident types:

- Fatalities
- Selected Personal Incident HiPo's
- AIPS Tier-1 incidents
- Selected AIPS Tier-2 incidents
- Hidden incidents, incidents not reported as per process.

MSE3/MSE8 are responsible for the MD-IRC Minutes of Meeting. The final minutes and final Incident report will be issued to the Participants within one working week.

It is at the discretion of the Relevant Director and MSE3/MSE8 to initiate the MD-IRC for the selected personal or AIPS Tier -2 incidents based on the relevance for the business. The purpose of the MD-IRC is to inform the MD-committee about High Impact Incidents and to verify if the learnings help to improve the PDO management system.

10. Learning from Incidents



10.1 Learning Process

The learnings identified by the incident investigation team (PDO or Contractor) will be uploaded in the Lost Time Incidents (LTI) database or Learning Knowledge Base (LKB) database:

http://portal.corp.pdo.om/solutions/LKB/Pages/LearningGateway.aspx

- Personal Incidents in the LTI database by MSE3.
  http://portal.corp.pdo.om/solutions/LKB/Pages/LearningGateway.aspx
- Process Safety Incidents in the LKB database by MSE8.
  http://portal.corp.pdo.om/solutions/LKB/AIPSM/Pages/HomePageNew.aspx

Learnings from external sources will be uploaded after review. Approved learnings will be uploaded in the Lost Time Incidents (LTI) database or Learning Knowledge Base (LKB) database.

10.2 Distribution of Learnings

10.2.1 Types of Alerts and when they are to be used

- First Alert: It is used for sharing the Initial learning from LTIs, the alert will be part of the LTI notification as a link it will be also uploaded in MSE3 website.
- Second Alert: It is used for Sharing Final learning once the investigation is concluded, and the alert will be uploaded in MSE3 website.
- Awareness Alert: It is used for all incident selected for MD-IRC; awareness alert will be used within 10 days after completing preliminary MD-IRC. and the alert will be uploaded in MSE3 website.
- Action Alert: It is used for any incident where immediate action required.

- Musleh news: Quarterly, MSE3/MSE8 with the support of MSE3 Team, will issue Musleh news consisting of all 2nd Alerts categories and sorted based on incident categories such as DROPs, Hands & Fingers, Road relate (MVIs) etc.

10.2.2 Learning from External

- Once the External Learning reports are received, MSE3/MSE8 to extract the learning, discuss the learning with CFDH/SME/AIPS working group and endorse the external learning.
- MSE3/MSE8 to communicate the learning to the business target audiences via HSE communication. For Action Alerts MSE3/MSE8 will upload the action in PIM after communicating and agreeing with Action Parties.
- All alerts will be published in the external website.
- Quarterly Mr Musleh news will be issued.
- In case further analysis is required, one of these three processes will take place: Fishbowls, Deep dive, Thematic Review.
- If required also Work stoppage can be initiated.

10.3 Learnings from Process Incidents

When the Investigation reports and the Learnings are uploaded in the relevant database, they need to be implemented by the Assets, Engineering teams, Contract holders and Site representatives.

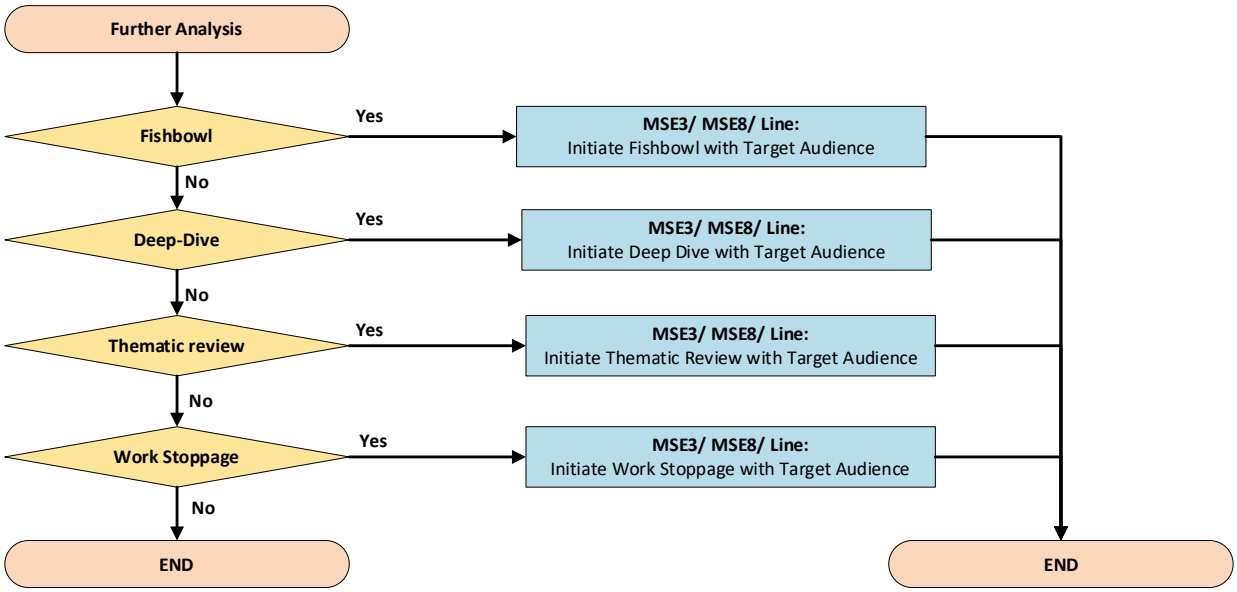
Note: Due to sensitive information, the incident reports cannot be shared with third parties without Formal Company Approval.

The purpose of the learnings is to discuss the issues at the relevant level in the organization.

- Learnings that have an impact on operation need to be discussed within all team that have relevant issues.
- Learnings with impact on design need to be discussed in the teams and implemented in future projects.
- Learnings with impact on Petroleum Engineering (PE) to be discussed in the PE teams and implemented in future projects.
- Learnings with impact on drilling to be discussed need to be discussed in the wells/drilling teams and implemented in future drilling projects.
- The Relevant CFDH is responsible for the learnings that require update of PDO Standards and Specifications.

Note: If a learning is included in a Procedure or Specification, it can be removed from the LTI and LKB. This is the responsibility of MSE3 or MSE8.

11. Further analysis



MSE3 or MSE8 will initiate a further analysis, however the line organization is responsible for implementation.

11.1 Fishbowl

The Fishbowls are initiated by MSE3 or MSE8. An interactive team engagement to discuss specific incident learnings to identify whether or not their own operation might suffer a failure in the future from the same type of management shortfalls. It is about applying the logic, questioning the reasoning, and then reflecting and asking, do we have a similar problem here? The Fishbowl is facilitated by the team leader. The Fishbowl Delivery Guide provides further guidance.

11.2 Deep Dive

The Deep Dive is initiated by MSE3 or MSE8 regarding a specific subject. The purpose is to investigate deeper to identify the wider learnings for the organization.

11.3 Thematic Reviews

Directorates thematic review

The HSE Team Lead from each Directorate is required to initiate a monthly incident review to identify the trends that require an internal Thematic Review. The Director shall ensure that the Thematic Review takes place. MSE3 will escalate the outcome of the Thematic Review to the MDC level if required and will officially communicate to the responsible Directorate.

Corporate thematic review

The Corporate Thematic Review is initiated by MSE3 or MSE8 regarding a specific theme to be reviewed based on analysis of data book/feedback from discipline CFDH's/assets. A dedicated team of specialists reviews the incidents to identify the wider learnings for similar units, equipment, or situations.

11.4 Work Stoppage

The Work Stoppage is initiated by MSE3 or MSE8 based on a specific incident. The purpose is to have the wider organization and contractors involved in the causes of the incident and the learnings for their organization or team. A work stoppage needs to be supported by MD.

12 Training, Periodical Reporting and Evaluation

12.1 Training,

Training will be provided for incident Investigation leads. The training to be refreshed if there's any changes in requirements such as changing in the training etc.

Specific training will be provided for ICAM and Causal Learning for the facilitators.

12.2 Periodic Reporting

For Personal incidents MSE3 will issue periodical reports containing incident statistics and overview.

For Process Safety incidents MSE8 will issue a monthly and annually summary report containing the incident statistics and a short description of the incidents.

12.3 Periodical Evaluation and Critical Learnings

A high-level report of the Personal Incidents and the Process Safety incidents will be issued to MD twice per year.

MSE3 will provide an analysis report containing:

- Fatalities
- LTI
- Selected HiPo

MSE8 will provide an analysis report containing:

- Tier 1
- Tier 2
- Process Safety HiPo

Note: For the Process Safety incidents, the assets are given the opportunity to present the Current situation and the way forward to prevent similar incidents for the future.

Attachments

Attachment 1 Key Definitions
Attachment 2 Roles and Responsibilities
Attachment 3 Ownership
Attachment 4 Incident Types
Attachment 5 Low Severity Incident Report Template
Attachment 6 Kick-off Template Personal Incidents
Attachment 7 Kick-off Template Process Safety Incidents
Attachment 8 Minimum Information for Personal Incidents
Attachment 9 CCPS Elements
Attachment 10 Risk Assessment Matrix Example
Attachment 11 Process Safety Incident Classification
Attachment 12 Incident Cause Analysis Method Tables
Attachment 13 Life Saving Rules
Attachment 14 Failed Safe and Failed Lucky

Attachment 1 Key Definitions

First Aid Case (FAC): Any work-related injury that involves no lost workdays, restricted workdays or medical treatment but which requires and receives first aid treatment.

High Potential Incident (HiPo) is an incident (including near miss) for which the potential consequences are assessed as RAM4+.

High Value Learning (HVL): A HVL is an events not meeting the APT 754 Tier1 or Tier 2 requirements and also not meeting the HiPo RAM 4+ requirements, however, is addressing an issue that can be beneficial for PDO to investigate.

Lost Time Injuries (LTI): The sum of injuries resulting in fatalities, permanent total disabilities, and lost workday cases, but excluding restricted work cases and medical treatment cases.

Note: If 20 people receive lost time injuries in one incident it is 20 cases, not one.

Lost Workday Case (LWC): Any work-related injury that renders the injured person temporarily unable to perform their normal work or restricted work on any day after the day on which the injury occurred. Any day includes a rest day, weekend day, scheduled holiday, public holiday or subsequent day after ceasing employment.

A single incident can give rise to several lost workday cases, depending on the number of people injured as a result of that incident.

Lost Workdays (LWD): The total number of calendar days on which the injured person was temporarily unable to work as a result of a lost workday case. In the case of a fatality or permanent total disability no lost workdays are recorded.

Lost Time Injury Frequency (LTIF)

The number of lost time injuries per million exposure hours worked during the period

Medical Treatment Case (MTC): Any work-related injury that involves neither lost workday or restricted workdays, but which receives Medical Treatment.

Motor Vehicle Incident: An incident involving a company or contractor vehicle in motion whether on or off the road, that has resulted in injury or damage to assets, the environment or the company's reputation, irrespective of the cost of repair or responsibility for the cause.

A vehicle is defined as a car, van, light vehicle, heavy goods vehicle, road tanker, bus or motorcycle any unit under tow. It also includes plant or mobile cranes (if licensed to travel on the roadways and with RAS) if the vehicle is driving on the roadway at the time of the incident.

Near-miss - An incident that could have caused illness, injury or damage to assets, the environment or company reputation, or consequential business loss, but did not. All near misses shall be treated as incidents and shall be investigated and reported according to their potential risk.

Non-Accidental Death (NAD): A non-accidental death is defined as the death of Company or contract employee due to suicide or non-work-related illness either at the workplace or company premises or due to a non-work-related illness which started at the workplace/company premises, but which subsequently resulted in death while the employee was outside of the workplace/company premises - e.g. in an ambulance, airplane or in hospital. Company premises includes company and contractor accommodation, or during working hours on non-company premises.

Non-Work-Related Third-Party Death: A reportable but non recordable fatality involving the death(s) of a third party but where the investigation confirms no direct link to a Company work related activity. This is removed from the statistics when classification is confirmed.

Occupational Illness: Any abnormal condition or disorder of an employee, other than one resulting from an occupational injury, caused by exposure to health hazards associated with employment.

An illness is work-related if the balance of probability is 50% or more that the case was caused by exposures at work.

Permanent Total Disability (PTD): Any work-related injury that permanently incapacitates an employee and results in termination of employment.

Process Safety Event: A process safety event is an incident that resulted in, or could potentially have resulted in an unplanned or uncontrolled release of:

- Combustible liquids (e.g. MEG, TEG, diesel, lube oil, hydraulic oil, etc.);
- Flammable liquids (e.g. crude oil, methanol, IPA, etc.);
- Flammable gas (e.g. natural gas, butane, pentane, etc.); or
- Toxic chemicals (e.g. H_2S, SO_2, mercury, etc.); or
- Non-toxic and non-flammable materials (e.g. steam, nitrogen, compressed CO_2 or compressed air) that result in actual consequences.

From a process that occurs within the property limits of PDO owned or operated hydrocarbon facilities including gas plants, gathering and production stations, well pads, gathering systems, injection systems, pipelines, etc.

Recordable Incident: A proven work-related injury or illness is recordable in the statistics if it results in one or more of the following:

- Death
- Lost work case (days away from work)
- Restricted work or transfer to another job
- Medical treatment beyond first aid
- Loss of consciousness for any length of time
- A significant injury or illness (diagnosed by a physician or other licensed health care professional) involving cancer, chronic irreversible disease, a fractured or cracked bone or a punctured eardrum.
- All incidents resulting in damage or AI-PS proven to relate to PDO are also recordable.

Repeated Incident: An incident is considered as a repeat if at least three out of the below criteria have been met:

- Same Top Event
- Same immediate Cause
- Same underlaying cause / Management system failure
- Same company

Restricted Work: Any work-related injury or illness where the PDO doctor recommends the employee not perform one or more of their job's routine duties as a direct result of injuries sustained.

Restricted Work Case (RWC): Any work-related injury which results in Restricted Work.

Restricted Workdays (RWD): The total number of calendar days counting from the day of starting restricted work (not counting the day of injury / illness) until the person returns to his normal work.

When restricted workdays follow a period of lost workdays, the restricted workdays are recorded in addition to the lost workdays, but the injury is recorded as a lost workday case only.

Tier 1 Process Safety Event: A Tier 1 Process Safety Event that meets the Tier 1 requirements per API 754

Tier 2 Process Safety Event: A Tier 2 Process Safety Event that meets the Tier 2 requirements per API 754

Total Recordable Cases (TRC)

The sum of injuries resulting in fatalities, permanent total disabilities, permanent partial disabilities, lost workday cases, restricted work cases and medical treatment cases.

Total Recordable Case Frequency (TRCF)

The number of Total Recordable Cases per million exposure hours

Unsafe Act: Is an action by a person which could have led to an injury, damage or harm, but which did not result in any on this occasion.

Unsafe Condition: Is a condition of a worksite which could have led to an injury, damage or harm, but which did not result in any on this occasion.

Work Related: Work related activities are defined as those activities for which management controls are in place or should have been in place.

The following activities should be considered as work related until proven otherwise:

- All work by PDO personnel on shift,
- All work by PDO contractor on PDO premises or on non-PDO premises for which it can reasonably be concluded, based on risk assessment that PDO and contractor management controls are required. “Contractor” includes all sub-contracted (etc) activities.

Attachment 2 Roles and Responsibilities

The following table formalizes the roles and responsibilities of different levels in the incident notification, investigation, and reporting process.

	Activity	First on scene	Supervisor	Incident Owner	Investigation team Lead	HSE Team leader	MSEM	MSE 3 Personal Incidents	MSE8 Process Safety	MSE5 Head HSE Planning	MCOH	UWA	Relevant CFDH	Director	MD
	NOTIFICATION														
1	Immediate emergency action	R													
2	Collect initial facts and eye-witness statements.		R												
3	Contact CCR 5555	R	R	I											
4	Notify the Road Safety Standards Team if motor vehicle incident		R			I									
5	Notify HSE Team Leader and Senior Operational Management		R	I		I		I	I						
6	Assess initial level of severity and potential classification from RAM		R			C		C	C						
7	Confirm the appropriate Incident Owner		R			A		I	I						
8	Incident owner can re-assign incident owner in PIM one level lower if appropriate			R		A		C	C						
9	Contact and inform the chosen incident owner		R	A											
10	Create an initial incident notification in PIM (notification based on the severity of the incident)		R	A			I	I	I				I	I	I
	INCIDENT CLASSIFICATION														
11	Create the Level 1 notification (Tier-1, Fatality, LTI, NAD, etc)			A				R	R						
12	Review Level 1 notification		R	R		C		S	S				C	A	
13	Communicate Level 1 notification in/ outside of PDO.					I		A	A					R	R
	COMMUNICATION														
14	Create an appropriate core investigation team			R		I		C	C				C	A	
	KICK-OFF														
15	Initiate kick off meeting			R	S	S		S	S				S	I	
16	Decision on the incident owner						A	R	R					I	
17	Hold initial meeting of the investigation team			A	R	S		S	S					I	
18	Make initial assessment if work related			A	R	S		S	S	I					
	INVESTIGATION and Reporting														
19	Identify Investigation Team			A	R	S		S	S						
20	Conclude investigation into the incident, including visits, interviews, inspection of equipment, review of records, etc			A	R	C		S	S						
21	Analyse findings and identify underlying causes.			A	R	S		S	S						
	INCIDENT REVIEW AND CLOSE OUT														
22	Conduct MSE IRC			S	S	C	A	R	R					I	
23	Conduct directorate Incident review (IRC) presentation			A	R	C		S	S				I	R	
24	Ensure the action items are SMART and appropriate			A	R	C		C	C						
25	Update presentation and investigation report with points raised in Directorate IRC			A	R	I		I	I					I	
26	Upload agreed actions into PIM			A	R	I		I	I						
27	Arrange MD-IRC review slot via MSE3, informing all attendees			A	C	S	I	R	R				I	I	I
28	Confirm with MSE3 who secretary will be and take minutes			A	R	I									
29	Review draft MoM and issue.			A	R	C		C	C				R	R	
30	Present report to MD-IRC			A	R	C		C	C				I	C	

	Activity	First on scene	Supervisor	Incident Owner	Investigation team Lead	HSE Team leader	MSEM	MSE 3 Personal Incidents	MSE8 Process Safety	MSE5 Head HSE Planning	MCOH	UWA	Relevant CFDH	Director	MD
31	Create final report and MoM/ presentation			A	R			C	C						
32	Upload final report/ MoM / presentation into PIM			A	R										
33	Upload additional agreed actions into PIM			A	C		I	R	R						
	LEARNINGS														
34	Process and cascade final 'learning from Incidents' communication (add MSE34 in the list)			I	I		A	R	R				S	I	
	ACTION TRACKING														
35	Enter MD-IRC minutes and report to PIM.			A	R			I	I						
36	Develop Serious Incident Review material for MD.			S	S	C		R	R	A			S	C	C
37	Implement remedial actions successfully			A	R	S		I	I						
38	Update PIM to confirm action points are successfully closed			A	R	S		I	I						
39	Check status of action point close outs.			A	R	S		I	I						
40	Confirm the quality and accuracy of action points closed out			R		S		I	I	I				A	
41	Challenge any failure to close out action point by deadline			R		S		I	I	I				A	
42	Conduct status reports and trend analysis							R	R	A					
43	Provide Directorates with monthly 'overdue PIM action item report'					I				A				I	
44	Update overdue PIM items into the KPIs dashboard									A					
45	Present dashboard in MDC									R					A
46	Process consequence management for sub-standard investigations			R		S		I	I						
	FOLLOW UP														
47	Periodical reporting of incidents							R	R						
48	Evaluation and Critical Learnings							R	R				S		
49	Thematic Reviews							R	R				S		

R= Responsible: Responsible for the action being carried out
A= Accountable: Accountable to ensure the responsible person(s) carries out the action required
S= Support: Is called upon to provide support the responsible person to achieve the action required
C= Consult: Is consulted to ensure the correct action, timing or focus is being applied
I= Inform: Is informed to ensure that they are kept aware of progress on the actions.

Note: For Personal Incidents MSE3 needs to be involved.
For Process Safety Incidents MSE8 needs to be involved.

Attachment 3 Ownership

In general, if the incident, (excluding transport related incidents) occurs within the following criteria, the directorate takes ownership of the incident:

Directorate	Name	Description/Activity
XD	Exploration Directorate	• Wells which are under the custody of XD. • Any activities under XD operations.
UWD	Well Engineering	• All incidents occurring during well construction/ workover (NOTE: if the incident is due to subsurface 'uncertainties' and as such the incident should actually be owned by subsurface). • Any Rig/ Hoist incidents. • Formal signed Well Location Custodianship Transfer (WLCTF) form will decide the owner during well handover. • PF/Well testing units (if the location been handover to WTU through PTW/Custodianship transfer, then UWD own the incident).
OND/OSD/ GD	Assets Subsurface Teams	• Incidents happening during normal operation can be decided depending on the cause of incident. If it is because of subsurface causes, then the owner is the subsurface team of the directorate. If it is because of surface causes, then the owner is the operation team of the directorate. If a cause is unclear of an incident occurred from Christmas tree up to the Choke valve, ownership rests within subsurface team. • For incidents happening because of wrong data/ info provided by subsurface team to well engineering, the owner is the subsurface team of the directorate.
OND/OSD/ UIDGD	Asset Operations Teams	• All production and gathering facilities. • Any interior hydrocarbon transportation including pipelines, flowlines and RMSs. • Any Equipment/ Facility/ Well formally handed over (signed by asset). • Any hydrocarbon storage facilities, Enhanced Oil Recovery systems, steam generation. • Facilities which are of Design Build Own Operate Maintain (DBOOM) and Design Build Own Operate Transfer (DBOOT) type.
OND/OSD/ UID/GD	Asset Engineering Teams (FCP)	Engineering activities (flowlines/ FCPs).
UID	Operations Teams	• PDO & contractor interior offices, camps, workshops & recreational facilities. • Supply warehouse and storage areas. • PDO School and Ras al Hamra Recreation Centre. • Defined areas within the Main Office complex. • SOGL and MoL Pipeline. • Power stations. • Booster station. • Tank Farm. • Marine facilities. • Incidents happening during pipeline maintenance work including pigging, inspection.
DPM	Projects	• Incidents occurring before signing Final Acceptance Certificate (FAC) ownership is given to Project Delivery Directorate (DPM).

Directorate	Name	Description/Activity

		• If an incident occurred because of project mishandling or an equipment that is under the custody of DPM, the ownership is determined as per below:
		  ○ For incidents occurring on new equipment installed in a brownfield the ownership is with DPM up to signing of the Final Acceptance Certificate (FAC).
		  ○ Incidents caused or supervised under the commissioning activities rests within project commissioning manager.
		  ○ Incidents caused or supervised under construction activity rests with the project construction manager.
		• For incidents where the causation does not fall on the above and does not have clear incident ownership, the ownership is with the contract holder.

As per de description	Rig move team	• Incidents during rig move. • Rig move responsibilities begin after loading and when vehicles move from the rig / camp site as these areas are under the custodianship of the drilling (Hoist). • Rig down is the drilling contractor's responsibility therefore not under the Rig mover only during loading when supervised by the Rig mover then ownership is transferred.
As per mode of contract	DBOOM	DBOOM facilities.
As per de description	Transport related incidents	• PDO employee - follow the line management of the PDO employee. • PDO contractor - respective Contract Holder (CH). • Subcontractor - respective CH of the main contractor. **Note:** if there's a delivery journey to supply or service more than one site or contract and there's no clear SLA in place, the following order will be considered while deciding the ownership in case any dispute on the ownership arise: • Who issue/manage the journey plan? • Who manages the Driver? • Who manage the PMS (if vehicle defects a main causation)? • Who paying for the services/PO? • Who collecting the Manhours and KMs? It's important while deciding the ownership to understand what controls failed that cause the incident and who is managing these controls.

Cases of dispute

If several reporting lines are involved in the incident and none of the above criteria have proven definitive in determining incident ownership, then it rests with the line in the following order:

1. Reporting line responsible for supervising the activity most influence on the causation of the incident.
2. Reporting line that suffers the most severe injury, damage or loss.
3. Reporting line that issues the Purchase order (PO).
4. Reporting line that collects the manhours.

In such an instance, the incident should be investigated and reported jointly with participants from each of the involved lines and with the Incident Owner leading.

Cases of dispute (Contractor managed location)

If multiple PDO contractors are involved in the incident and none of the above criteria have proven definitive in determining incident ownership, then it rests with the contractor in the following order:

1. The contractor who has most influence on the causation of the incident.
2. The contractor responsible for supervising the activity which has most influence on the causation of the incident.
3. Contractor that collects the manhours.
4. Contractor that issues the Purchase order (PO).
5. Contractor that suffers the most severe injury, damage or loss.

In such an instance, the incident should be investigated and reported jointly with participants from each of the involved contractors and with the Incident Owner leading.

Wells Examples:

No	Scenario	Ownership
1	While centrifuge operator (PDO Mud contractor) was climbing down from the centrifuge skid through the cage fixed ladder located on a drilling rig (main contractor) he suddenly lost his balance and slipped and fell on the ground from height of approx. 1.7 m due to not maintaining 3 point of contact and not having the stairs aligned	The ownership of investigation lies with Mud contractor will own the incident as he has most influence on the causation of incident and his records will be impacted.
2	During POOH of the gun assembly and while rotating the connection loose to almost a full turn resulting in trapped pressure release and injury to the Drilling contractor crew (main contractor). This was caused due to inadequate supervision & procedures from the Eline contractor.	The ownership of investigation lies with the e line contractor and the record of both parties will be impacted.
3	While the wireline contractor was lifting the lubricator using the hoist winch and mobile crane, the elevated end swung to the pipe-rack side of the catwalk and struck Landing joint which was laying on the catwalk causing it roll off the catwalk and fall on the right foot of the Slick line Assistant Operator who was standing near the catwalk to remove the hose to prevent it getting tangled on the catwalk and suffered a fracture. This was caused due to poor supervision by the wireline supervisor and inadequate zone management	The ownership of investigation lies with wireline contractor with support from the hoist contractor and the record of wireline contractor will be impacted.
4	While running 133/8 casing one of the casings' running crew was hit by the SJ elevator slings when the slings got parted due to overloading of the SJE resulting in LTI. This was caused due to poor communication & inadequate zone management by the driller.	The ownership of investigation lies the drilling contractor with support from the casing running contractor the record of both parties impacted.
5	A service hand working on a main contractor facility gets injury due to an unsafe condition on the main contractor facility.	The ownership of investigation lies the main contractor with support from the service company with the record of both parties impacted.

Attachment 4 Incident types

The incident types described below are for example only.

No	Incident Types	Party Involved	Examples
1	Work related reportable and recordable	PDO/ PDO contractor incident	**Camp site** C1 Employee is bitten by a snake on duty in working hours C2 Employee slips on floor in shower block which is slippery and does not have anti slip surface C3 Employee trips over cables running over ground and which are not adequately contained **Travel** T1 Employee travels from home to a medical organised by his company in a private vehicle when alternative transport has not been arranged. T2 Employee decides to leave for a work journey in the dark before the journey plan allows and has a crash in the dark **Work** W1 Contractors employee conducting non PDO work but in the contractor's workshop/yard which should contractually be dedicated for PDO operations. W2 Employee is cooking food in a worksite without permission and burns himself W3 Employee falls down aircraft steps whilst boarding a plane on a business trip **Other** A Company Employee attends a course at a training school and sustains an injury during training. Since the injury occurs during the training sessions, it is a work-related injury.
		Third Party	Third Party suffered Fatal injuries from a road accident involving PDO/PDO Contractor vehicle, where investigation revealed a failure in management controls from PDO/PDO Contractor.
2	Work related reportable but non recordable	PDO/ PDO contractor incident	NA
		Third Party	• 3rd P1 Third Party suffered injuries from a road accident involving PDO/PDO Contractor vehicle, where investigation revealed a failure in management controls from PDO/PDO Contractor. The incident will be reported in PIM, but Third-Party injury will not be recorded in PDO Statistics unless it is fatality. • 3rd P2 A customer goes to our site to pick up scrap's materials (no contract in place), while on site, he trips and injured his ankle. The incident will be reported in PIM, but Third-Party injury will not be recorded in PDO Statistics unless it is fatality.
3	Non work related	PDO/ PDO contractor incident	Camp C1 Employee is bitten by a snake in the camp in non-working hours C2 Employee suffers food poisoning after eating food he has let spoil in his room C3 Employee traps his finger in the door in a camp in non-working hours C4 Employee slips over whilst standing on the shower tray and the tray is not damaged in any way

No	Incident Types	Party Involved	Examples
			Travel T1 Employee uses company vehicle without management permission for a private trip T2 Employee on a work journey decides to travel off road to chase a rabbit and rolls the vehicle T3 Employee is jogging on the road outside the camp before work and is struck by a passing vehicle T4 Employee chokes on food at a restaurant in non-working hours whilst away on a business trip abroad **Other** O1 Company Employee attends a course at a training school and sustains an injury while going out for a stroll in the evening. The injury occurs in the employee's recreational time, and since it is not caused by a failure of management controls of the training centre, it is not work related. O2 Employee travels back home in a private vehicle when he has a paid bus/flight ticket from his employer O3 Vehicle demobilised from PDO work crashes on return journey O4 Employee is travelling on a non PDO approved public bus service when his company have arranged a ticket on a PDO approved bus **Non-Accidental Death (NAD**) N1 Suicide which is not related to work issues. E.g Employee commits suicide at work due to personal home pressures N2 Death by natural causes not related to work exposure. E.g Employee has a heart attack on a public commuting bus N3 Employee falls ill at site but dies later in hospital due to same illness N4 Employee has a non-work-related illness (e.g. stroke, whilst resting off duty in the work camp N5 Employee exhibits symptoms before entering PDO flight but then dies in the air.

Attachment 5 Low Severity Incident Report Template

Contractor:						**LOW SEVERITY/POTENTIAL INCIDENT INVESTIGATION REPORT**	
Contract Number:							
Contract Holder:							
DATE OF INCIDENT:				**TIME OF INCIDENT:**			
LOCATION OF INCIDENT:							
INCIDENT SEVERITY:				**Legend of Incident Severity:**			
(Tick on appropriate box)				**0**: No injury or damage to asset or to the environment (ENV)			
Incident Actual Severity:				**1**: Slight injury, FAC or asset damage<US$10K, slight Environmental effect			
0	**1**	**2**	**3**	**4**	**5**	**2**: Minor injury(MTC/RWC) or asset damage US$10K-100K, minor ENV effect	
Incident Risk Potential:				**3**: Major injury(LTI,PPD) or asset damage US$100K-1M, moderate ENV effect			
Low		**Medium**		**High**		**4**: Up to 3 Fatality or PTD or asset damage US$1M-10M, major ENV effect	
						5: More than 3 fatality of PTD or asset damage over US$10M, massive ENV effec	
TYPE OF INCIDENT: *(Tick on appropriate box)*							
☐ PERSONAL INJURY		☐ ASSET DAMAGE		☐ ENVIRONMENTAL		☐ ROAD TRAFFIC	
☐ NEAR MISS		☐ NON ACCIDENTAL DEATH		☐ OTHERS(Specify):			
BRIEF DESCRIPTION OF INCIDENT:							
PARTIES INVOLVED IN INCIDENT:				COMPANY/ DEPARTMENT		INJURY SUSTAINED	
NAME		JOB					
POLLUTION, ASSET LOSS OR DAMAGE:							
TYPE OF FACILITY OR EQUIPMENT				EQPT. TAG NO.		DESCRIPTION OF DAMAGE/POLLUTION	
ACTION TAKEN FOR INJURED PERSONS:							
☐ First Aid		☐ Medical Treatment		☐ Hospital Confinement			
☐ Others (Specify):							
IMMEDIATE CAUSE (UNSAFE ACT /CONDITION) CONTRIBUTING TO THE INCIDENT							
REPORTED BY(SUPERVISOR/MANAGER):							
NAME:			**SIGNATURE:**			**DATE/TIME:**	
PIM NUMBER							
UNDERLYING CAUSE (S): (ABSENCE OR LAPSE IN MANAGEMENT CONTROLS)							
CORRECTIVE ACTION (S)						TYPE	RESPONSIBLE PARTY / TARGET DATE
PEOPLE							
PLANT/EQPT							
PROCESS							
1) Eliminate		2) Substitute		3) Isolation	4) Design	5) Training	6) Admin controls / 7) PPE
Comments from HSE Dept.:							
Investigated by:					Date:		
Closed out date:							
Remarks:							
HSEM/A:			**SIGNATURE:**			**DATE:**	

Microsoft Excel Worksheet

Attachment 6 Kick-off Template Personal Incidents

Incident date:

Notification date:

Incident Type# xx (e.g.: LTI#00) Comp Name XXX

LTI / HiPo / NAD	**Incident Owner**		**Investigation team** (list below)
	Investigation Lead		
	HSE		
	ICAM trained investigator		
	Contract Holder (if applicable)		
Days			
10	**First draft (from notification date)**		
16	**Second draft**		
21	**Final draft**		
24	**MSE3 IRC**		
30	**Director IRC**		
42	**MD IRC (if applicable)**		
	Critical Factor (s)		
	Causational factors / considerations		

Investigation template:

LTI/Fatality/High Potential

http://www.pdo.co.om/hseforcontractors/DataManagement/Documents/V2.New%20IRC%20-LTI%20HVL%20%20Hipo%20templet%20Review%20updated.pptx

NAD

http://www.pdo.co.om/hseforcontractors/DataManagement/Documents/New%20NAD%20IRC%20templet.pptx

ICAM listings:

http://www.pdo.co.om/hseforcontractors/DataManagement/Documents/Incident%20Investigation/ICAM_GU612_Underlying%20causes_immediate%20causes_MSF_V5_pirntable%20version.pdf

CP-122 HSE Manual:

http://pdointernet/hsepoc/pages/home.aspx

Guide:

- All Fatal incidents require 1–2-page preliminary findings to be presented to MD within 10 days of notification
- Contractor must keep an electronic evidence repository and provide this with 1st draft to MSE3 team.
- Any additional evidence to be handed over on MSE3 IRC.
- Do not change the template
- Do not call IP, use his job title
- Ensure you capture behavioral and cultural aspects
- Ensure evidence is provide in PIM before it is closed out
- After each review, please ensure you complete your follow up drafts in the version sent to you by the MSE team. This is to ensure any small amendments we make are not lost and have to be repeated.
- Directorate planner to schedule Directorate IRC (copied into Kickoff minutes)

Attachment 7 Kick-off Template Process Safety Incidents

Incident No: PIM Incident Type: -AIPS-Tier

Title:

	General Information	Names
	Incident Owner/Directorate	
	Investigation Lead	
	Root Cause Specialist	
	HSE Focal Point	
	CFDH/Disciplines to be involved:	
	Contract Holder*	
	Contractor Name*	
	Investigation Team (list members)	
	Incident RAM Ranking	Actual: Potential:
AIPS**	Critical Milestones (dates)	Dates
	Official notification date	
T=0	**Investigation Kick-off meeting**	
T+10 days	**MD-IRC Initial Update**	
T+40 days	**Final draft**	
T+50 days	**CFDH approval of LFI**	
T+52 days	**MSE8 IRC**	
T+62 days	**Director IRC**	
T+70 days	**MD-IRC***	
	Remarks/Initial Findings	
	Critical Factors/Considerations	
	Causational Factors / Considerations	

* If applicable

** Applicable for all Tier 1, on-plot Tier 2 incidents (selective off-plot Tier 2) and HiPo

Attachment 8 Minimum Information for Personal Incidents

1. Identify who witnessed the incident and obtain their names and contact details
2. Collect and make a note of the initial facts including.
3. What you saw when you arrived?
4. What is the time?
5. What is the weather?
6. What is the lighting – where is the sun?
7. What, if any non-work-related general clothes were people wearing
8. Who was the person injured?
9. What did the injured person say?
10. What injuries were visible if any?
11. What equipment was involved?
12. What was the phase of operations, process condition, etc.
13. Markings, scratches etc. left by equipment involved,
14. Where were relevant people and equipment?
15. Ask witnesses what they saw, heard, smelt etc. and make notes. Record who says what.
16. Ensure the road safety department is informed if it is a motor vehicle incident.
17. Take measurements, heights, distances etc. if applicable.
18. Take photographs and/or video of the scene as quickly as possible if it is safe to do so. Remember that taking too many photos is much better than not taking enough.
19. Inform the PDO and contractor management as soon as possible.

Attachment 9 CCPS Elements (As per PR-1712)

Element		Adopted by PDO
Commitment to Process Safety		
1	Process Safety culture	
2	Compliance with standards	V
3	Process Safety Competency	V
4	Workforce involvement	
5	Stakeholder outreach	
Understanding Hazards and Risks		
6	Process Knowledge management	V
7	Hazard identification And Risk Assessment	V
Manage Risk		
8	Operating procedures	V
9	Safe Work Practices	V
10	Asset Integrity and Reliability	V
11	Contractor Management	V
12	Training and Performance Assurance	
13	Management of Change	V
14	Operational Readiness	
15	Conduct of Operations	V
16	Emergency Management	
Learn from Experience		
17	Incident Investigation	
18	Measurements and Metrics	
19	Auditing	
20	Management Review and Continuous Improvement	

Attachment 10 Risk Assessment Matrix Example

The PDO risk Assessment Matrix is part of CP-122 Sheet 31. The matrix below is only included as an example. The examples for People and Asset consequences have been added only for clarification.

Severity	CONSEQUENCES				INCREASING LIKELIHOOD				
					A	B	C	D	E
	People	Environment	Assets	Reputation	Never heard of the industry	Heard of in the industry	Has occurred in company **or** > 1 p/a in the industry	Happened at the location, **or** > than 1 p/a in the Company	Has happened > 1 p/a at a location
0	No health effect/injury	No effect	No damage	No impact	Low Risk				
1	Slight health effect/injury	Slight effect	Slight damage	Slight impact					
2	Minor health effect/injury	Minor effect	Minor damage	Minor impact					
3	Major health effect/injury	Moderate effect	Moderate damage	Moderate impact			Medium Risk		
4	PTD* or 1 to 3 fatalities	Major effect	Major damage	Major Impact					
5	Multiple fatalities	Massive effect	Extensive damage	Massive impact			High Risk		

People

Severity Level	Definition	Examples
0	**No injury or health effect**	
1	**Slight injury or health effect** • No Treatment Case or First Aid Case • Ill ness that results in noticeable discomfort, minor iteration or transient effects that are reversible after exposure stops	Not affecting work performance and not affecting daily life activities. • First aid cases and medical treatment cases • Exposure to health hazards that give rise to noticeable discomfort, minor irritation, or transient effects reversible after exposure stops
2	**Minor injury or health effect** • Medical Treatment Case • Lost Workday Case or Restricted Work Case, where either has a duration of up to and including 5 days • Illness with reversible health effects such as food poisoning and dermatitis	Affecting work performance, such as restriction to activities or need to take up to 5 days to fully recover. Or affecting daily life activities for up to 5 days. Or reversible health effects. • Restricted workday cases or lost workday cases resulting in up to 5 calendar days away from work • Illnesses such as skin irritation or food poisoning.
3	**Major injury or health effect** • Lost workday Case or Restricted Work Case, where either has a duration exceeding 5 days • Illness with reversible health effects such as sensation, noise included hearing loss, chronic back disorders or repetitive strain injury • Mental illness due to stress with reversible health effects	Affecting work performance in the longer term, such as absence from work for more than 5 days. Or affecting daily life activities for more than 5 days. Or irreversible damage to health. • Lost Workday cases resulting in 6 or more calendar days away from work • Long term disabilities (previously called Permanent Partial Disabilities) • Illnesses such as sensitization, noise induced hearing loss, chronic back injury, repetitive strain injury or stress

Severity Level	Definition	Examples
4	**Permanent total disability or up to three fatalities** • Illness with reversible health effects such as corrosive burns, asbestosis and silicosis • Cancer • Mental illness due to stress with irreversible health effects	Resulting from injury or occupational illness. • Illnesses such as corrosive burns, asbestosis, silicosis, cancer and serious work-related depression. • Car accident resulting in 1, 2 or 3 fatalities
5	**More than three fatalities** • Illness with reversible health effects such as multiple asbestosis cases traced to a single exposure situation • Cancer in a large, exposed population	Resulting from injury or occupational illness. Examples: • Multiple asbestosis cases traced to a single exposure situation • Cancer to a large, exposed population • Major fire or explosion resulting in more than 3 fatalities

Asset

Severity Level	Definition	Examples
0	**No damage**	
1	**Slight damage** • Costs less than 10,000 US$.	No disruption to operation
2	**Minor damage** • Costs between 10,000 and 100,000 US$.	Brief disruption to operation
3	**Moderate damage** • Costs between 100,000 and 1 million US$.	Partial shutdown
4	**Major damage** • Costs between 1 and 10 million US$.	Up to two weeks shutdown
5	**Massive damage** • Costs in excess of 10 million US$.	Substantial or total loss of operation

Environment

Severity Level	Definition
0	**No effect**
1	**Slight effect** Slight environmental damage – contained within the premises. Example: • Small spill in process area or tank farm area that readily evaporates
2	**Minor effect** Contamination damages Minor environmental damage, but no lasting effect. Examples: • Small spill off-site that seeps into the ground • On-site groundwater contamination • Complaints from neighbors, • Single of statutory or another prescribed limit • No permanent effect on the environment
3	**Moderate effect** Limited environmental damage that will persist or require cleaning up. Examples: • Spill from a pipeline into soil/sand that requires removal and disposal of a large quantity of soil/sand • Observed off-site effects or damage, e.g. fish kill or damaged vegetation

Severity Level	Definition
	• Off-site groundwater contamination • Complaints from community organizations (or more than 10 complaints from individuals) • Frequent exceedance of statutory or another prescribed limit, with potential long-term effect
4	**Major effect** Severe environmental damage that will require extensive measures to restore beneficial uses of the environment. Examples: • Oil spill at a jetty during tanker (off) loading that ends up on local beaches, requiring clean-up operations • Off-site groundwater contamination over an extensive area • Many complaints from community organizations or local authorities. • Extended exceedance of statutory or other prescribed limits, with potential long-term effects
5	**Massive effect** Persistent severe environmental damage that will lead to loss of commercial, recreational use or loss of natural resources over a wide area. Example: • Crude oil spillage resulting in pollution of a large part of a river estuary and extensive clean-up and remediation measures

Reputation

Severity Level	Definition
0	**No impact**
1	**Slight impact** • Local public awareness but no discernible concern • No media coverage
2	**Minor impact** • Local public concern • Local media coverage
3	**Moderate Impact** Significant Impact tin region or country • Regional public concern • Local stakeholders, e.g. community, NGO, industry and government, are aware • Extensive attention in local media. Some regional or national media coverage.
4	**Major impact** Likely to escalate and affect Group reputation • National public concern • Impact on local and national stakeholder relations. National government and NGO involvement with potential for international NGO action. • Extensive attention in national media. Some international coverage. • Potential for regulatory action leading to restricted operations or impact on operating licenses.
5	**Massive impact** Severe impact on Group reputation • International public concern. • High level of concern amongst governments and action by international NGOs. • International media attention • Significant potential for effect on national/international policies with impact on access to new areas, grants of licenses and/or tax legislation

Assessment

Actual Ranking

Assessment of the actual incident severity using the PDO Risk Assessment Matrix (RAM)

The PDO RAM shall be used to classify the **actual** severity of an incident:

- The left-hand column represents a rating of the severity of consequences (level 0 to 5) for harm or damage to people (P), assets (A), the environment (E) or PDOs reputation (R). Each row provides a different severity level for the incident's **actual** consequences.
- Find the most appropriate statement for the consequences of the incident in the rows 0 to 5 using the descriptions in section 1.2.
- For determining the Actual severity ratings, ignore the colored boxes of the RAM (only consider the consequence)

Example 1

- A major injury to a person gives an actual severity of **3(P)**
- A major environment effect gives an actual severity of **4(E)**
- A slight damage to equipment gives an actual severity of **1(A)**
- A massive impact on PDOs reputation gives an actual severity of **5(R)**

Note: In cases where an incident has multiple effects, the most severe shall prevail in the classification. Where the severities are equal the injury to personnel has priority over other effects.

Example 2

A process vessel leaks and causes a flash fire, killing 3 people and resulting in damage and deferment costs of $15M.

- The people consequence is classed as a **4(P)**
- The asset consequence is classed as a **5(A)**
- Hence the most significant risk for classification of the incident would be **5(A)**, despite 3 fatalities resulting from the incident."

Example 3

A tanker rolls over and a driver suffers a broken arm as a result. The tanker is scrapped with a resultant asset loss of $200K.

- The people consequence is classed as a **3(P)**
- The asset consequence is classed as a **3(A)**
- As the classifications for the two categories are the same, the people consequence takes precedence, and the incident would be **3(P)**."

A PDO doctor shall determine the 'people' injury severity involving any injury requiring anything other than first aid treatment. This shall be provided within 48 hours of the incident and shall be done on a purely medical basis and consideration of job type; the ruling and its rationale shall be recorded in writing in the report from the PDO doctor.

The four tables below shall be used to determine the most appropriate definition for people, assets, environment, and reputational consequences.

Potential Ranking

PDO looks at history to evaluate the potential future risk of any incident.

First ask the question "What is the worst scenario that could feasibly have gone wrong from this incident?" In this case one needs to consider there were no barriers, neither control nor recovery barriers in place

Then review historical records to see if or when that last scenario actually happened and the consequences that resulted from it.

Note that different but similar historical incidents may have led to several different outcomes and severities affecting people (P), assets (A), the environment (E) or reputation (R).

The top row of the RAM (shown as columns A to E) represents the different degrees of likelihood of the incident causing these potential consequences (based on how often those same consequences occurred in the past).

The potential risk is recorded as a three-digit potential risk rating:

1. Likelihood, (letter)
2. Severity (number),
3. Subject of the consequence (letter).

Example 4

A driver hit a sand-dune at high speed and suffered a major injury giving his actual severity as 3(P).

- A review of records shows that PDO has suffered a death in 2 similar incidents 8 months and 11 months ago with an actual rating of **4(P).**
- The potential for this person to have died then becomes **D4 (P)**
  D = has happened more than once per year in the Company
  4 = a singular fatality
  P = consequences were to a person
  Color Red

Example 5

An engineer climbs on to the top of a storage tank is overcome by H_2S and dies. Two buddies in breathing apparatus climb the tank to rescue the engineer but it is too late. The actual severity is 4(P).

- A review of records shows that in PDO 3 years ago a person died in similar circumstances but the 3 man rescue team were overcome as they did not have BA and also died with an actual rating of **5(P).**
- The potential for this incident is **C4 (P)** as four people were not involved here and so no more than 3 people could have died even without BA.
  C = has happened in the Company
  4 = fatality, but less than 4
  P = consequences were to a person
  Color = Yellow

Example 6

A gas pipeline ruptures due to over pressure causing a moderate effect as it is spotted by a passing engineer and the line is shut down. This gives an actual of 3(E). A review of records shows that this is the second rupture on the same line in the same location in the last 9 months, the first caused a major effect to the environment as it was not spotted quickly. Its actual rating was **4(E)**

- The potential for this incident becomes **E4 (E)** as it has proven it could have been worse as proven by history.
  E = has happened more than once per year at the location
  4 = major effect
  E = consequences were to the environment
  Color = Red

Boxes in the matrix represent different risk levels divided into light blue, blue, yellow and red areas.

1. Red - High potential incident
2. Yellow - Medium potential incident
3. Green - Low potential incident

The four areas describe the level of control required to manage risk:

- Red: Identify and implement controls and recovery measures to reduce the risk to ALARP and provide a documented demonstration of ALARP by a Bow-Tie or equivalent methodology.
- Yellow: Identify and implement controls and recovery measures to reduce risk to as Low As Reasonably Practicable (ALARP).
- Dark Blue: Manage for continuous improvement through the effective implementation of the HSE Management System.
- Light Blue: Manage for continuous improvement, although PDO may set lower priority for further Risk reduction

Attachment 11 Process Safety Incident Classification

A Process Safety Event is an incident that occurs within the property limits of PDO owned or operated hydrocarbon facilities (including gas plants, gathering and production stations, export sites, tank farms, well pads, gathering systems, injection systems, pipelines, flowlines, piping with sites, subsea lines and ancillary support areas (e.g., boiler houses and waste water treatment plants), bulk storage and transportation vessels attached to process equipment for purpose of transfer etc. that resulted or could have potentially resulted in loss of primary containment of:

- Combustible liquids (e.g. MEG, TEG, diesel, lube oil, hydraulic oil, etc.); or
- Flammable liquids (e.g. crude oil, methanol, IPA, etc.); or
- Flammable gas (e.g. natural gas, butane, pentane, etc.); or
- Toxic chemicals (e.g. H_2S, SO_2, mercury, etc.); or
- Non-toxic and non-flammable material (e.g. steam, nitrogen, compressed CO_2 or compressed air) that results in actual consequences.

All drilling and productions operational activities are also relevant including related facility start-up or shut-down operations, related construction or decommissioning operations, and events resulting from sabotage, terrorism, climatic episodes, earthquakes or other indirect causes.

Fluid loss from transportation equipment (e.g. tankers) are however excluded.

Tier 1 Indicator Definition and Consequences

A Tier 1 PSE is an unplanned or uncontrolled release of any material (Loss of Primary Containment, or LOPC), including non-toxic and non-flammable materials (e.g., steam, hot water, nitrogen, compressed CO2, or compressed air), from a process that results in one or more of the consequences listed below:

- An employee, contractor or subcontractor ‘days away from work’ injury and/or fatality
- A hospital admission and/or fatality of a third party
- An officially declared community evacuation or community shelter-in-place including precautionary community evacuation or community shelter-in-place
- A fire or explosion damage greater than or equal to $100,000 of direct cost
- A release of material greater than or equal to the threshold quantities described in **Table A** in any one-hour period.

Tier 2 Indicator Definition and Consequences

A Tier 2 Process Safety Event (PSE) is an LOPC with lesser consequence. A Tier 2 PSE is an unplanned or uncontrolled release of any material, including non-toxic and non-flammable materials (e.g., steam, hot water, nitrogen, compressed CO2 or compressed air), from a process that results in one or more of the consequences listed below and is not reported as a Tier 1 PSE:

- An employee, contractor or subcontractor recordable injury
- A fire or explosion damage greater than or equal to $2,500 of direct cost to the company
- A release of material greater than or equal to the threshold quantities described in **Table A** in any one-hour period.

Note: Some non-toxic and non-flammable materials (e.g. steam, hot water or compressed air) have no threshold quantities and are only included in this definition as a result of their potential to result in one of the other consequences.

Note: An internal fire or explosion that causes an LOPC from a process triggers an evaluation of the consequences. The LOPC does not have to occur first.

Drilling includes all exploration, appraisal and production drilling, wireline, completion, plugging and abandonment (including temporary abandonment), and workover activities as well as their administrative, engineering, construction, supply, and transportation aspects.

Tier 1 and 2 PSEs are reportable **only** when an LOPC occurs when operating ‘in-hole’. In-hole is defined by the period of time from when the drilling rig first spuds a well until drilling and completion activity has stopped and the well production tree (or well cap) is installed. Actual drilling and completions activities do not need to be taking place. This does not include rig up and rig down activities.

For drilling operations, Tier 1 and 2 PSEs are excluded for:

- Drilling/workover/wireline operations when not 'in-hole'
- Loss of circulation, loss of drilling mud, well kick, or underground blowout where there has not been an associated LOPC of material (e.g., gas, oil, other fluids, or mud) released above ground or above seabed or onto the rig floor

Events associated with the following activities fall outside the AIPS Incident classifications:

a) Marine transport operations, except when the vessel is connected or in the process of connecting or disconnecting to the facility or process.

b) Truck operations, except when the truck is connected or in the process of connecting or disconnecting to the process, or when the truck is being used for on site storage.

c) Vacuum truck operations, except on site truck loading or discharging operations, or use of the vacuum truck transfer pump.

d) Routine emissions from permitted or regulated sources.

Note: Upset emissions from permitted or regulated sources are potentially Tier 1 or 2 PSEs.

e) Office, shop, warehouse, or camp/compound building activities (e.g., resulting in office fires, spills, personnel injury or illness).

f) Activities leading to personal safety incidents (e.g., slips, trips, falls) that are not directly associated with on site response or exposure to an LOPC.

g) Activities resulting in an LOPC from ancillary equipment not connected to the process (e.g., small sample containers). The exclusion includes fuel/oil leaks involving trucks or other vehicles or other mobile equipment not considered part of the process.

h) Quality Assurance (QA), Quality Control (QC) and Research and Development (R&D) laboratory activities.

i) New construction that is positively isolated (e.g., blinded or air gapped) from a process prior to commissioning and prior to the introduction of any process fluids, and that has never been part of a process.

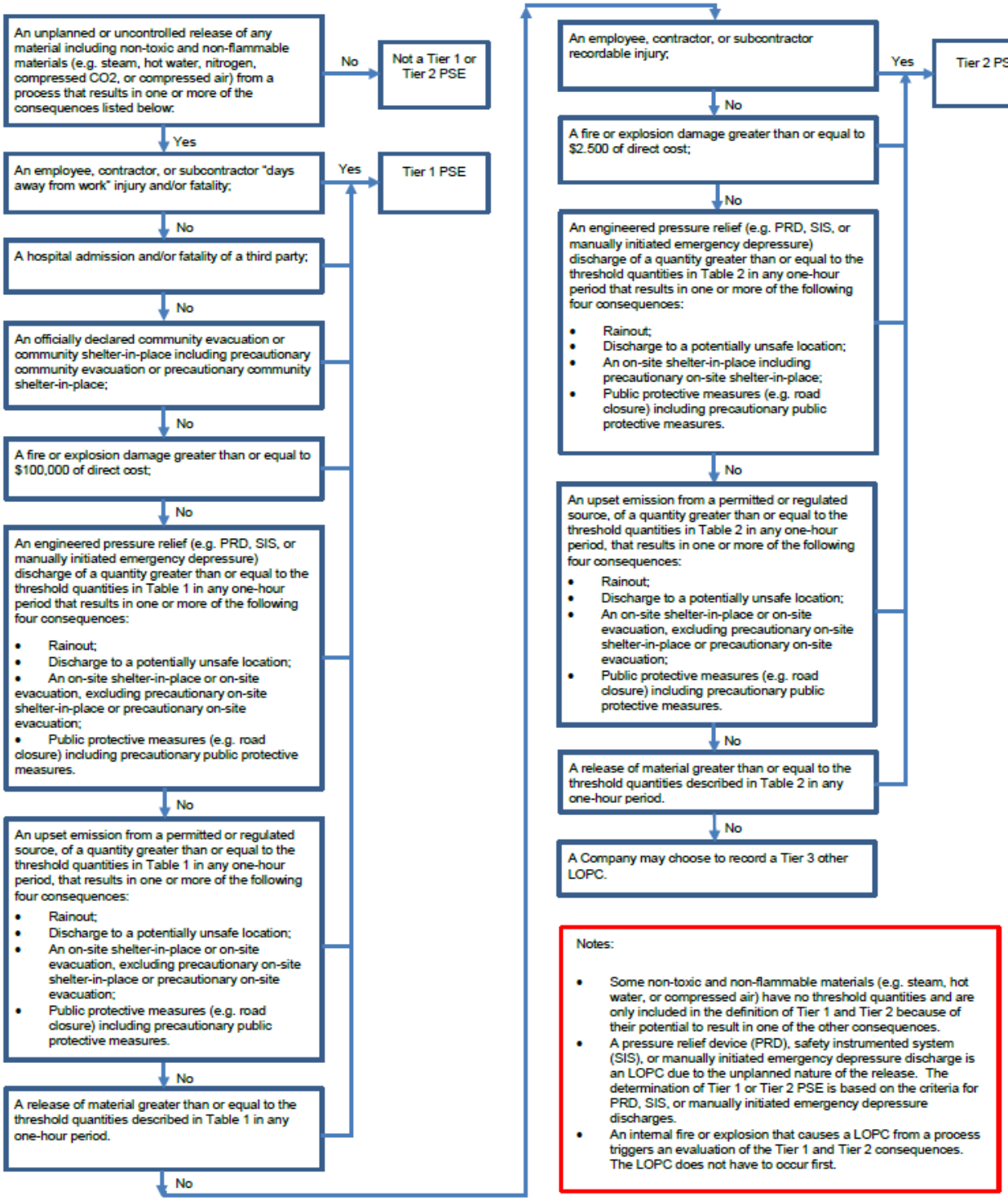
j) On site fueling operations of mobile and stationary equipment (e.g., pick-up trucks, diesel generators, and heavy equipment).

Table A: Summary of Tier-1 & 2 Thresholds.

Component	Tier 1 Threshold (outdoor / indoor)	Tier 2 Threshold (outdoor / indoor)
Crude	1000 / 500 kg	100 / 50 kg
HC Gas	500 / 250 kg	50 / 25 kg
HC Condensate	1000 / 500 kg	100 / 50 kg
Oil Based Mud (OBM)	-	1000 kg
Diesel	2000 / 1000 kg	100 / 50 kg
Lube Oil	-	1000 / 500 kg
H2S	25 / 12.5 kg	2.5 / 1.25 kg
Sulphur	-	1000 / 500 kg
N2/CO2	2000 / 1000 kg	1000 / 500 kg
Steam/Condensate	As per other consequence	As per other consequence
Fire/Explosion	100,000 USD	2,500 USD
Personal Injury	Fatality/LTI	MTC/RWC

Note: This is only a summary of the most relevant thresholds. API 754 will be governing.

PSE Tier 1 / Tier 2 DETERMINATION DECISION LOGIC TREE (PER API RP 754)



Attachment 12 Incident Cause Analysis Method tables

Attachment 12.1 Immediate Causes

	Unsafe Actions 1 - 4
1	**Communication**
1.1	**Violation (by individual)**: one individual fully aware that he was taking a risk by not complying with the work standard or procedure but still decided to do the job that way, e.g. not following a procedure
1.2	**Violation (by group)**: people fully aware that they were taking a risk by not complying with the work standard or procedure but still decided to do the job that way, e.g. solving a problem knowing that they have to infringe "actively break" on the rules or procedures.
1.3	**Violation (by supervisor)**: a supervisor or other management employee fully aware that he was taking a risk by not complying with the work standard or procedure but still decided to do the job that way.
1.4	**Operation of equipment without authority**: A person decided unilaterally to operate equipment or machinery without obtaining prior authorization to do so from the appropriate person. It is irrelevant if the person is trained in the use of the equipment, only that he did not obtain authorization.
1.5	**Improper position or posture for task**: the person did not follow the human kinetic practices. The person was working on an unsafe, unstable or non-standard work floor or was placing body parts in unsafe positions.
1.6	**Overexertion of physical capability**: did more than a person is physically able to do, e.g. carrying or lifting too much weight, etc.
1.7	**Work or motion at improper speed**: the person involved was not working at the proper speed, not taking time to do things safely, e.g. driving a forklift too fast, slewing a load too fast, adding chemicals too fast or too slow, etc.
1.8	**Improper lifting**: material being lifted, either by human or mechanical means, was lifted contrary to acceptable practices or was over the capacity of the person or the lifting equipment.
1.9	**Improper loading**: the equipment was improperly loaded, e.g. a vehicle or centrifuge loaded to one side or overloaded or wrong product in wrong cycle.
1.10	**Shortcuts**: the person involved in the work took a shortcut instead of performing the work in accordance with the procedures.
1.11	**Other**: if none of the above categories apply this category can be used.
2	**Use of Tools and Equipment**
2.1	**Improper use of equipment**: equipment was used for activities for which it was not designed, or equipment was misused, e.g. operating equipment beyond the maximum recommended temperature, lifting a pipe with a forklift.
2.2	**Improper use of tools**: tools were used for activities for which they were not designed, or tools were misused, e.g. possibly wrong tool for job, using excessive force on a tool, etc.
2.3	**Use of defective equipment (aware)**: knowing that the equipment was defective and still going on with the work, e.g. running a forklift with leaking hydraulics.
2.4	**Use of defective tools (aware)**: knowing that tools were defective and still using them.
2.5	**Improper placement of tools, equipment or materials**: material or equipment placed in potentially hazardous position.
2.6	**Operation of equipment at improper speed**: an operating limit was exceeded – the speed of a grinding wheel, the assembly line was speeded up, operating throughput was surpassed, etc.
2.7	**Operation of equipment without authority**: the person involved operated equipment for which he was not authorized to do so, because either he did not have a work permit or, for the person working in his own department, he was told by his supervisor he was not allowed to work on it. This also applies in situations where operating the equipment is not in the person's job description and therefore, understood that he is not

	authorized to operate the equipment, e.g. operating a forklift or crane without training or being certified or operating process equipment that is not included in the workers job function.
2.8	**Servicing of equipment in operation**: an attempt was made to service equipment without turning it off – trying to clear a stuck conveyor, working on an engine while its running, rodding out a plugged line, etc.
2.9	**Other**: if none of the above categories apply this category can be used.
3	**Use of Protective Methods**
3.1	**Lack of knowledge of hazards present**: knowing that the situation was not normal, the person involved in the incident was not informed or warned about the hazards.
3.2	**Personal Protective Equipment not used**: equipment prescribed in the procedures was not used.
3.3	**Improper use of Personal Protective Equipment**: the required Personal Protective Equipment was used, but it was not used in the proper way, e.g. non-fitting gas mask or wrong size of safety glasses or incorrect type of respirator, not maintaining or inspecting the equipment correctly.
3.4	**Servicing of energized equipment**: the equipment was not electrically or mechanically isolated or safeguarded according to lockout, red tag or line and equipment operating procedures.
3.5	**Equipment or materials not secured**: equipment, materials or person was not secured against movement or falling, e.g. ladder not secured, load not rigged properly, no toe boards on scaffolding, etc.
3.6	**Disabled guards, warning systems or safety devices**: the proper guards, warning systems or other safety devices were in place, but were disabled or overridden to allow the work to proceed without these protections.
3.7	**Removal or overriding of guards, warning systems or safety devices**: the proper guards, warning systems or other safety devices had been removed at some prior time and not reinstalled or reactivated.
3.8	**Personal Protective Equipment not available**: the necessary personal protective equipment was not available to employees at their work site.
3.9	**Other:** if none of the above categories apply this category can be used
4	**Inattention / Lack of Awareness**
4.1	**Improper decision making or lack of judgement**: the situation was wrongly judged and the wrong decision was made. E.g. deciding to do the job without following the procedure, not locking and tagging out as required, working on live equipment knowing the hazards.
4.2	**Distracted by other concerns**: the person involved was distracted and not attentive to the work in progress, therefore, the person was not aware or aware too late that something had gone wrong. Or had other issues on their mind.
4.3	**Inattention to footing and surroundings**: the person was just walking around and did not notice the obstacle or the surface conditions of the ground.
4.4	**Horseplay**: person(s) involved in the event were engaged in inappropriate activities, including practical jokes or clowning around.
4.5	**Acts of violence**: any type of physical or mental confrontations that can cause bodily injury or mental anguish.
4.6	**Failure to warn/make safe**: an individual had knowledge of a dangerous condition or activity, but did not warn current or future persons of the exposure, e.g. not tagging a defective tool or piece of defective equipment.
4.7	**Use of drugs or alcohol**: person(s) involved in the event were determined to be under the influence of drugs or alcohol.
4.8	**Routine activity without thought**: the person involved was performing a routine activity, such as walking, sitting down, stepping, etc. without conscious thought and was exposed to a hazard as a result.
4.9	**Other**: if none of the above categories apply this category can be used
	Unsafe conditions 5 - 8
5	**Protective Systems**
5.1	**Inadequate guards or protective devices**: adequate guards and protective devices that were needed to protect the worker were not present.

5.2	**Defective guards or protective devices**: guards and protective devices were installed but failed at the time of the incident.
5.3	**Inadequate Personal Protective Equipment**: the personal Protective Equipment used was not adequate for the situation at the time of the incident or the wrong type of Personal Protective Equipment was specified.
5.4	**Defective Personal Protective Equipment**: the Personal Protective Equipment was sufficient, but the Personal Protective Equipment used was defective at the time of the incident.
5.5	**Inadequate warning systems**: adequate warning systems were present but failed to provide notice at the time of the incident
5.6	**Defective warning systems**: adequate warning systems were present but failed at the time of the incident.
5.7	**Inadequate isolation of process or equipment**: the equipment was not properly isolated, and the people involved were exposed to chemicals, hot surfaces, electricity, etc.
5.8	**Inadequate safety devices**: safety devices such as pressure relief valves or turbine over speed trips were present but did not act quickly enough to prevent the accident.
5.9	**Defective safety devices**: safety devices such as pressure relief valves or turbine over speed trips failed to activate.
5.10	**Other**: if none of the above categories apply this category can be used
6	**Transportation, Equipment and Tools**
6.1	**Defective**: **vehicle, plant etc.**: the right vehicle, plant was being used, but was defective.
6.2	**Inadequate vehicle, plant for the purpose**: the necessary vehicle, plant to perform the function was not available, e.g. forklift being used as a crane.
6.3	**Improperly prepared vehicle, plant etc.**: the vehicle, plant was not prepared adequately prior to the job or maintenance work, e.g. a vehicles pre check not done prior to leaving the premises.
6.4	**Defective equipment**: the right type of equipment was being used, but the equipment was defective.
6.5	**Inadequate equipment for the purpose**: the necessary type of vehicle to perform the function was not available, e.g. forklift being used as a crane.
6.6	**Improperly prepared equipment**: the right equipment was being used, but the equipment had not been properly repaired or serviced for use. e.g. a vessel not thoroughly cleaned off process chemicals prior to entry.
6.7	**Defective tools**: the right kind of tool was selected but the tool involved was defective.
6.8	**Inadequate tools**: the tools were not adequate for this purpose, or the proper tools were not supplied.
6.9	**Improperly prepared tools**: the tools were not prepared properly before the job, e.g. not repaired properly or not cleaned of contaminants.
6.10	**Other**: if none of the above categories apply this category can be used
7	**Work Exposure**
7.1	**Fire and explosion**: the incident was caused by a fire and/or explosion.
7.2	**Noise or vibration**: the incident was caused by exposure to extremely high noise levels or vibration e.g. shock effect, process equipment, and high noise or vibration producing tools.
7.3	**Energized electrical systems**: incident caused by system not fully de-energized.
7.4	**Energized systems, other than electrical**: incident was caused by a system not fully isolated from gravitational, pneumatic, hydraulic or chemical energy sources.
7.5	**Radiation**: the incident was caused by dangerous radiation, e.g. x-ray or gamma ray, high frequency radiation, laser, NORM etc.
7.6	**Temperature extremes**: the incident was caused by an exposure to extreme high or low temperatures.
7.7	**Hazardous chemicals**: the incident was caused by extremely hazardous chemicals used in the process, e.g. reactive, toxic or ecologically dangerous chemicals.
7.8	**Mechanical hazards**: the incident was caused by sharp edges, moving machinery or equipment, etc.

7.9	**Physical hazards:** the incident was caused by contact with a physical hazard
7.10	Clutter or debris: housekeeping was inadequate, or work location was not clean and orderly.
7.11	**Storms or acts of nature**: the incident was a direct or indirect result of flooding, high wind, hailstorm, etc.
7.12	**Slippery floors or walkways**: the incident was caused by a slippery walking or working surface.
7.13	**Other**: if none of the above categories apply, this category can be used
8	**Workplace Environment / Layout**
8.1	**Congestion or restricted motion**: layout of the workplace was poor and not enough clearances were available or accessibility to equipment or tools was poor.
8.2	**Inadequate or excessive illumination**: the workplace was poorly illuminated, or the visibility was poor.
8.3	**Inadequate ventilation**: poor ventilation, e.g. the temperature could rise too high, concentrations of chemicals could rise or oxygen levels could decrease, etc.
8.4	**Unprotected height**: a contributing factor was work at an unprotected height, e.g. scaffold building, in towers, or on roofs, etc.
8.5	**Inadequate workplace layout**: the controls, labels or displays used to monitor the work were not adequate, e.g. the controls were out of normal reach, labels or displays were out of sight. Can also include misinformation – such as mislabeled equipment or chemicals.
8.6	**Other**: if none of the above categories apply this category can be used

Attachment 12.2 Underlying Causes

	Human factors 9 - 14
9	**Physical Capabilities**
9.1	**Vision deficiency**: the incident happened because the person involved had a vision deficiency, e.g. could not see over long distance, could not see alarms on the panel, etc.
9.2	**Hearing deficiency**: the incident happened because the person involved had a hearing deficiency, e.g. could not hear the alarm.
9.3	**Other sensory deficiency**: a deficiency, like reduced feel or smell, contributed to the incident.
9.4	**Reduced respiratory capacity**: asthma, silicosis, asbestosis and other elated diseased contributed to the incident or seriousness of the incident.
9.5	**Other permanent physical disabilities**: all other physical disabilities not mentioned above, e.g. weak back, ankles, etc.
9.6	**Temporary disabilities**: Disabilities, which are temporary, like broken bones, muscle pain, migraine headache, etc.
9.7	**Inability to sustain body positions**: the incident happened because the person involved did not have the capability to sustain the required body position for a longer time.
9.8	**Restricted range of body movement**: a physical condition restricted the person's movement and was not planned for in the job activity, e.g. a temporary or permanent physical disability, wearing of Personal Protective Equipment, unusual weight, unusual heights, etc.
9.9	**Substance sensitivities or allergies**: the person involved in the incident was medically proven to be allergic or sensitive to the substances involved.
9.10	**Inadequate size or strength**: the person assigned to the work did not have the size or strength to complete the task safely, e.g. could not reach, could not lift, etc.
9.11	**Diminished capacity due to medication**: the side effects of medication limited the person's physical capability.
9.12	**Diminished capacity due to inadequate intake of substance**: the person's diminished physical capability was due to insufficient substance intake, i.e. water, food, etc
9.13	**Other**: if none of the above categories apply this category can be used
10	**Physical Conditions**
10.1	**Previous injury or illness**: the incident happened because the person involved was ill (fever or any other kind of illness) or had an existing injury before the incident happened.
10.2	**Fatigue**: the person involved in the incident was fatigued due to workload or to lack of rest, e.g. too long working hours without time to relax, working more than 8 hours per shift, working double shifts over a long period of time, or working for a too long period (e.g. no days off over a period of more than seven days).
10.3	**Diminished performance**: the surroundings or conditions have led to less than ordinary performance, e.g. temperature extremes, lack of oxygen due to high elevations, atmospheric pressure change, such as encountered during diving work.
10.4	**Blood sugar deficiency**: at the time of the incident, the person involved had low blood sugar. This should be medically established.
10.5	**Impairment due to drug or alcohol use**: at the time of the incident, the person involved was under the influence of alcohol or drugs.
10.6	**Other**: if none of the above categories apply this category can be used.
11	**Mental state**
11.1	**Poor judgement**: although the person involved was well trained at the time of the incident, the person did not choose an appropriate course of action.

11.2	**Memory failure**: although the person involved was well trained at the time of the incident, the person could not remember how to act or react.
11.3	**Poor coordination or reaction time**: although the person involved knew exactly which actions to take, the person was not capable of coordinating all the required actions or the reaction time was too slow.
11.4	**Emotional disturbance**: the incident happened because the person involved was emotionally disturbed.
11.5	**Fears or phobias**: the incident happened because the person involved had a fear or phobia, e.g. someone who is afraid of working on heights, climbing ladders or claustrophobia, etc.
11.6	**Low mechanical aptitude**: the person was confused on what actions to take because they did not understand basic elements of how mechanical things work.
11.7	**Low learning aptitude**: the person involved had been well trained but was confused due to limited learning capability.
11.8	**Influenced by medication**: the persons mental state was diminished due to side effects of medication (e.g. drowsy, light-headed).
11.9	**Depression**: The person was suffering from depression and was under medical treatment.
11.10	**Other**: if none of the above categories apply this category can be used.
12	**Mental stress**
12.1	**Preoccupation with problems**: the person involved in the incident was preoccupied with problems and was not fully concentrated on the activities in progress, e.g. problems at work or at home.
12.2	**Frustration**: the incident happened because the person involved was frustrated, e.g., lack of management support, workload is unrealistic, trying to do the job with limited resources, doing his very best and seeing no results, etc.
12.3	**Confusing directions / demands**: the person involved in the incident felt the work was not well defined with proper direction or demands. Too many people giving instructions.
12.4	**Conflicting directions / demands**: conflicting directions or demands led to an incident, e.g., urgency of a job but still having to follow lengthy time-consuming safety procedures or too many safety critical jobs required to be completed simultaneously i.e. too many priorities.
12.5	**“Meaningless” or “degrading” activities**: the person involved in the incident felt the work the person was doing was meaningless, e.g., cleaning up and the next day it is filthy again, degrading or too much experience or education for this low classified job.
12.6	**Emotional overload**: the person was under high stress from either work or personal issues those effects their emotional state.
12.7	**Extreme judgement / decision demands**: the work being done required judgement and decision making that created stress, e.g., time sensitive decisions, high stakes in the outcome, incomplete information on which to base the decision.
12.8	**Extreme concentration or perception demands**: the work environment contributed to the incident, as the work required great concentration, e.g., a person is so absorbed in what they are doing, and they fail to recognize a hazard.
12.9	**Extreme boredom**: the person is adversely affected by monotonous or repetitive work.
12.10	**Other**: if none of the above categories apply this category can be used.
13	**Conduct**
13.1	**Improper performance is rewarded**: although the supervisor knew that the person was not following the safety procedures, guidelines of TA’s/JSA’s, the person felt they were being rewarded by saving time because the job was completed quickly. The worker may also have felt rewarded by performing improperly e.g. if by taking shortcuts, an unpleasant job is finished quicker, such as saving time/effort or opportunity to enable other more pleasant activities to be followed, in not following the prescribed work method, procedure, standard, practice or rule?

13.2	**Improper supervisory example**: supervisors not setting the proper example to the people working in their organizations or under their direction.
13.3	**Inadequate identification of critical safe behaviors**: the person failed to identify, recognize or apply critical safe behaviors e.g. locking sand tagging out which were critical and necessary to preventing failure leading to potential risk exposures resulting in safety incidents.
13.4	**Inadequate reinforcement of critical behaviors**: a supervisor seeing someone not following the safety procedures and guidelines and not correcting them immediately is an example of inadequate reinforcement of "critical safe behavior" or performance standards. Similarly, supervisors must note when employees are performing correctly to adequately reinforce the correct performance standards. Peer pressure can also play a role, if proper performance is criticized.
13.5	**Inappropriate aggression**: either the people were aggressive, or actions were done, and decisions were taken in an aggressive manner without really having an overview or regard of the consequences.
13.6	**Improper use of production incentives**: the use of the incentives for production or timelines has created an incentive to ignore safety requirements.
13.7	**Supervisor implied haste**: the incident was caused by the supervisor's implication that urgency in completing the work was more important than safety considerations.
13.8	**Employee perceived haste**: the incident was caused by the employee's assumption that urgency in completing the work more important than safety considerations.
13.9	**Habit / personal performance:** the incident was caused by the employees settled or regular tendency or practice, which is hard to give up.
13.10	**Vandalism**: Deliberate act of damage or destruction of company property or equipment.
13.11	**Other**: if none of the above categories apply this category can be used.
14	**Skill level**
14.1	**Inadequate assessment of required skills**: the person involved believed they had the proper skills to perform the work, but in fact, lacked required skills.
14.2	**Inadequate practice of skill**: the person involved was theoretically experienced but lacked practice in performing the task.
14.3	**Infrequent performance of skill**: the person was trained in the job, but the activity involved in the incident was done on a very low frequency or the person involved rarely performed the activity.
14.4	**Lack of coaching on skill**: the incident happened because the person involved did not have the coaching of a supervisor or experienced co-worker.
14.5	**Insufficient review of instruction to establish skill**: the person involved had training but was not given the opportunity to practice or perform the task as part of training to firmly establish the skill.
14.6	**Other**: if none of the above categories apply this category can be used.
	Workplace factors 15 - 23
15	**Training / Knowledge Transfer**
15.1	**Inadequate knowledge transfer**: a well-developed training effort was in place, but failed to transfer the necessary knowledge. Reasons for this could include the inability of delegates to comprehend (material beyond their level, language difficulties), inadequate instructor qualification, inadequate training equipment (lack of props or means to illustrate the topic) or misunderstood directions on the part of the delegates.
15.2	**Inadequate recall of training materials**: a well-developed training effort was successful in transferring the necessary knowledge, but delegates were not able to recall the material when needed. This could be the result of training not being reinforced on the job, or an inadequate retraining frequency.
15.3	**Inadequate training effort**: some training was conducted, but it failed to accomplish the necessary knowledge transfer. Potential causes include inadequate training program design, poorly developed training objectives, inadequate orientation programs, inadequate initial training efforts or poor means to determine if delegates have indeed mastered the material being taught.

15.4	**No training provided:** there was no effort made to train the particular person in this subject. Reasons for this can include a failure to identify training was necessary, reliance on out of date or inaccurate training records, a change in work methods or a conscious decision to forego training.
15.5	**Other**: if none of the above categories apply this category can be used.
16	**Management / Supervision / Employee Leadership**
16.1	**Conflicting roles / responsibilities**: who was to be responsible for what was not clear and well defined. This could include unclear reporting relationships, unclear assignments of responsibilities, improper delegation or conflicting situations where more than one party appears to be responsible for the same issue
16.2	**Inadequate leadership/supervision**: the person assigned with the responsibility for aspects for safety had not carried out their responsibility to the degree necessary for safe work. This could include lax standards of performance being tolerated, inadequate accountability for safety performance, and little performance feedback, inadequate knowledge of conditions at the work site or inadequate safety promotion.
16.3	**Inadequate identification of worksite/ job hazards**: the incident was caused by the failure to perform or properly respond to a loss exposure study, such as a HAZOP review or Job Safety Analysis.
16.4	**Inadequate correction of worksite / job hazards**: a hazard or incident had previously occurred to draw attention to a deficiency, but there was an inadequate effort to correct that deficiency.
16.5	**Inadequate management of change system**: the incident happened because a system or procedure did not exist or was incomplete to ensure that changes which affect the process are adequately assessed, documented and communicated.
16.6	**Inadequate incident reporting / investigation system**: the incident reporting and investigation procedures and guidelines were not followed for incidents that happened in the department. Therefore, the learning experiences and recommendations that could have prevented similar incidents were not discovered or lack of tracking system to ensure follow-up was done or not communicating the results of the investigations.
16.7	**Inadequate or lack of safety meetings**: safety meetings were not held or did not transfer essential knowledge about safety issues related to the incident.
16.8	**Inadequate performance measurement and assessment**: the means to measure and track safety performance were inadequate, leaving the organization unsure of what needed to be done.
16.9	**Inadequate application of work performance standards:** Management regularly failed to consistently apply work performance standards such as compliance to procedural requirements resulting in employees performing substandard work.
16.10	**No or Inadequate visible felt leadership**: Leadership do not demonstrate a safety presence or engage employees on safety issues in the workplace. E.g., attend safety meetings and toolbox talks etc.
16.11	**Other**: if none of the above categories apply this category can be used.
17	**Contractor Selection and Oversight**
17.1	**Lack of contractor pre-qualification**: a contractor firm was hired to perform work without successfully completing a pre-qualification review.
17.2	**Inadequate contractor pre-qualifications**: a pre-qualification review was conducted, but it failed to identify deficiencies in the contractor's capabilities.
17.3	**Inadequate contractor selection**: the selection of a contractor was made without all relevant data, or without proper consideration or due diligence of the contractor's safety management capabilities.
17.4	**Use of a non-approved contractor**: a contractor firm who did not meet pre-qualification criteria was hired to perform work.
17.5	**Lack of job oversight**: a contractors firm's work was not inspected or audited to identify deficiencies in outcomes or methods.
17.6	**Inadequate oversight**: a contractors firm's work was inspected or audited, but deficiencies present were not identified.
17.7	**Other**: if none of the above categories apply this category can be used.
18	**Engineering Design**

18.1	**Inadequate technical design**: the incident was caused by poor technical design or engineering standards, weak materials of construction, valves in the wrong location, lines across walkways, etc. The reasons for inadequate technical design can be faulty input into the design process (bad information) or faulty design output (a bad design).
18.2	**No/ inadequate risk assessment**: No risk assessment was undertaken at any stage (conceptual, construction, commissioning etc.) on the facility process or equipment. The adequacy of safety equipment had not been systematically measured.
18.3	**Inadequate standards, specifications and/or design criteria**: although the design criteria and specifications had been followed, the specifications and criteria were not adequate and had to be adopted.
18.4	**Inadequate assessment of potential failure**: the incident was caused by the fact that the potential failure was not adequately assessed in the initial design stage.
18.5	**Inadequate ergonomic design**: the incident was caused by a poor ergonomic design, meaning that there was not an optimal tuning between the equipment and human working with the equipment.
18.6	**Inadequate monitoring of construction**: although all design specifications and criteria had been followed, inspections during the construction were not done adequately.
18.7	**Inadequate assessment of operational readiness**: the incident happened because the procedure for handover from construction to production was not followed, software changes were not fully tested, or operating manuals and training were not completed.
18.8	**Inadequate monitoring of initial operation**: the incident happened because there was not enough monitoring and analyses of the initial operation information.
18.9	**Inadequate evaluation and/or documentation of change**: the incident happened because unevaluated changes were made, and an unsafe situation was introduced. Documentation and communication of the changes was required and could have been overlooked.
18.10	**Other**: if none of the above categories apply this category can be used.
19	**Work planning**
19.1	**Inadequate work planning or scheduling**: the work being done was not adequately planned or scheduled in terms of people, equipment, materials, procedures or permits.
19.2	**Inadequate preventive maintenance or inspection**: the incident happened because the failing piece of equipment was not included in a preventive maintenance or inspection program, was overdue, or was wrongly overhauled.
19.3	**Inadequate repair or refurbishment**: the incident happened because the equipment failed due to wrong or insufficient reparative maintenance.
19.4	**Excessive wear and tear**: the incident happened because the equipment that failed showed excessive wear and tear due to corrosion, erosion, misuse, etc.
19.5	**Inadequate reference materials or publications**: the person doing the work did not have the proper owner's manual, vendor information, repair procedure, etc. to have proper knowledge to do the work.
19.6	**Inadequate audit / inspection / monitoring**: the incident happened because the equipment failed due to inadequate audit, inspection and monitoring because the required audit / inspection / monitoring was not done adequately or was not done adequately or was not done at all.
19.7	**Inadequate job placement (wrong person for the job)**: the selection process was not successful in choosing a suitable worker for the particular job assignment.
19.8	**Other**: if none of the above categories apply this category can be used.
20	**Purchasing, Material Handling and Material Control**
20.1	**Incorrect item received**: the correct item was ordered, but an incorrect item was received. Reasons for this can include incorrect specifications to vendors, inaccurate information on the requisition, and inadequate control on who can modify orders, an unauthorized substitution by the vendor, inadequate product acceptance procedures or a failure to verify receipt of proper goods.

20.2	**Inadequate research on materials / equipment**: the lack of knowledge led to the wrong item being ordered.
20.3	**Inadequate mode or route of shipping**: the hazard was created during shipment of the item – either by lost custody or product degradation.
20.4	**Improper handling of materials**: the hazard was created due to improper handling of the material.
20.5	**Improper storage of material or spare parts:** Materials and spare parts were stored in such a way that there was risk of them falling down, resulting a damage or injury
20.6	**Inadequate material packing:** Packing of materials was not adequate for safeguarding the material against harm
20.7	**Material shelf life exceeded:** Materials were not removed when their shelf life expired and became unhealthy or unsafe for use due to their age.
20.8	**Improper identification of hazardous materials**: the materials were not properly identified, and appropriate handling procedures were not used.
20.9	**Improper salvage or waste disposal**: the hazard was created when an item was improperly de-commissioned and disposed
20.10	**Inadequate use of health and safety data**: the hazard was created when relevant health and safety information was not exchanged or used.
20.11	**Other**: if none of the above categories apply this category can be used.
21	**Tools and Equipment**
21.1	**Inadequate assessment of needs and risks**: the wrong tools and equipment were provided, as a result of the faulty assessment of what was needed to properly perform the work.
21.2	**Inadequate human factors / ergonomics consideration**: the tools and equipment provided did not reflect the needs of the person performing the work.
21.3	**Inadequate standards or specifications**: improper tools and/or equipment was provided, as a result of inadequate standards or specifications covering what should have been provided.
21.4	**Inadequate availability**: the needed tools or equipment were not available at the job site.
21.5	**Inadequate adjustment / repair / maintenance**: the proper tools and equipment were available but were not in good repair when used.
21.6	**Inadequate salvage and reclamation**: tools and equipment that were removed from service for overhaul were not properly repaired or destroyed, creating a hazard.
21.7	**Inadequate removal or replacement of unsuitable items**: items that were no longer serviceable remained on the equipment.
21.8	**No equipment record history**: a hazard was created as a result of a failure to maintain proper records on the equipment.
21.9	**Inadequate equipment record history**: records were maintained but failed to properly identify a hazard.
21.10	**Other**: if none of the above categories apply this category can be used.
22	**Work Rules / Policies / Standards / Procedures (PSP)**
22.1	**Lack of PSP for the task**: there were no written PSP covering the work being performed at the time of the incident. This could be the result of a failure to assign responsibility for the development of PSP, or the failure to complete an adequate job safety analysis for the task.
22.2	**Inadequate development of PSP**: there was some PSP in place, but the PSP that were developed did not fully meet the needs of the work. This could be the result of inadequate coordination with design efforts, having un-knowledgeable people developing the PSP, not identifying the proper steps to take in problem situations or a poor format that made the PSP difficult to use. Were written procedure for the critical /job safety task available and were they based on a proper task/job safety analysis?
22.3	**Inadequate implementation of PSP, due to deficiencies**: there were PSP in place, but the implementation of the PSP was not complete due to deficiencies in these documents. This could include such things as

	contradictory requirements, confusing formats, inaccurate sequence of steps, technical errors, incomplete instructions, etc.
22.4	**Inadequate enforcement of PSP**: well established PSP were in place, but their use was not properly enforced, for reasons such as inadequate monitoring of the work being done, inadequate supervisory knowledge of what was to be done or inadequate reinforcement with labels or signs.
22.5	**Inadequate communication of PSP**: there was an appropriate PSP in place, but it had not been properly communicated. This could be the result of incomplete distribution, language difficulties, incomplete integration with training efforts or out of date PSP still in use.
22.6	**Inadequate task observation of PSP**: there was some informal task observation done for some PSP but not based on a risk-based approach. This could be as a result of no or inadequate development of a proper task observation system in place.
22.7	**Other**: if none of the above categories apply this category can be used.
23	**Communication**
23.1	**Inadequate horizontal communication between peers**: incident happened because there was no communication or no adequate communication between peers and colleagues.
23.2	**Inadequate vertical communication between supervisor and person**: incident happened because there was no communication or no adequate communication between supervision and workers, top bottom and bottom up in the same organization.
23.3	**Inadequate communication between different organizations**: organizations other than their own were not properly informed.
23.4	**Inadequate communication between work groups**: the incident occurred because two or more individuals or groups were working on the same task but did not properly communicate.
23.5	**Inadequate communication between shifts**: the incident occurred due to poor shift handover procedures, e.g. workers not expected to write a detailed account of problems in a log.
23.6	**Inadequate communication methods**: the normal means of communicating information were not adequate – phone lines busy, static on radios, writing was illegible, etc.
23.7	**No communication method available**: the proper tools (telephone, computer, mail, paging system for emergencies, tapes, recorder, slides and projector boards) were not available.
23.8	**Incorrect instructions**: the person involved was given instructions, but the instructions were not understood as meant and they were unclear or incomplete.
23.9	**Inadequate communication due to job turnover**: the person starting a task was not around to finish it and those assigned to complete the work did not have the necessary information.
23.10	**Inadequate communication of safety and health data, regulations or guidelines**: the safety and health data and new regulations were not discussed with the people performing the work.
23.11	**Standard terminology not used**: incident happened because either the terminologies were different in departments or there was confusion, e.g. different pieces of equipment have the same numbers. Standard codes and practices were not followed, e.g. color coding for lines, electrical, etc.
23.12	**Verification / repeat back techniques not used**: a verbal message was misunderstood and went unidentified because there was no verification / repeat back of the message by the recipient.
23.13	**Messages too long**: confusion arose due to the length of the message.
23.14	**Speech interference**: a verbal message was not properly transmitted due to background noise, static or other distractions.
23.15	**Cultural/ethnic communication barriers:** confusion arose due to interpretation of instructions which were not understood as meant and was unclear.
23.16	**Other:** if none of the above categories apply this category can be used.

Attachment 12.3 Management System Failures

	Management system failures 24 - 33
24	**Leadership**
24.1	**Management failed to show leadership in HSE:** decisions or failings or not setting a good example which detract from HSE standards
24.2	**Insufficient process to ensure adequate budgets or funding:** insufficient funding to maintain minimum HSE standards, manpower or facilities
24.3	**Inadequate provision of a suitable and sufficient annual HSE plan:** plan has not been devised, is not up to date, is not relevant to the operation, is not detailed enough or is not attainable
24.4	**Inadequate implementation of the Annual HSE Plan:** the plan has been devised but is not used as a document to manage HSE on ongoing basis
24.5	**Inadequate assurance of the implementation of the Annual HSE Plan:** there is no evidence of regular and sufficient reviews of progress on keeping in compliance with the plan by senior management
24.6	**Management encouraged behavior focusing on operations/profit at expense of HSE:** evidence that operational deliverables are prioritized over meeting HSE obligations
24.7	**Management encouraged unsafe behavior by inappropriate incentive targets:** Bonus arrangements are geared toward operational or profit targets rather than operating safely
24.8	**Management failed to invest sufficient time and energy in HSE management:** there is no evidence that senior management dedicate their personal time in progressing and managing HSE standards
24.9	**Management failed to enforce consequence management appropriately:** management have inconsistently or failed to implement consequence management when infringements have been recorded
24.10	**Management failed to priorities HSE as a key business requirement:** there is no evidence that HSE is a priority on the senior management agenda, no meetings with minutes, audits, reports, visits
24.11	**Other:** if none of the above categories apply this category can be used.
25	**Risk management**
25.1	**Inadequate systems for learning from incidents:** no evidence of using lateral learnings to assess the HSE management system for shortfalls,
25.2	**Inadequate implementation of systems for learning from incidents:** no evidence of improvements or confirmation there is no problem as a result of reviewing lateral learnings
25.3	**Inappropriate safeguards and management checks to avoid shortcuts/shortfalls:** HSE audits, inspections, reviews are not taking place or documented with findings and remedial actions taken
25.4	**Inadequate provision or use of safeguards for ensuring step outs issued are suitable and sufficient:** step outs from the HSE management system are not accompanied by suitable and sufficient risk assessments or MOPOs
25.5	**Inadequate processes and/or resource for quality check of HEMPs:** lack of competent resource to conduct HEMPs or to review existing HEMPS for their suitability and sufficiency. No process to review HEMPs on a regular program
25.6	**Inadequate processes for communication of HEMP in TBTS, safety briefings etc.:** the HEMP controls are not transferred into procedures, instructions, or training
25.7	**Inappropriate systems to ensure the quality or update of specifications or procedures:** there is no program for the quality review or updating of specifications or procedures, or the program is not being followed
25.8	**Other:** if none of the above categories apply this category can be used.
26	**Strategy and planning**
26.1	**Inadequate PDO or contractor HSE strategy:** the strategy does not address the key risk areas, or does not focus on the areas of focus necessary for improvement

26.2	**Inadequate HSE annual plan for maintaining and improving HSE standards**: A HSE plan is in existence, but it does not address the issues identified in the investigation adequately to bring about an improvement. It is either not comprehensive, not adopted, not reviewed, 'copied and pasted' to tick the box, or it does not appropriate for the work that the company is conducting or does not address the significant risks that the workforce face.
26.3	**HSE Plan does not address key HSE business exposure:** the plan is not relevant to the operation being conducted, it is a generic plan, or is copied from previous years
26.4	**Inadequate HSE project plans in place to ensure suitable project management:** project plans do not have HSE concerns embedded into them or sufficient resources to deliver them
26.5	**Other:** if none of the above categories apply this category can be used.
27	**People and competency**
27.1	**Inadequate resource to ensure adequate and competent contract holders and contract site reps:** unauthorized contract holders or site reps are managing a PDO contract
27.2	**Inappropriate competency standards for work/tasks in place:** roles and responsibilities including minimum competencies are not contained in job descriptions or are not PDO compliant
27.3	**Inappropriate compliance with contract minimum competency requirements for safety critical positions:** employees are allowed to work who do not meet the minimum competency requirements
27.4	**Inappropriate use of contract resource conducting work for which they are not competent:** lack of safeguards to ensure employees are not assigned work for which they are not formally deemed competent
27.5	**Inadequate processes to ensure competency of HSE staff to conduct appropriate HEMP/HRA assessment:** failure in the system to ensure HSE Advisers are competent, are PDO compliant and have been authorized formally by the PDO Contract Holder
27.6	**Inappropriate resource levels for supervision and management: s**upervision is not competent, not sufficient in number, is not experienced, is not available back to back, is not supervising, is conducting the work themselves
27.7	**Other:** if none of the above categories apply this category can be used.
28	**Asset integrity management**
28.1	**Inappropriate quality control systems for maintenance and inspection:** maintenance/inspections are not recorded, do not take place, are not conducted by competent people, are not scheduled, do not comply with the schedule, do not look at all equipment, do not look at all parts of equipment, do not result in repairs, do not result in isolation for repair
28.2	**Inappropriate asset and integrity strategies:** plans do not include all equipment, do not involve interaction of interfaces between plant, do not comply with PDO specifications, are not based on international standards
28.3	**Inappropriate methodologies for testing of integrity of equipment/materials:** incorrect equipment used for testing or frequency of inspection/testing is not appropriate. Follow up of defects does not take place
28.4	**Inappropriate criteria for material specification:** PDO specifications are not adhered to, PDO specifications do not comply with international standards,
28.5	**Inappropriate methodology for initial designs and specifications:** new technology is not appropriately researched, and best practice implemented, the PDO process for design, HAZOP etc. are not complied with, MSE4 team are not involved in the sign off of the design/specification
28.6	**Inappropriate execution protocols for HAZOP etc. to ensure appropriate design and operating envelopes:** the PDO process for review and sign off for new designs or plant is not complied with to ensure it is safe to mobilize
28.7	**Inappropriate protocols relating to authority levels for over-riding controls/alarms:** controls are ignored or over-ridden without proper authorization at the appropriate management level

28.8	**Inappropriate hazard analysis protocols for operating outside of normal operational envelope:** no suitable and sufficient risk assessment is conducted at an appropriate level or authority obtained to operate outside of the design operating parameters
28.9	**Other:** if none of the above categories apply this category can be used.
29	**Procedures**
29.1	**Inadequate focus on maintaining procedures up to date:** no process to regularly review procedures to ensure relevance, practicality, employee feedback, shortfalls identified, audit results
29.2	**Inadequate process implementation for STOP:** the STOP system is not functional, it is not resourced, focuses on quantity and not quality, is not fed back to the originator, is not acted upon, is not analyzed statistically, is not positive as well as negative
29.3	**Inadequate process implementation for IVMS:** the data is not collected, not analyzed, not reviewed, not quality checked, does not rank drivers, does not result in feedback to drivers, does not follow the PDO procedure, is not used to improve driver behavior, does not result in consequence management, does not involve a reward and recognition aspect
29.4	**Inadequate process implementation for SJM:** inadequate competent resource, does not involve vehicle and load checks, does not cover all journeys over 20km, does not cover out of office SJM, no evidence of action for open journeys, no authorized person audit of the SJM, does not result in appropriate equipment or resource for SP2000 compliance
29.5	**Inadequate process implementation for sub-contractor management:** no evidence that sub and sub-contractors are regularly audited, reviewed, involved in the HSE plan and management system, no contractual requirement for them to meet PDO standards, no evidence of non-compliance action taken
29.6	**Inadequate process implementation of controls for management of access/egress:** no evidence that controls are in place and utilized for authorization for access or egress from controlled areas
29.7	**Inadequate process implementation for commissioning:** risk assessment, plans does not follow the PDO requirements, people are not competent, inadequate time is provided for commissioning, insufficient competent resources, insufficient safeguards
29.8	**Inadequate process implementation for permit to work systems:** systems are not compliant to PDO requirements, the necessary site visits, inspections and sign offs are not required in the management system, inadequately trained staff, permits extended past their close out times, risk assessments not conducted, verified, redone, area authority permission not requested
29.9	**Inadequate process implementation for entry to confined spaces:** non competent or unauthorized staff used, relevant PDO procedures not complied with, relevant signatories not required, audits and inspections not conducted
29.10	**Inadequate process implementation for working at height:** procedures for working at height do not exist, do not cover all activities, are not practical, are not PDO compliant, are not enforced. The necessary equipment is not provided, compliance audits do not take place, people are not trained
29.11	**Inadequate process implementation for working in H2S areas:** people are not trained, equipment is not made available, audits are not conducted, remedial action for non-compliance does not take place
29.12	**Inappropriate process implementation for concurrent work in the permit to work systems:** the system does not include the requirement to identify concurrent work activities which could impact on safety
29.13	**Inappropriate process implementation for work with lifting equipment:** PDO procedures are not complied with, people are not trained, insuffient staffing, inadequate equipment, equipment is not tested, equipment is not used for its intended purpose, audits do not take place
29.14	**Inappropriate process implementation for vehicle movement or loading/offloading:** no motor vehicle procedures, controls, standards or they are inadequate, a HEMP has not been conducted, people are not trained, SP2000 is not complied with, SP2001 is not complied with

29.15	**Inappropriate process implementation for working plant shutdown/start up:** PDO specifications for start up and shutdowns are not incorporated into the management system, or not complied with. Specifications are not practical, relevant or all encompassing
29.16	**Inappropriate process implementation for working with pressure systems:** PDO specifications for working with pressurized systems are not incorporated into the management system, or not complied with. Specifications are not practical, relevant or all encompassing
29.17	**Inappropriate process implementation for working with electricity and power systems:** PDO specifications for working on electrical equipment are not incorporated into the management system, or not complied with. Specifications are not practical, relevant or all encompassing
29.18	**Inappropriate process implementation for other procedures or processes:** PDO specifications for other processes are not incorporated into the management system, or not complied with. Specifications are not practical, relevant or all encompassing
29.19	**Other:** if none of the above categories apply this category can be used.
30	**Contractor and supplier management**
30.1	**Inappropriate contracting and procurement processes:** the PDO contracting process was not complied with
30.2	**Inadequate contract management HSE reviews:** management reviews do not take place, do not focus on HSE, are not taking place regularly, do not result in effective monitoring of HSE in the contract, do not result in remedial action
30.3	**Inadequate vetting model for new contactor in tendering:** the vetting process was not adhered to, the vetting model was inadequate, the vetting was inaccurate and was not identified in a quality check
30.4	**Inappropriate C9 validation process in the contract tendering:** a non standard C9 in the contract was not authorized by the MSE department
30.5	**Inappropriate quality assurance of resources in the contract tendering:** the quality review of CVs was ineffective, did not take place or was not conducted thoroughly
30.6	**Inadequate and inappropriate levels of engagement in contract management:** inadequate or inappropriate CSR supervision, lack of contact time and visits by the Contract Holder, lack of focus on HSE matters by the Contract Holder
30.7	**Inadequate resource for management of contracts:** contract holder does not have sufficient time, resources or competency to effectively manage the contract
30.8	**Other:** if none of the above categories apply this category can be used.
31	**Operating responsibility**
31.1	**Inadequate management of Permit to work systems:** permit to work systems are not managed effectively by the area authority, audits are not taking place or are ineffective
31.2	**Inappropriate controls for lone working:** lone workers are not protected via communication processes to ensure they are helped if they encounter difficulty
31.3	**Inadequate processes for management of change:** the process is not understood, not used, is ineffective, is not comprehensive, does not address the key issues of the change.
31.4	**Other:** if none of the above categories apply this category can be used.
32	**Crisis and emergency response**
32.1	**Inappropriate systems for crisis management:** crisis management systems do not address all scenarios, do not provide effective guidance in managing crisis events
32.2	**Inappropriate drills for crisis management:** inadequate drills are conducted to practice, drills do not encompass all crisis management staff, drills are not realistic, drill learning points are not followed up and learnt from
32.3	**Inadequate processes to assure competency in resource for crisis management:** inadequate number of trained crisis management staff in the system

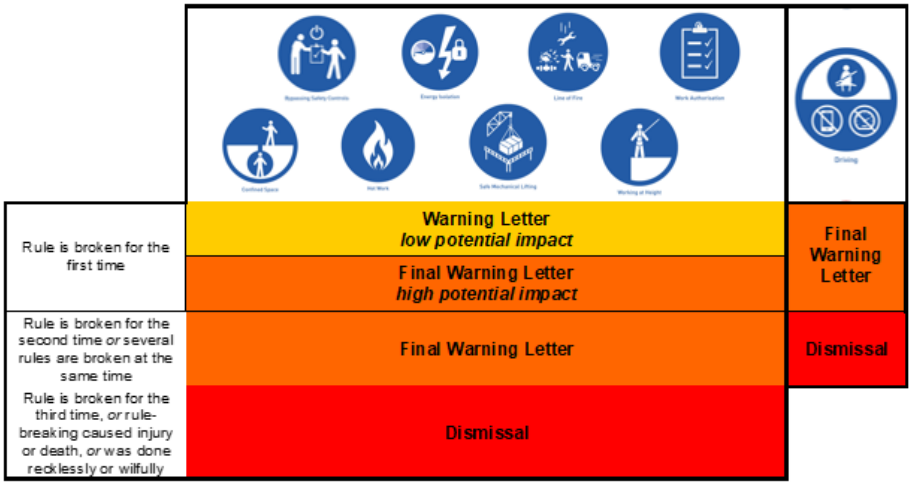
32.4	**Inadequate planning for crisis management:** plans do not provide effective guidance to enable the team to deal with a crisis effectively
32.5	**Other:** if none of the above categories apply this category can be used.
33	**Performance and assurance**
33.1	**Inadequate surveillance protocol of HSE standards:** audits, reviews, inspections, testing, visits, engagements are not adequate to ensure HSE standards are met
33.2	**Inadequate PDO quality assurance of surveillance protocols:** High level audits and reviews of the HSE management systems are not conducted regularly or effectively, insufficient time is provided, it is not conduted by senior management, assurance is not met
33.3	**Inadequate processes to assure design specifications:** Technical authority levels for sign off are ignored, no audits take place to verify compliance
33.4	**Inadequate processes to assure quality of systems:** inadequate quality management for the design, build, commissioning and operation, insufficient involvement of quality management or safety staff, exclusion from the process
33.5	**Inadequate processes to ensure competency of designer:** checks on the competency of the designer not completed and verified by certification and references
33.6	**Inadequate management systems to ensure guarantees from suppliers:** the system allows equipment to be supplied without guarantee or warranty for a sufficient time period
33.7	**Inadequate audit and assurance processes:** failure to design, implement or utilize an audit and assurance process
33.8	**Inadequate assurance of close out of actions from incidents or audits:** no evidence that audit findings have been acted upon and shortfall resolved and evidenced
33.9	**Inadequate assurance of systems for learning from incidents:** no assurance process to ensure that the lateral learnings are being reviewed, assessed for relevance and the HSE MS is reviewed against the learnings with action taken where necessary
33.10	**Inadequate planning or resource or system for assuring competency standards have been met:** no competent management resource to track the competency standards required and employment of compliant resource
33.11	**Inadequate assurance processes for implementation of management of change:** no audits, reviews of the successful implementation and use of the management of change process
33.12	**Other:** if none of the above categories apply this category can be used.

Attachment 13 Life Saving Rules

Any investigation that identified a Life Saving Rules (LSR) violation and concluded via the investigation that there was violation of LSR, the violation needs to be captured in the Incident report and the appropriate logo needs to be included. Violation of the LSR needs to be flagged in PIM and the consequence matrix needs to be applied as required.

Below are nine Industry Life Saving Rules and consequence matrix. The QR code can be used to watch the video animation for more details.

LSR Consequence Matrix



Attachment 14 Failed Safe and Failed Lucky

High Potential Event (HPE) is an incident (including near miss) for which the potential consequences are assessed as RAM4+.

Ranking: if an action has been taken or a barrier is in place and the routine action or barrier worked as intended, this is considered Failed Safe.

The initial classification is based on the DROPS calculator and then follow the below criteria to confirm if its is a HPE or HiPo.

High Potential Incident (HiPo) is an incident (including near miss) for which the potential consequences are assessed as RAM4+.

Ranking: if no action been taken or no barrier had been in place (unmitigated) and the routine action or barrier failed despite actual severity is zero, this is considered Failed Lucky.

Sl No	Criteria	HPE	HPI
1.	CCTV Available		
	- CCTV footage to confirm adherence to zone management *	Y	If any of the criteria for HPE is not met then it is a HiPo.
	- SOP implemented	Y	
	- TBT discusses the potential dropped object hazard	Y	
	- Possibility of the dropped object going out of managed zone	N	
2.	CCTV not available		
	- Position of people away from LOF	Y	If any of the criteria for HPE is not met then it is a HiPo.
	- Physical barriers available & Zone managed	Y	
	- SOP implemented	Y	
	- TBT discusses the potential dropped object hazard	Y	
	- Possibility of the dropped object going out of managed zone	N	

Note * Review footage prior to the event if more confirmation is needed on how the zone was managed.

HiPo are not only RAM4+ but also any incident with its potential severity falling under red shaded area in PDO RAM.

Below are examples of scenarios where Failed Safe (HPE) and Failed Lucky (HiPo) are identified:

	Dropped/Falling Objects				
1	During lifting/hoisting a sling broke, and a heavy load was dropped but did not hit anyone.	Yes – there was a release of energy.	Yes – the DROPS calculator shows this as a potentially fatal dropped object.	Yes - nobody was in the 'line of fire zone' and this zone had been properly defined and was well managed.	Near Miss High Potential Event (HPE) - Fail Safely
2	During lifting/hoisting a sling broke, and a heavy load was dropped but did not hit anyone.	Yes – there was a release of energy.	Yes – the DROPS calculator shows this as a potentially fatal dropped object.	No – no valid barrier was in place.	Near Miss High Potential Incident (HiPo)
3	While working at height, a 2 kg hammer slipped and was caught by the lanyard.	Yes – there was a release of energy.	Yes – the DROPS calculator shows this as a potentially fatal dropped object.	Yes – the mandatory lanyard worked as intended and nobody was standing below the worker, as a barricaded-off and permit-controlled No-Entry Zone was enforced for the duration of the work.	Near Miss High Potential Event (HPE) - Fail Safely
4	While working at height, a 2 kg hammer fell 10 meters when the lanyard failed.	Yes – there was a release of energy.	Yes – the DROPS calculator shows this as a potentially fatal dropped object.	Yes - nobody was standing below the worker, as a barricaded-off and permit-controlled No-Entry Zone or Restricted Access Zone was enforced for the duration of the work.	Near Miss High Potential Event (HPE) - Fail Safely
5	While working at height, a 2 kg hammer fell 10 meters when the lanyard failed. A work crew had been issued a permit and were about to enter the No-Entry Zone.	Yes – there was a release of energy.	Yes – the DROPS calculator shows this as a potentially fatal dropped object.	No – though enforced, the barricaded-off and permit-controlled No-Entry Zone was not effective, as the permit was issued to allow the work crew entry.	Near Miss High Potential Incident (HiPo)