PETRONAS TECHNICAL STANDARDS

INCIDENT NOTIFICATION, INVESTIGATION AND REPORTING

PTS 18.06.01

March 2016

PTS Circular

This revision of PTS 18.06.01 **Incident Notification, Investigation and Reporting (March, 2016)** has been transformed in the new format and numbering and content has been reviewed accordingly.

The previous version of this **PTS 60.0501 (November 2012)** will be removed from PTS Filing Room / PTS Site from herein onwards.

The custodian of this PTS is:
Head, Assurance and Risk, Group HSE.

Please direct any questions regarding this PTS to the above-named.

Document Authorization

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Revision History

Date	Version	Description of Updates	Author
June 05	Original	PTS 60.0502 Incident Investigation	
June 06	Revision 1	PTS 60.0501 Incident Investigation	
Dec 09	Revision 2	Combining PTS 60.0504 Incident Classification and Reporting into PTS 60.0501 Incident Investigation. • Revised Incident Classification Criteria Includes Reportable and Recordable Incidents • Includes Incident Direct Cause • Classifications • Includes HSE Alert • Includes GHSED Investigations Revised Investigation Tools	GHSED
Aug 10	Revision 3		GHSED
Nov 12	Revision 4	• Revised PTS title • Reorganized the structure of the PTS Revised Incident Investigation and Reporting Flow Chart • Included process to manage incidents resulting in occupational illness • Clarified notification and reporting requirements and included timeline • Included responsibilities of team members and competency requirements • Included final report and lessons learnt templates • Revised Incident Classification Criteria and included criteria for LOPC	GHSED
March 16	Revision 5	Amendment in all chapters: PTS 18.06.01 Incident Notification, Investigation and Reporting • Revised Incident Investigation and Reporting Flow Chart • Clarified process to manage incidents resulting in occupational illness • Included a new section on investigation of Non-Accidental Death (NAD) • Enhanced notification requirement to COMCEN • Included a new section on incident rating • Alignment of incident rating descriptors with HSE Risk Matrix for impact to People, Asset, and Reputation. • Enhancement of the current Environment Effect descriptor. • Included a new write up on High Potential Incident. • Changes in HSE Alert submission timeline. • New requirement on legal review for HSE Alert, Lessons Learnt and Investigation Report.	Kamariah Hazlina Kamarul Bahrain, HSE Risk and Incident Management

		• Enhanced Table 2 Summary of requirement for Incident Notification, Investigation and Reporting. • Provide clearer requirement on closure of recommendations.	

FOREWORD

PETRONAS Technical Standards (PTS) has been developed based on the accumulated knowledge, experience and best practices of the PETRONAS group supplementing National and International standards where appropriate. The key objective of PTS is to ensure standard technical practice across the PETRONAS group.

Compliance to PTS is compulsory for PETRONAS-operated facilities and Joint Ventures (JVs) where PETRONAS has more than fifty percent (50%) shareholding and/or operational control, and includes all phases of work activities.

Contractors/manufacturers/suppliers who use PTS are solely responsible in ensuring the quality of work, goods and services meet the required design and engineering standards. In the case where specific requirements are not covered in the PTS, it is the responsibility of the Contractors/manufacturers/suppliers to propose other proven or internationally established standards or practices of the same level of quality and integrity as reflected in the PTS.

In issuing and making the PTS available, PETRONAS is not making any warranty on the accuracy or completeness of the information contained in PTS. The Contractors/manufacturers/suppliers shall ensure accuracy and completeness of the PTS used for the intended design and engineering requirement and shall inform the Owner for any conflicting requirement with other international codes and technical standards before start of any work.

The PTS shall be used exclusively for the authorised purpose. The users shall arrange for PTS to be kept in safe custody and shall ensure its secrecy is maintained and provide satisfactory information to PETRONAS that this requirement is met.

ANNOUNCEMENT

Please be informed that the entire PTS inventory is currently undergoing transformation exercise from 2013 - 2015 which includes revision to numbering system, format and content. As part of this change, the PTS numbering system has been revised to 6-digit numbers and drawings, forms and requisition to 7-digit numbers. All newly revised PTS will adopt this new numbering system, and where required make reference to other PTS in its revised numbering to ensure consistency. Users are requested to refer to PTS 00.01.01 (Index to PTS) for mapping between old and revised PTS numbers for clarity. For further inquiries, contact PTS administrator at ptshelpdesk@petronas.com.my

Table of Contents

1.0 INTRODUCTION

This document provides the process for incident notification, investigation and reporting in the event of an incident. It serves to:

- provide a standard approach in incident notification, investigation and reporting in line with PETRONAS requirements on the use of standard formats, tools and methodologies
- provide a consistent approach to incident investigation in order to achieve a high quality report and analysis
- provide a basis for developing OPU/BU/HCU/JV/Project specific investigation procedures and guidelines

1.1 SCOPE

The scope of this standard covers the notification, investigation and reporting of incidents, resulting in, or potentially resulting in:

i. Fatalities
ii. Injuries
   a) Permanent total disabilities
   b) Permanent partial disabilities
iii. Occupational illnesses
iv. Environmental damage
v. Property damage
vi. Reputation damage
vii. Loss of Primary Containment (LOPC)

Note: The term Incidents (as stated above) include near miss occurrence.

This document also provides guidance for non-accidental death and special situations (refer to **Appendix** 9 and **10**).

This PTS does not provide description on incident classification (i.e. recordable and non-recordable) incident and HSE Performance monitoring which are covered in PTS 18.06.04

1.2 GLOSSARY OF TERMS

1.2.1 General Definition of Terms & Abbreviations

Refer to PTS Requirements, General Definition of Terms, Abbreviations & Reading Guide PTS 00.01.03 for General Definition of Terms & Abbreviations

1.2.2 Specific Definition of Terms

No.	Terms	Description
1.	Accident	An event or chain of events that has caused Injury or Illness and/or Damage (Loss) to assets, the Environment or Third Parties.
2.	Non-Accidental Death	A Non-Accidental Death (NAD) is the death of a worker (employee or contractor) due to a non-work related illness that occurs at work premises and/or during engagement in work related activities. Example: Worker found dead in offshore living accommodation and subsequent investigation concludes a non-work related cause.
3.	Approved Medical Examiner (AME)	Registered medical practitioners approved by PETRONAS to conduct Occupational Health related tasks such as but not limited to Fitness to Work, Medical Surveillance, and Substance Misuse testing for the Company's employees.
4.	Company Health Advisor	Registered medical practitioners employed by OPU/BU/HCU/JV/Project to provide specialist advice on health matters, develop strategy, implement health initiatives and monitor performance.
5.	Contractor	A Company which has entered into a legal contract to supply services or material to the owner. Any reference to Contractors includes consultants, agents and other third parties who have entered into similar legal contract for the supply of services or material, unless otherwise stated.
6.	Employment	All work or activity performed in carrying out an assignment or request of a Reporting Company or Reportable Contractor, including related activities not specifically covered by the assignment or request. Employment also includes activities, even outside working hours, where the Reporting Company has the Prevailing

		Influence. Under certain circumstances travel to and from work is also considered as being in the course of Employment.
7.	Emergency Incident	Incidents where ERT/EMT (Tier 1, Tier2, or Tier 3) have been activated.
8.	Non-Emergency Incident	Incidents where there is no activation of ERT/EMT.
9.	Fatality	Death resulting from a recordable Injury or Illness regardless of the time intervening between the Injury/Illness and death.
10.	First Aid Case	Any single/one-time treatment and subsequent observation of Injury or Illness, example minor scratches, cuts, burns, splinters, heat stress etc., which do not require Medical Treatment. Such treatment and observation are considered as First Aid even if provided by a physician or medical personnel.
11.	High Potential Incident	High Potential Incident – Any incident which, under different circumstances, would have caused more severe consequences leading to a major incident of rating 3,4, or 5.
12.	Incident	An event or chain of events which has caused or could have caused Injury or Illness and/or Damage (Loss) to assets, the Environment or Third Parties. This includes a Near Miss.
13.	Incident Classification	Recordable or Non-Recordable
14.	Incident Owner	A person who has the responsibility on the activities or operations involved in the incident.
15.	Incident Rating	Rating 1, 2, 3, 4 and 5 as per descriptor in Appendix 1.
16.	Injury	Harm to a person resulting from contact between the body of the person and an external agent or from exposure to environmental factors. This includes health outcome resulting from accident or single instantaneous

		exposure example cut, sprain, fracture, amputation, animal or snake bite, one-time chemical exposure or poisoning.
17.	Loss of Primary Containment	An unplanned or uncontrolled release of any material from primary containment, including non-toxic and non-flammable materials (e.g. steam, hot condensate, nitrogen, compressed CO2 or compressed air).
18.	Lost Time Injury (LTI)	Sum of Fatality, Permanent Total Disability (PTD), Permanent Partial Disability (PPD) and Lost Workday Case (LWC).
19.	Lost Workday Case (LWC)	Any recordable Injury which renders the injured person temporarily unable to perform his Regular Job or Restricted Work on any day after the day or shift on which the Injury was received i.e. within 24 hours. In this case “any day” includes off/rest day, weekend, leave, 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.
20.	Man-hours	Actual “hours worked” including overtime and training but excluding off-duty hours (although the time is spent at the worksite or premise), leave, sickness and other absences. “Hours worked” for activities that are not part of the scope of work under the contract or other activities that are excluded by the OPU/BU/JV/HCU/Project for reporting on the basis of risk consideration shall not be reported.
21.	Medical Surveillance	The periodic screening of a defined population for a specific disease or for biological markers of exposure for which the population is, or may be, at risk from their exposure to specific health hazards (noise, Benzene, Mercury, etc.).

22.	Medical Treatment Case (MTC)	Any recordable injury beyond first aid treatment that involves neither lost workdays nor restricted workdays but which requires treatment by medical personnel.
23.	Near Miss	An incident which potentially could have caused Injury or Occupational Illness and/or Damage (loss) to people, assets, the environment or reputation, but which did not.
24.	No treatment case	Where an illness or injury does not meet any of the other severity criteria and does not require First Aid treatment.
25.	Occupational Health Doctor (OHD)	For Malaysian Operations, an OHD is a medical practitioner who has postgraduate qualification in Occupational Health and is registered as an Occupational Health Doctor by the Department of Occupational Health and Safety, Malaysia. For International Operations, an OHD is a medical practitioner appointed by the Company to manage Occupational Health issues in the Company.
26.	Occupational Illness	Any recordable abnormal condition or disorder, other than an Injury, which is mainly caused by exposure to environmental factors associated with the employment. It includes acute and chronic Illness or diseases which may be caused by inhalation, absorption, ingestion or direct contact. Whether a case involves a work-related Injury or an Occupational Illness is determined by the nature of the original event or exposure which caused the case, not by the resulting condition of the affected employee. An Injury results from a single immediate event i.e. event resulted from something that happened in an instant. Cases resulting from anything other than a single immediate event is considered Occupational Illnesses i.e. resulted from

		prolonged or multiple exposures to a hazardous substance or environmental factor, it is an illness. A single incident can give rise to several occupational illnesses e.g. food poisoning, skin rashes due to chemical exposure. An Injury case can later become illness case if the acute effect has later become chronic effect after certain duration. This case will be considered as both injury and illness case
27.	Permanent Partial Disability (PPD)	Any recordable Injury or Illness which results in the permanent and complete/ partial loss of use/function of any part of the body regardless of any pre-existing disability or impairment of such body part/function.
28.	Permanent Total Disability (PTD)	Any recordable Injury or Illness which permanently incapacitates an employee, which may result in termination of employment.
29.	Primary Containment	A tank, vessel, pipe, rail car or equipment intended to serve as the primary container or used for the transfer of the material. Primary containers may be designed with secondary containment systems to contain and control the release from primary containment.
30.	Process	Production, distribution, storage, utilities, or pilot plant facilities used in the manufacture of chemical, petrochemical and petroleum refining products. Process also defined as facilities used in drilling and production operations in oil and gas industry. This includes rigs and process equipment (e.g. reactors, vessels, piping, furnaces, boilers, pumps, compressors, exchangers, cooling towers, refrigeration systems, etc.), storage tanks, ancillary support areas (e.g. boiler houses and wastewater treatment plants), on-site remediation

		facilities, and distribution piping under control of the Company.
31.	Non-Recordable Incident	Other incidents in which PETRONAS or its affiliates has no direct influence and control on the personnel, site or activity involved. Such incidents may not be included in the HSE Performance Statistics of PETRONAS but shall continue to be reported for sharing and learning purposes.
32.	Recordable Incident	All incidents in which PETRONAS or its affiliates has direct influence and control on the personnel, site or activity involved. These include incidents involving : i. Work-related activities carried out inside/outside Company premises ii. Non work-related activities inside company premise which have been caused by negligence, error or omission on the part of the Company iii. Loss or damage of Company properties or assets "Work-related activities" are those activities for which management controls are, or should have been, in place such as follows: i. Work by Company personnel ii. Work by Contractor personnel on Company premises iii. Work by Contractor personnel on non-Company premises for which it is concluded on the basis of risk considerations that Company management controls are required Such incidents shall be included in the HSE Performance Statistics of PETRONAS.
33.	Regular Job	Existing work activity or task which the injured person is assigned to, as part of his normal job function.

34.	Restricted Work Case (RWC)	Any recordable Injury which results in a work assignment after the day the incident occurred where the injured person is temporarily able to perform some, but not all of their Regular Job. The restricted work assignment must be meaningful and pre-established or a substantial part of a Regular Job. Tasks which have been established to accommodate the injured person does not constitute Regular Job.
35.	Secondary Containment	Exists to contain or control a release from primary containment. Secondary containment systems include, but are not limited to, tank dikes, curbing around process equipment, drainage collection systems into segregated oily drain systems, the outer wall of double walled tanks, etc.
36.	Spill	Unplanned or uncontrolled releases of liquid or solid associated with current operations from primary or secondary containment, into the environment.
37.	Third Party	Individual or organization including public which are not employed by or contracted to the reporting OPU/BU/HCU/JV or Contractor.
38.	Worker	Employee and Contractor's Employee
39.	Work Related	For the purpose of this document, the term, "Work-Related" is used to describe those activities for which management controls are, or should have been, in place. Incidents occurring during such activities are reportable and will be included in the statistics. In order to encourage consistency in the reporting practices of PETRONAS, as a minimum, the following activities are considered "work-related" as they are susceptible to incidents with significant

		impact for which management controls should be in place: i. all work by Company personnel; ii. all work by Contractor personnel on company premises, and iii. all work by Contractor personnel on non-Company premises for which it is concluded on the basis of risk considerations that Company and Contractor management controls are required. For Company personnel, "Work" includes attending courses, conferences and Company organised events, business travel, field visits, or any other activity or presence expected by the employer. For Contractor personnel, the same activities are included when they are executed under a contract on behalf of the Company. Contractor includes all sub-contracted personnel. Where it is impossible or inappropriate for the Company to seek to impose management control on Contractor exceptions may be justifiable. Examples may be found in areas where Contractor services are not dedicated to the company e.g.: i. manufacturing of components in a factory together with the manufacture of components for other customers; ii. construction at a Contractor's fabrication site shared by other customers; iii. delivery of goods to company locations by a Contractor who is also employed for delivering goods to other companies during the same journey, and iv. Customer collection of Company's products, where the vehicle and drivers are under the control of the customer. The Company should make a conscious, balanced and documented decision

		whether or not to maintain management controls and include incidents in the performance indicators.

Table 1: Specific Definition of Terms

1.3 SUMMARY OF CHANGES

This PTS 18.06.01 (March 2016) replaces PTS 60.0501 (November 2012) with the following changes:

i. Clarified process to manage incidents resulting in occupational illness and Non-Accidental Death (NAD)
ii. Enhanced notification requirement to COMCEN
iii. Alignment of incident rating descriptors with HSE Risk Matrix for impact to People, Asset, and Reputation.
iv. Included details on High Potential Incident.
v. Changes in HSE Alert submission timeline.
vi. New requirement on legal review for HSE Alert, Lessons Learnt and Investigation Report.

2.0 INCIDENT NOTIFICATION, INVESTIGATION AND REPORTING PROCESS

The flow for incident notification, investigation and reporting process is described in **Figure 1** and explained further in the following sections. OPU/BU/HCU/JV/Project are required to establish their own procedure in line with this PTS.

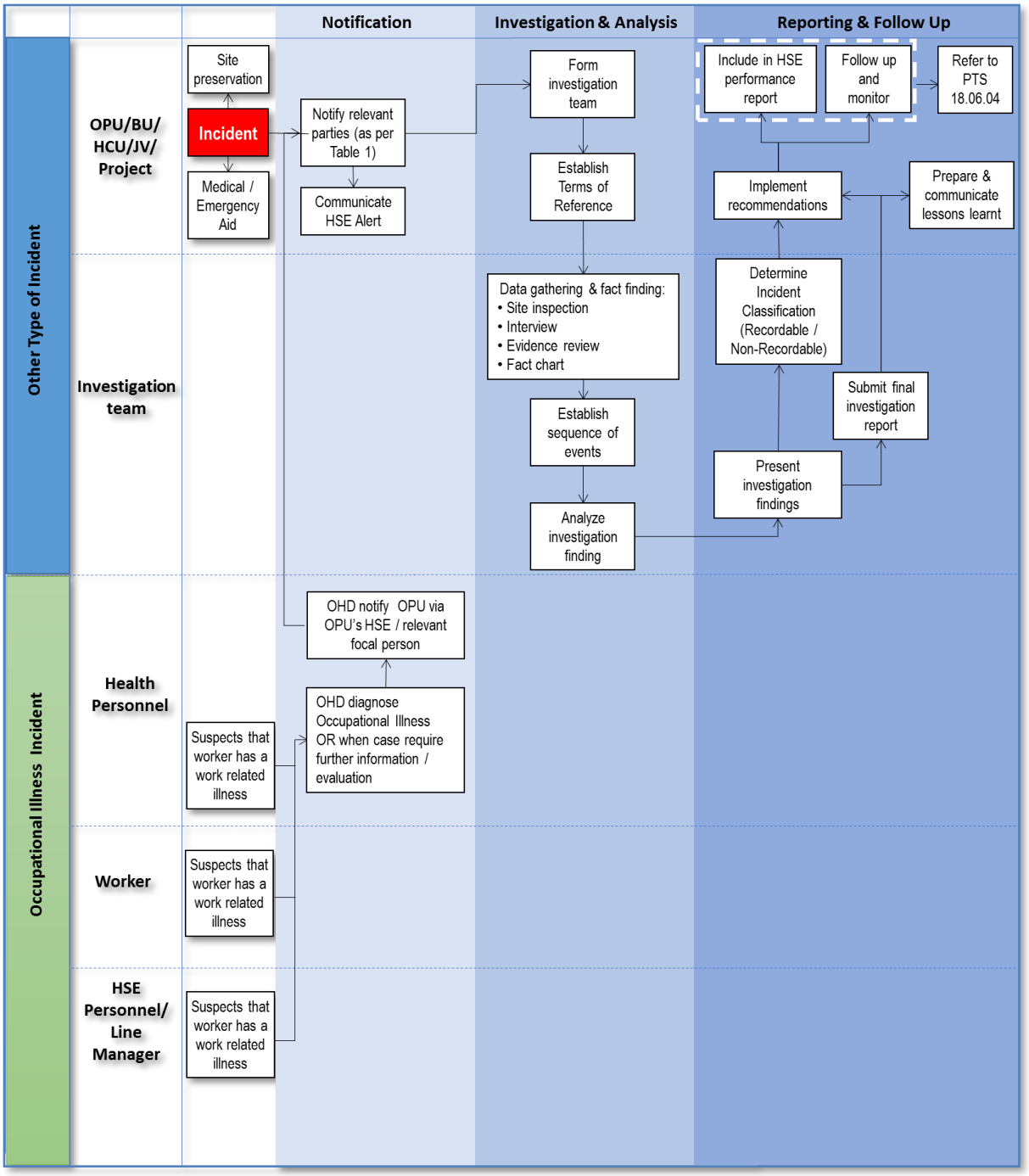


Figure 1: Incident Notification, Investigation and Reporting Flow Chart

Along the course of an incident investigation, various types of reports and updates are expected to be produced. Below is the list of documents that are required to be produced and submitted:

i. Notification form
ii. HSE Alert
iii. Exit presentation
iv. Final presentation
v. Final report
vi. Lessons Learnt

Details such as the contents of the documents and timeline for submission are elaborated in the following sections.

2.1 INVESTIGATING INCIDENTS POTENTIALLY RESULTING / RESULTING IN OCCUPATIONAL ILLNESS (OI)

Incidents resulting in occupational illnesses may not exhibit any impact immediately after the exposure to hazard has taken place as it takes time for symptoms to develop and be detected. Hence, a specific process is required to diagnose the illness, as well as to confirm that it is a recordable or non-recordable incident.

Flow of investigation and other requirements:

i. Investigation usually triggered by suspicion of OI occurrence by Line Manager, HSE personnel, Human Resource personnel, Occupational Health Doctor (OHD) or the worker him/herself. OPU/BU/HCU/JV/Project is accountable to ensure proper referral to OHD is made timely.

ii. Upon referral, OHD will proceed with medical assessment in order to diagnose the illness based on occupational history, hazards exposure, physical examinations, laboratory and other relevant tests:

   a) When confirmed that the illness diagnosed is not work related, no further investigation needed. Case should be medically managed accordingly.
   b) When the case is either diagnosed as OI or requires further information/evaluation, OHD is required to notify OPU/BU/HCU/JV/Project.

iii. Upon notification by OHD, OPU/BU/HCU/JV/Project to determine scale of investigation including size and composition of investigation team, based on incident rating as per Appendix 1.

   a) For incident Rating 3 and below, OPU/BU/HCU/JV/Project to determine scale of investigation in consultation with respective Company Health Advisor. In some instances of OI, the investigation may not be required to the full scale as stated in **Table 2**. Example:

      - Investigation of Rating 3: Noise Induce Hearing Loss (NIHL), usually only requires involvement of Company Health Advisor and OPU's HSE.
      - Investigation of Rating 2: food poisoning, may require additional investigation team members, involvement of subject matter expert, more specific stakeholders interview and worksite assessment.

   b) For incident Rating 4 and above, flow of notification, investigation and reporting is as per **Table 2.**

iv. The aims of investigation are determination of work relatedness of illness, cause/s or contributory factor of an illness and providing recommendations. Input from Company Health Advisor shall be obtained to support the process. In circumstances where the OHD may already have concluded the diagnosis of OI, respective Company Health Advisor shall review and verify the diagnosis of OI. This will ensure accurate decision is made on case recordability to PETRONAS and reporting to local authority as per respective country legislation.

2.2 NON ACCIDENTAL DEATH

Non-accidental death involving an employee or contractor at work premises and/or during engagement in work related activities shall be investigated.

The objective of this investigation is to ascertain whether any work-related exposures could have contributed to the cause of death, assess adequacy of Medical Emergency Response (MER) and recommend corrective action.

The guidance to OPU/BU/HCU/JV/Project on conduct of initial and full scale NAD investigation is provided in Appendix 9. Decision making to trigger full scale investigation shall be done in consultation with respective Company Health Advisor. In the event that the death is suspected as work related, investigation of fatality shall be triggered as per **Table 2** requirement.

3.0 SITE PRESERVATION

As much as possible, the site should be preserved until at least a preliminary investigation has taken place. It may be necessary to clear the area or rectify problems in order to minimize the consequences, eliminate the hazards or facilitate emergency response operations. In such cases, photographs of the sites should be taken and relevant evidences preserved.

Local legislation may prescribe that for certain classes of accident, e.g. fatality or motor vehicle accident; nothing may be moved without prior permission from authorized persons.

This may include barricading the scene, posting a guard, creating a chain of custody documents, or similar actions. Special attention should be given to time sensitive information, such as computer data files and photography of the site. All such evidence collected should be held for the incident investigation team.

4.0 INCIDENT NOTIFICATION

The procedure for notification shall:

i. fulfil the timeline as stipulated in **Table 2**
ii. identify key roles and responsibilities (e.g. incident owner, notifier, etc.)
iii. identify the means of notification and the recipients of the notification
iv. identify information to be included in the notification such as:
    a) time and location of the incident
    b) persons injured / equipment damaged
    c) nature of injury / damage and estimate of severity
    d) volume of LOPC
    e) volume of Spill

Major incidents (i.e. incidents with Rating 3 to Rating 5) shall be reported as per the requirements in **Table 2**. The Incident Rating Descriptor in **Appendix 1** should be used to rate the incidents prior to the investigation.

The responsibility for this notification lies with the OPU/BU/HCU/JV/Project who has control on the activities or operations.

Incident Owner shall complete the Notification section in the Incident Notification and Investigation Module in iHSE within 3 working days after the incident to ensure that reporting statistics are updated. Subsequently, the Incident Details section of the Investigation Module in iHSE shall be completed within 5 working days after the incident.

4.1 NOTIFICATION TO COMCEN

All incidents are to be notified through COMCEN using the Group HSE Notification Form as per PTS 18.40.01 PETRONAS Contingency Planning Standard.

For non-emergency incidents, notification to be sent to COMCEN according to the timeline stated in **Table 2** below. The responsibility for this notification to COMCEN lies with the incident owner.

For emergency incidents, notification to be submitted as per requirement in PTS 18.40.01 PETRONAS Contingency Planning Standard.

COMCEN shall be responsible to notify all concerned as indicated in the NF. It will still be the responsibility of the OPU/BU/HCU/JV/Project concerned to notify their top management.

4.2 NOTIFICATION TO AUTHORITIES

For incidents that require notification to authorities, the notification timeline shall be as stipulated under relevant country regulatory requirement.

4.3 INCIDENT RATING

All incidents shall be rated based on the Incident Rating Descriptors in **Appendix 1**. The rating shall be based on the highest rating on the impact of the incident to People, Reputation, Asset, Environment and/or Loss of Primary Containment (LOPC). Depending on the information and description of the incident, Group HSE in consultation with the respective OPU/BU/HCU/JV/Project may review the incident rating.

4.3.1 HIGH POTENTIAL INCIDENT

Some incidents, depending on the nature of the occurrence (e.g. hazards and risks involved), could potentially lead to more severe consequences with higher Incident Rating. If the condition meets the criteria defined in Section 1.2.2 (No. 11), these incident should be identified as “High Potential Incident”. The following example is an illustration of high potential incident.

A minor fire occurred on a pump inside a warehouse used to store chemicals, hydrocarbon and other highly flammable materials. Since the incident occurred during a day time and was immediately spotted by an operator who happened to

be at a nearby location, emergency response was taken timely to extinguish the fire. Based on the actual damage incurred, it was identified as Incident Rating 2. Should the incident happen at night time (and knowing that the fire detection system was out of service, the location of the fire was too close to storage tanks containing flammable materials and the large quantity of materials stored), the fire could have escalated to cause major incident with more severe consequence under the Incident Rating Descriptors.

Although this is a minor incident with Incident Rating 2, it should also be identified as a "High Potential Incident"

Please refer to PTS 18.06.04 HSE Performance for other examples of High Potential Incidents.

There are 3 steps in determining a High Potential incident.

i. Identify potential Consequences.
Identify the "worst case credible" Consequences that could develop from a release of the hazard associated with the incident. Ask the question: What could happen if the controls don't work or they fail?

ii. Estimate the Severity of each potential Consequences.
For each of the identified Consequences assess the Severity (0 - 5) in the four Consequence categories - people, assets, environment and reputation (PAER).

iii. Estimate the Likelihood
For each of the potential Consequences, make an estimate of the Likelihood of the Consequence by referring to the Likelihood scale in the PETRONAS HSE Risk Matrix. The estimate of Likelihood is based on the Likelihood of the particular Consequence under consideration, not on the Likelihood of the hazard being realised or incident occurring.

Each potential Consequences can now be plotted on the Risk Matrix. Potential Consequences that fall in the VERY HIGH and HIGH region is considered as a High Potential Incident.

Requirements for High Potential Incident notification, investigation, issuance of HSE Alert/Lessons Learnt, presentation and reporting should be defined by the OPU/BU/HCU/JV/Project Management depending on the nature and potential severity of the incident. As a minimum, the level of investigation should meet the requirement of a rating 3 incident. This is to ensure that adequate attention is given and appropriate mitigation plans are determined to prevent recurrence.

4.4 HSE ALERT

Incident Owner should communicate relevant information about the incident to relevant parties in order to alert them about the hazard and precautionary measures that can be taken to prevent recurrence.

For all major incidents, draft of HSE Alert shall be prepared by Incident Owner in a format shown in **Appendix 2** (HSE Alert Template) and OPU/BU/HCU/JV/Project to submit to Group HSE within 3 working days from the date of incident. Group HSE, in consultation

with legal, will review and approve the HSE Alert for dissemination across the Group within 7 working days from the date of incident.

<table>
<tr><th></th><th>Rating 1</th><th>Rating 2</th><th>Rating 3</th><th>Rating 4</th><th>Rating 5</th></tr>
<tr><td rowspan="2">Notification to</td><td colspan="2">Non Emergency Incident
OPU/BU/HCU/JV/Project Management (within 24 hours).
Notify COMCEN within 24 hours
Authority (as per timeline stipulated under relevant regulatory requirement)</td><td>Non Emergency Incident
OPU/BU/HCU/JV/Project Management (within 24 hours).
Notify COMCEN within 24 hours
Authority (as per timeline stipulated under relevant regulatory requirement)</td><td colspan="2">Non Emergency Incident
OPU/BU/HCU/JV/Project Management (within 1 hour).
Notify COMCEN within 1 hour
Authority (as per timeline stipulated under relevant regulatory requirement)</td></tr>
<tr><td colspan="5">Emergency Incident
Notify COMCEN within 1 hour, and subsequent updates every 2 hours until stand down (as per PTS 18.05.01 requirement)</td></tr>
<tr><td>Investigation Team</td><td>OPU/BU/HCU/JV/Project appoints:
Leader, minimum G3 or equivalent
Team members from other departments within same OPU/JV/HCU/Project</td><td>OPU/BU/HCU/JV/Project appoints:
Leader, minimum Staff, G5 or equivalent
Team members from other departments within same OPU/JV/HCU/Project</td><td>BU's Corporate HSE appoints (within 24 hours):
Leader, minimum Principal, G7 or equivalent
Team members from other Country/Region/OPU/BU/HCU/JV/Project within same BU.
In the absence of BU Corporate HSE, GHSE will appoint the Investigation Team (within 24 hours):
Leader, minimum Principal, G7 or equivalent
Team members from other Country/Region/OPU/BU/HCU/JV/Project within same BU.</td><td>GHSE (Non-transport incident) / BU (Transport incident) Appoints (within 24 hours):
Leader, minimum Principal, G7 or equivalent
Team members comprise of external representatives from GTS/Country/Region/Other OPU/BU/HCU/JV/Project</td><td>GHSE appoints (within 24 hours):
Leader, minimum Custodian, G9 or equivalent
Team members comprise of external representatives from GTS/Country/Region/Other OPU/ BU/HCU/JV/Project</td></tr>
</table>

Presentation of Investigation Findings	• Present to OPU/JV/HCU/Project Head (MD/CEO), Segment / Sector Head (VP)	• Present to OPU/JV/HCU/Project Head (MD/CEO), Segment / Sector Head (VP)	Investigation team appointed by BU • Conduct exit presentation to site management (**within 10 working days from start of investigation**) • Present final investigation findings to OPU/Project Management. • Present to Business Level. In the absence of BU Corporate HSE, GHSE will appoint the Investigation Team • Refer to requirement for rating 4 (Non-Transport Incident)	<u>Non-Transport Incident</u> • Conduct exit presentation to site management (**within 10 working days from start of investigation**) • Present to GHSE for finalization. • Present to Business Level <u>Transport Incident</u> • Conduct exit presentation to site management (**within 10 working days from start of investigation**) • Present final investigation findings to OPU/Project Management. • Present to Business Level.	• Present exit report to site management (**within 10 working days from start of investigation**) • Present to GHSE for finalization. • Present to Business Level • Presentation to Petronas / HSE ExCo
Endorsement of Investigation Report.	• Endorsed by Facility Head (e.g. Plant Manager)	• Endorsed by Facility Head <u>For LTI</u> • Endorsed by Head HSE, BU.	Investigation team appointed by BU. • Endorsed by Head HSE, BU. In the absence of BU Corporate HSE, GHSE will appoint the Investigation Team • Endorsed by Head GHSE	<u>Non-Transport Incident</u> • Endorsed by Head GHSE. <u>Transport Incident</u> • Endorsed by Head HSE, BU.	• Endorsed by Head GHSE.
HSE Alert	Communicate internally within OPU/BU/HCU/JV/Project		Incident Owner to prepare and OPU/BU/HCU/JV/Project to submit to GHSE within 3 working days from the date of incident. GHSE to disseminate within 7 working days from date of incident.		
Lessons Learnt	Sharing internally within OPU/BU/HCU/JV/Project		Incident Owner in consultation with investigation team leader to prepare and OPU/BU/HCU/JV/Project to submit to GHSE **within 2 weeks after finalization of findings with GHSE or final presentation to OPU/Project Management**		
Submission of Final Investigation Report	Communicate internally within OPU/BU/HCU/JV/Project		Investigation team appointed by BU. • Investigation Team Leader to submit final investigation report to BU Corporate HSE **within 2 weeks after presentation**	• Investigation Team Leader to submit final investigation report to GHSE **within 2 weeks after finalization of findings with GHSE final presentation to OPU/Project Management** • GHSE to review and endorse final report in consultation with legal advisor.	

		to OPU / Project Management. • BU Corporate HSE to review and endorse final report in consultation with legal advisor.	
		In the absence of BU Corporate HSE, GHSE will appoint the Investigation Team • Refer to requirement for rating 4 and 5 (Non-Transport Incident)	

Note: In certain circumstances, Group HSE may request the Country/ Region/ OPU/ BU/ HCU/ JV/ Project to appoint an investigation team.

Table 2: Summary of Requirements for Incident Notification, Investigation and Reporting

5.0 INCIDENT INVESTIGATION AND ANALYSIS

All incidents shall be investigated. The responsibility for carrying out incident investigation lies with the OPU/BU/HCU/JV/Project who has control on the activities or operations. Depending on the severity of the incident, an independent investigation team may be formed by the BU or Group HSE.

In the event that local or national authorities take over the investigation, a dedicated person should be nominated as a focal point to liaise with the authorities and to assist them in assembling the information they require.

Investigations should be carried out as soon as possible as the quality of evidence can deteriorate rapidly with time. The level of investigation may vary depending on the severity and complexity of the incident. The following section describes typical investigation process.

5.1 PLANNING AN INVESTIGATION

Planning is the key to a good investigation. A good plan ensures that all resources are utilized effectively, time is managed well, and the required evidences are collected. This is crucial to establishing the facts and the causes of the incident, and producing a credible investigation report.

5.1.1 Formation of Investigation Team

The appointment of the investigation team shall be based on the rating of the incident and should be in accordance with **Table 2**. In certain circumstances, Group HSE will make the final decision on the appointment of the investigation team.

The size and composition of an investigation team depends on the scale of the investigation, and should take into account factors such as:

i. the extent of actual or potential consequences
ii. the potential for recurrence
iii. the departments or discipline involved in the incident
iv. legal requirements

To ensure an unbiased investigation, the team should be independent. This can be done by having the investigation team led by party not directly involved in the incident or activities. It is recommended that the team consists of members from various disciplines and with the appropriate experience. This may include Subject Matter Experts (SME) or specialists to provide technical support if necessary (e.g. OH Doctor, Metallurgist, Fire Specialist, etc.).

The roles and responsibilities of the investigation team members and competency requirements are given in **Table 3**.

ROLE	RESPONSIBILITIES	COMPETENCY REQUIREMENT
Team Leader	• Establish Terms of Reference (TOR) Lead or facilitate the investigation in line with the TOR • Assign tasks to team members Identify, discuss and resolve the key issues as they are raised by the team • Identify required resources e.g. facilitator, technical specialist	Minor incident: • Trained in incident investigation or at least one of the investigation tools (e.g. Tripod Beta, Why-why, Tree Diagrams, etc.) Major incident: • Trained in incident investigation Have experience participating in an investigation for a major incident (at least as a team member)
Team Member	• Obtain evidence and reference to support the investigation • Conduct site inspection • Carry out interviews • Analyse findings and provide recommendation	• Trained in incident investigation or at least one of the investigation tools (e.g. Tripod Beta, Why-why, Tree Diagrams, etc.)
Scribe (may be from one of the team members)	• Assists investigation team in consolidating interview statements, preparing reports and presentation packs	• Familiar with the requirements of this PTS
Facilitator (as required)	• Guide the investigation process • Facilitate discussions	• Trained as a facilitator or trainer for incident investigation • Have experience participating in incident investigations (at least as a team member)

Table 3: Responsibilities of Investigation Team members and Competency Requirements

5.1.2 Establish The Term of Reference.

The Terms of Reference define the scope and deliverables of the investigation and should be established prior to starting the investigation.

See **Appendix 3** for an example of Terms of Reference.

5.1.3 Preparing for the Investigation

A checklist or an index listing possible areas to be investigated should be established to ensure a comprehensive coverage. The checklist should cover the following areas as a minimum:

i. Organization
ii. People
iii. Asset Design
iv. Historical information

An example of items to check is given in **Appendix 4**.

5.2 THE INVESTIGATION PROCESS

The incident investigation process is as follows:

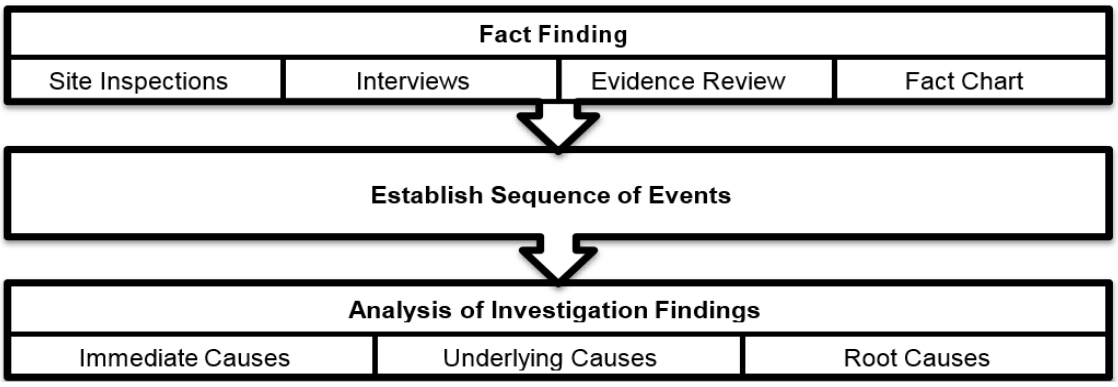


Figure 2 : Investigation Process

5.2.1 Fact Finding

In carrying out an investigation, the team should collect as many facts as possible which may help in understanding of the incident and the events surrounding it.

i. Site Inspection

Site inspection should be as thorough as possible and cover all items identified in the checklist.

ii. Interviews

Interviewers shall not in any way intimidate the interviewee. All parties involved shall maintain the confidentiality of the interviews. This can be achieved by:

a) limiting the number involved - it is recommended that only the interviewer, interviewee and note-taker be present during an interview
b) restricting the use of any recording device - recording device may only be used after obtaining interviewee's consent
c) recording the names of parties present during the interview

At the end of an interview, the interviewer should share the contents of the interview notes with the interviewee to confirm the statements that were given. Once confirmed, all parties involved should acknowledge and sign the interview document.

It should be noted that the statements made by different witnesses may conflict, therefore supporting evidence must be provided.

iii. Evidence Review

Evidence provides clues to help investigators and also corroborates witness accounts. Investigators should look at all available forms of evidence such as:

a) Drawings Instructions Process trends Logs
b) Work permits
c) Procedures Video/audio recording Photographs
d) Physical evidence such as samples of equipment, products, etc.
e) Medical report, post-mortem report, sick leave certificate

iv. Fact Chart

All information collected by team members should be shared so that all members are privy to the same facts. This can be done by setting up a fact chart where all findings, questions, statements, etc. are displayed. Actual events should be accompanied by date and timestamps. This exercise will provide focus, unearth any discrepancies, and show the connections between the various possible events and conditions leading to the incident.

5.2.2 Establish Sequence of Events

Establishing the sequence of events is a key step of the investigation process as it provides information that is crucial to understanding the circumstances surrounding the incident. In some incidents, it may be necessary to include events that took place well before the incident. The sequence of events is built from all the facts collected. The sequence can go as far as the background of each detail of the surrounding until the aftermath of the incident.

The sequence of events can be summarized in the flow chart below.

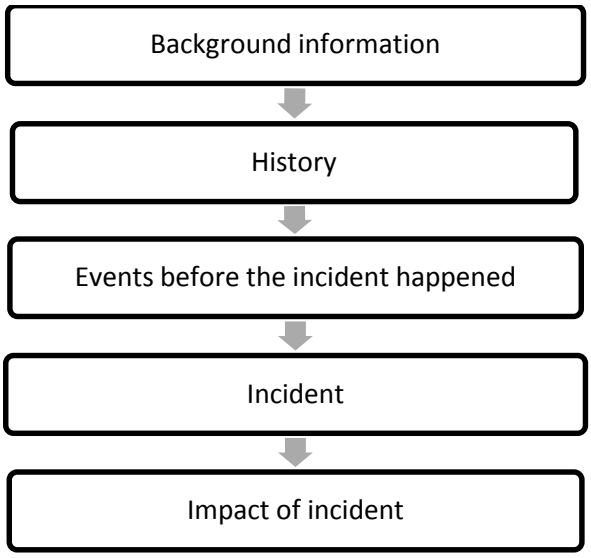


Figure 3: Sequence of events

5.2.3 Analysis of Investigation Findings

All investigation findings shall be analysed to determine immediate, underlying and root causes of the incident. Appropriate Root Cause Analysis (RCA) tools e.g. Why-why, Tripod Beta, etc. may be used to facilitate the root cause analysis.

Immediate causes are the triggers for an event while **underlying causes** are the failures that contributed to the event happening. One way to identify an immediate cause is that if you take it away, the event could not have occurred. Rectifying the immediate and underlying causes normally only provides short term benefits and will not necessarily prevent recurrence of the same event.

An investigation should seek beyond the immediate causes and underlying causes to establish the **root causes**. Each root cause should be categorized according to the 11 Basic Risk Factors (as per **Appendix 5**).

The investigation should show the barriers that have failed or were missing and address elements of negligence or failure of individuals or parties in discharging their roles and responsibilities which had contributed to the incident.

For High Potential Incident, the scope of the investigation should address the possible failures that potentially could result in more severe consequences (even though it did not), and assess if the required controls are still functioning.

5.2.4 Recommendations

Recommendations should address the causes of the incident and identify actions to prevent recurrence. Some recommendations may be aimed at reducing the risk to an acceptable level, while others may be aimed at improving protective systems to limit the consequences. Recommendations should also identify actions to close weaknesses/gaps in the HSEMS (if there is any).

Recommendations should be prioritized based on their potential impact (i.e. Major or Minor, as per the Incident Rating Descriptors) and should specify the proposed time frame for action closure (i.e. P1 - Immediate, P2 - within 3 months, P3 - within 12 months).

6.0 REPORTING OF INVESTIGATION FINDINGS

6.1 EXIT PRESENTATION

For major incidents, an exit presentation is required and shall be presented to the site management not more than 10 working days after the start of investigation process. The exit presentation should focus on recommendations for immediate action. Detailed analysis on the root causes shall be included in the final investigation report.

6.2 INVESTIGATION REPORT

Upon the completion of an incident investigation, the investigation team shall present the findings to the respective management as per **Table 2**. The report shall be signed off by the investigation team leader.

For all incidents, the report should contain the following information as a minimum:

i. Background of the incident (i.e. date, time and location of the incident)
ii. Information on persons injured/equipment damaged
iii. Description of the incident
iv. Immediate and root causes
v. Recommendations

For major incidents:

i. The report should be prepared as per standard investigation report format as shown in **Appendix 6.**

ii. The final report should be reviewed by respective Legal Advisor prior to signing off by the investigation team leader.

iii. The report should be distributed to the following parties:
    a) EVP of relevant Business Division
    b) Relevant VPs
    c) Head, Business HSE
    d) Facility Head
    e) Facility HSE Manager
    f) Head, Group HSE Division
    g) Head, GTS (if relevant to the incident)

The report shall be classified as a confidential document and managed accordingly.

Upon completion of incident investigation, the findings shall be recorded in the **Investigation Details Section** of Incident Notification and Investigation Module in iHSE.

For incident which report has been prepared in hardcopy documents, the incident owner shall complete or update the relevant sections as above within one month after receiving the final report. A copy of the report shall be attached in iHSE.

7.0 INCIDENT RECOMMENDATION TRACKING AND CLOSE-OUT

The action items should be discussed on a formal basis with action parties for agreement on the action required and the time-schedule for implementation. The implementation plan shall be endorsed and tracked by OPU/BU/HCU/JV/Project management to ensure effective and timely close- out. BU shall verify and report the closure of action items at OPU/BU/HCU/JV/Project sites to Group HSE quarterly. Group HSE shall monitor the overall closure of action items.

In the event that an action item will take a long time to implement (e.g. action requiring plant shutdown), interim measures should be identified. To prevent a single factor (e.g. metallurgic testing) holding up the reporting, a recommendation could be to investigate further in that specific area.

OPU/BU/HCU/JV/Project shall establish a system to record, monitor and track status of action items arising from all investigation. The information shall include the following, as a minimum:

i. The agreed action items.
ii. Specific action party for each action item
iii. Timeline to close each action item

8.0 COMMUNICATION OF LESSONS LEARNT

Incident Owner in consultation with investigation team leader to prepare the HSE Lessons Learnt. OPU/BU/HCU/JV/Project shall submit the HSE Lessons Learnt for all Major incidents to Group HSE within two weeks after finalization of findings with Group HSE or final presentation to OPU/Project Management using a standard format shown in **Appendix 8.**

Group HSE, in consultation with legal, will review the draft HSE Lessons Learnt for dissemination across the Group. HSE Lessons Learnt from selected external incidences will also be developed and shared through the same process.

All OPU/BU/HCU/JV/Project across the Group are responsible to implement, where applicable, the recommendations stated in the HSE Lessons Learnt. Verification of the learnings adoption and implementation will be carried out through the 3-Tiered Assurance process.

9.0 HSE PERFORMANCE REPORTING AND ANALYSIS

After completing the investigation, all information in the iHSE system should be updated in accordance to the final investigation reports if there is any change.

In the instance where the classification of incident is unclear and require additional input, respective Company Health Advisor should be consulted.

For reporting purposes, all incidents will be classified either as Recordable or Non-Recordable. In case where the Recordable and/or Non-Recordable classifications are not clearly or easily determined, or even disputable, Group HSE will make the the final decision.

OPU/BU/JV/HCU/Project Management are required to report the summary of incidents monthly to Group HSE for consolidation and reporting to higher management (refer to PTS 18.06.04 HSE Performance Monitoring and Reporting).

10.0 BIBLIOGRAPHY

PETRONAS TECHNICAL STANDARDS

Index to PTS	PTS 00.01.01
Requirements, General Definition of Terms, Abbreviations & Reading Guide	PTS 00.01.03
HSE Performance Monitoring And Reporting	PTS 18.06.04
Group Contingency Planning Standard	PTS 18.05.10

APPENDIX 1: INCIDENT RATING

The following set of criteria (i.e. harm to people, asset damage, environmental effect, impact to reputation, and loss of primary containment) should be used to determine the incident rating to initiate notification and investigation. The rating shall be based on the highest rating on the impact of the incident to People, Reputation, Asset, Environment and/or Loss of Primary Containment (LOPC). Depending on the information and description of the incident, Group HSE in consultation with the respective OPU/BU/HCU/JV/Project may review the incident rating.

HARM TO PEOPLE

Class	Rating	Description
Minor	1	• "No Treatment" Case or First Aid Case. • Occupational Illnesses that result in noticeable discomfort, minor irritation or transient effects after exposure stops.
	2	• Medical Treatment Case. • Lost Workday Case or Restricted Work Case, where the duration equals or less than 4 calendar days. • Occupational Illnesses with reversible health effects such as food poisoning and acute dermatitis • Positive biological/biological effect monitoring result without permanent effect to health.
Major	3	• Lost Workday Case or Restricted Work Case, where the duration exceeds 4 calendar days. • Injury which result in Permanent Partial Disability. • Occupational illnesses with irreversible health effects which result in Permanent Partial Disability such as occupational noise induced hearing loss, chronic back disorder or repetitive strain injury.
	4	• Fatality due to injury or occupational illness. • Injury which result in Permanent Total Disability. • Occupational illness including cancer with irreversible health effect which result in Permanent Total Disability such as asbestosis, silicosis and heart or kidney failure due to chemical exposure.
	5	• Fatalities due to injury or occupational illness. • Occupational illnesses[Note1] including cancer with irreversible health effect which result in Permanent Total Disability such as asbestosis, silicosis and heart or kidney failure due to chemical exposure.

Note:
1. Occupational illnesses including cancer to affected workers exposed to similar hazard in the same Operating Unit.

ASSET DAMAGE

Class	Rating	Description
Minor	1	Direct damage cost less than USD25,000
	2	Direct damage cost from USD25,000 to USD99,999
Major	3	Direct damage cost from USD 100,000 to USD 999,999
	4	Direct damage cost from USD1,000,000 to USD9,999,999
	5	Direct damage cost is equal or greater than USD10,000,000

Direct Damage Cost: Cost directly attributed to the incident, such as the replacement value of equipment lost, cost of repairs, clean-up, material disposal, environmental remediation and emergency response.

Direct damage cost does not include indirect costs, such as business opportunity losses, feedstock / product loss, loss of profits due to equipment outages, cost of obtaining or operating temporary facilities or cost of obtaining replacement products to meet customer demand.

Direct damage cost does not include the cost of the failed component leading to the incident, if the component is not further damaged by the fire or explosion

ENVIRONMENTAL EFFECT

Class	Rating	Description (meet either one of criteria)
Minor	1	**Slight Impact** • Release[Note1] that comes into contact with soil or water, still confined to the area of the source of the release and with insignificant adverse effects to the environment. Examples: • Oil/chemical leakage within an unpaved ground in the process area that result in limited staining on the ground with no stress vegetation observed. There is also no evidence of access to the groundwater. The leakage has not gone into the storm water drains.
	2	**Minor Impact** • Release that comes into contact with soil or water, no longer confined to the area of source of the release but still confined to the company site[Note2], resulting in limited and transient effects to the environment. The effect does not impair the beneficial use of the environment for the other users. • Emission or discharge from regulated/permitted source, with a single breach of a company/other standards but does not exceed any regulatory standards. Examples: • Oil/chemical leakage that is not only on unpaved ground in the process area, but it has gone into the storm water drains, but still contained within the company site. There is also no evidence of access to the groundwater. • Produced water quality has exceeded the internal limit for oil and grease. • Treated effluent quality from the Industrial Effluent Treatment System (IETS) has exceeded the internal limit for COD, if any.
Major	3	**Localised Impact** • Release that is no longer confined to the company site, resulting in disruption with transient effects to the beneficial use of the environment. Evidence of off-site environmental effect or damage (e.g. vegetation damage, fish kill, groundwater contamination) but over a limited area. • Emission or discharge from regulated/permitted source, exceeding regulatory standard[Note3]. Examples: • Oil leakage resulting in soil and groundwater contamination that migrate to neighbouring property but does not affect beneficial uses of soil and groundwater such as potable water supply.

Class	Rating	Description (meet either one of criteria)
		• Spill of oil/chemicals into public drain or adjacent stream resulting in fish kill, but no significant disruption or loss of beneficial uses of the stream, or loss of sensitive or protected species. • Produced water quality has exceeded the regulated limit for oil and grease. • Treated effluent quality from the Industrial Effluent Treatment System (IETS) has exceeded the regulated limit of COD. • Stack emission quality for NOx has exceeded the regulated limit.

	4	**Major Impact**
		• Release reaching the environment which results in significant disruption of or impairment to beneficial uses of the environment and/or to public receptors. Evidence of severe environmental damage such as:
		  ◦ it is widespread and detectable for some distance beyond the company site; or
		  ◦ becomes sub-standard or unfit for one or more purposes including supporting normal wildlife populations; or
		  ◦ interference with other users causing loss of earnings, public health impact or claims
		• Require extensive measures or larger scale effort to restore the contaminated environment to its original state or risk based approach acceptable level.
		• Emission or discharge from regulated/permitted source, with extended or repetitive breach of regulatory standard with possible legal penalty or prosecution.
		
		<u>Examples:</u>
		• Oil spill beyond the company site causing significant disruption to commercial fish farming, or port operations, or other water recreational activities.
		• Surface water contamination causing domestic and commercial water supply disruption to regional population and business activities over several days.
		• Groundwater contamination from an underground tank of a petrol station affecting adjacent community drinking water well.
		• Treated effluent quality from the Industrial Effluent Treatment System (IETS) has exceeded the regulated limit of COD for several days and Department of Environment (DOE) has issued out the compound.

	5	**Massive Impact**
		• Release reaching the environment over designated areas of ecological importance or an extensive area which results in:
		  ◦ **Significant loss** of beneficial uses of the environment and/or **loss** of public receptors; or
		  ◦ **Loss** of rare, endangered, threatened and endemic species.
		• Irreparable/long term damage/ widespread environmental effects.

Class	Rating	Description (meet either one of criteria)
		• Emission or discharge from regulated/permitted source, with extended or repetitive breach of regulatory standard resulting in legal penalty/prosecution with possible total shutdown of facility. Examples: • Crude oil spill affecting a large area of sensitive mangrove estuarine with loss of protected species or critical habitat in that area. • Contamination of surface water causing loss of sole water supply source for community and business activity over extended period or inability to sustain beneficial use of environment. • Treated effluent quality from the Industrial Effluent Treatment System (IETS) has exceeded the regulated limit of COD for several weeks and Department of Environment (DOE) has taken up the non-compliance as a court case for fine.

Notes:

1. Release refer to liquid and solid release.
2. Company site includes all areas within the operational control of the OPU.
3. Non-compliance to regulatory standards/limits, with respect to but not limited to air emission and effluent discharge. Where host country regulatory requirements are not available, then company standards/limits will apply.
4. Releases into pits or basin designed for hydrocarbon or chemical containment will not be counted as spill.

Definitions/Explanation:

Term	Definitions/Explanation
Beneficial Uses	Means uses of the environment or any element or segment of the environment that is conducive to public health, welfare or safety and which requires protection from the effects of wastes, discharges, emissions and deposits. Covers the uses of land, water and/or other natural resources including but not limited to: • Agriculture/aquaculture – Farming, horticulture and commercial production of aquatic animals; • Public water supply – Source water for community, or individual water supply systems, including, but not limited to, drinking water supply delivered through community water supply systems; • Industrial water supply – Water for industry, including secondary industry and a mining or petroleum activity, and for other industry uses; • Wildlife habitat in areas of ecological importance – Support wildlife habitat and ecosystems including, but not limited to, the survival and enhancement of plant and animal species in areas of ecological importance; • Recreation – Parks, green areas and water bodies used for sports, boating, recreational fishing, swimming and other social activities; • Culture, religion and heritage – Areas with high archaeological and historical value, aboriginal/native traditional or customary land, burial grounds, houses of worship or land reserved for spiritual/religious activities.
Company/other standard limits	Means standard limits/targets set internally by PETRONAS or its respective OPUs, and/or those set by third party (e.g. effluent quality acceptance criteria set by a third party effluent treatment facility). This excludes standard limits set by regulatory authorities.

Public receptors	Include offsite residences, institutions (e.g. schools, hospitals), industrial, commercial, and office buildings, parks or recreational areas where members of the public could potentially be or are exposed to environmental pollutants.
Designated	Means listed, gazetted, recognized, identified or protected by law or by relevant authorities.
Disruption to public receptors	May include disruption or interruption resulting in community evacuation, or injury or illness from exposure to environmental pollutants.
Area of ecological importance	Means clearly defined geographical space, recognized, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values This may include: • National and State parks, nature reserves or conservation areas (e.g. wildlife reserves, sanctuaries, marine parks, and forest reserves); • UNESCO Biosphere Reserve and Heritage Site; • Areas with restricted range or endemic species, and migratory and congregatory species. • Wetlands that have been designated or recognized as being regional, national and international importance.
Rare, endangered, threatened and endemic species	Includes listed species, for example, according to IUCN Red List of Threatened Species (critically endangered or endangered species or vulnerable), or protected under statutory act.
Transient effect	Noticeable effect that is brief and disappear without causing discomfort/inconvenience.
Spill	Unplanned or uncontrolled releases of liquid or solid associate with current operations from primary or secondary containment, into the environment
Environment	In the context of spill, environment covers soil, surface water and ice covered surface whereby : • Soil – Includes surfaces (e.g. soil, sand, silts, shells, gravel) not designated as impermeable secondary containment, as well as the underlying sediments and groundwater resources; and • Surface water –Includes creeks, rivers, ponds, seas, oceans, etc. but excludes ponds, pits, basins, etc. in place on company property for purposes of hydrocarbon or chemical containment or treatment. • Snow- or ice-covered surfaces are classified based on the surface below the snow or ice; and • Standing rainwater are classified as a spill to soil.

IMPACT ON REPUTATION

Class	Rating	**Description (**meet either one of criteria**)**
Minor	1	Slight Consequence • Public awareness may exist, but there is no public concern • Trust questioned – but recoverable speedily
	2	Limited Consequence • Local public concern or complaints • Local media and/ or local political attention with potentially negative consequence for company operations • Trust dented – recoverable with time and good PR
Major	3	Considerable Consequence • Regional public concern. Extensive adverse attention in local media • National media and/ or regional political attention resulting in negative consequence on company operations. • Adverse stance of local government and/ or action groups • Trust diminished – recoverable at considerable cost
	4	National Consequence • National public concern. Extensive adverse attention in the national media • Regional/national policies with potentially restrictive measures and/or consequence on grant of licences[Note1] • Mobilisation of pressure or action groups
	5	International consequence • International public attention. Extensive adverse attention in international media • National/international policies with potentially severe consequence on access to new areas, grants of licences [Note1] and/ or tax legislation • Trust completely lost – not recoverable

Note:
1. Withdrawal of existing license or rejection of new license to operate

.

LOSS OF PRIMARY CONTAINMENT (LOPC)

Class	Rating	Description
Minor	1	**Slight Release** • Release below Tier 2 threshold quantity as per API 754 (i.e. R_1 < Tier 2 threshold quantity)
	2	**Minor Release** • Release equal to or above Tier 2 threshold quantity, but below Tier 1 threshold quantity as per API 754 (i.e. Tier 2 threshold quantity ≤ R_2 < Tier 1 threshold quantity)
Major	3	**Local Release** • Release equal to or above Tier 1 threshold quantity as per API 754, but below 10 times the threshold quantity (i.e. Tier 1 threshold quantity ≤ R_3 < 10 x Tier 1 threshold quantity)
	4	**Major Release** • Release equal to or above 10 times the Tier 1 threshold quantity as per API 754, but below 100 times the threshold quantity (i.e. 10 x Tier 1 threshold quantity ≤ R_4 < 100 x Tier 1 threshold quantity)
	5	**Extensive Release** Release equal to or above 100 times the Tier 1 threshold quantity as per API 754 (i.e. R_5 ≥ 100 x Tier 1 threshold quantity)

Threshold Release Category

Table 1—Tier 1 Material Release Threshold Quantities

Threshold Release Category	Material Hazard Classification [a,c,d]	Threshold Quantity (outdoor release)	Threshold Quantity (indoor[b] release)
1	TIH Zone A Materials	5 kg (11 lb)	2.5 kg (5.5 lb)
2	TIH Zone B Materials	25 kg (55 lb)	12.5 kg (27.5 lb)
3	TIH Zone C Materials	100 kg (220 lb)	50 kg (110 lb)
4	TIH Zone D Materials	200 kg (440 lb)	100 kg (220 lb)
5	Flammable Gases or Liquids with Initial Boiling Point ≤ 35 °C (95 °F) and Flash Point < 23 °C (73 °F) or Other Packing Group I Materials excluding strong acids/bases	500 kg (1100 lb)	250 kg (550 lb)
6	Liquids with Initial Boiling Point > 35 °C (95 °F) and Flash Point < 23 °C (73°F) or Other Packing Group II Materials excluding moderate acids/bases	1000 kg (2200 lb) or 7 bbl	500 kg (1100 lb) or 3.5 bbl
7	Liquids with Flash Point ≥ 23 °C (73 °F) and ≤ 60 °C (140 °F) or Liquids with Flash Point > 60 °C (140 °F) released at a temperature at or above Flash Point or strong acids/bases or Other Packing Group III Materials	2000 kg (4400 lb) or 14 bbl	1000 kg (2200 lb) or 7 bbl

It is recognized that threshold quantities given in kg and lb or in lb and bbl are not exactly equivalent. Companies should select one of the pair and use it consistently for all recordkeeping activities.

[a] Many materials exhibit more than one hazard. Correct placement in Hazard Zone or Packing Group shall follow the rules of DOT 49 *CFR* 173.2a [14] or UN Recommendations on the Transportation of Dangerous Goods, Section 2 [10]. See Annex B.

[b] A structure composed of four complete (floor to ceiling) walls, floor, and roof.

[c] For solutions not listed on the UNDG, the anhydrous component shall determine the TIH zone or Packing Group classification. The threshold quantity of the solution shall be back calculated based on the threshold quantity of the dry component weight.

[d] For mixtures where the UNDG classification is unknown, the fraction of threshold quantity release for each component may be calculated. If the sum of the fractions is equal to or greater than 100 %, the mixture exceeds the threshold quantity. Where there are clear and independent toxic and flammable consequences associated with the mixture, the toxic and flammable hazards are calculated independently. See Annex A, Examples 28, 29, and 30.

Source: Process Safety Performance Indicators for the Refining and Petrochemical Industries, ANSI/API Recommended Practice 754, First Edition, April 2010

Table 2—Tier 2 Material Release Threshold Quantities

Threshold Release Category	Material Hazard Classification [a,c,d]	Threshold Quantity (outdoor release)	Threshold Quantity (indoor[b] release)
1	TIH Zone A Materials	0.5 kg (1.1 lb)	0.25 kg (0.55 lb)
2	TIH Zone B Materials	2.5 kg (5.5 lb)	1.2 kg (2.8 lb)
3	TIH Zone C Materials	10 kg (22 lb)	5 kg (11 lb)
4	TIH Zone D Materials	20 kg (44 lb)	10 kg (22 lb)
5	Flammable Gases or Liquids with Initial Boiling Point ≤ 35 °C (95 °F) and Flash Point < 23 °C (73 °F) or Other Packing Group I Materials excluding strong acids/bases	50 kg (110 lb)	25 kg (55 lb)
6	Liquids with a Initial Boiling Point > 35 °C (95 °F) and Flash Point < 60 °C (140 °F) or Liquids with Flash Point > 60 °C (140 °F) released at or above Flash Point; or Other Packing Group II and III Materials excluding moderate acids/bases or Strong acids and bases	100 kg (220 lb) or 1 bbl	50 kg (110 lb) or 0.5 bbl
7	Liquids with Flash Point > 60 °C (140 °F) released at a temperature below Flash Point or Moderate acids/bases	1000 kg (2200 lb) or 10 bbl	500 kg (1100 lb) or 5 bbl

In order to simplify determination of reporting thresholds for Tier 2, Categories 6 and 7 in Tier 1 have been combined into one category in Tier 2 (Category 6). The simplification is intended to provide less complicated requirements for those events with lesser consequences.

It is recognized that threshold quantities given in kg and lb or in lb and bbl are not exactly equivalent. Companies should select one of the pair and use it consistently for all recordkeeping activities.

[a] Many materials exhibit more than one hazard. Correct placement in Hazard Zone or Packing Group shall follow the rules of DOT 49 *CFR* 173.2a [14] or UN Recommendations on the Transportation of Dangerous Goods, Section 2 [10]. See Annex B.

[b] A structure composed of four complete (floor to ceiling) walls, floor and roof.

[c] For solutions not listed on the UNDG, the anhydrous component shall determine the TIH zone or Packing Group classification. The threshold quantity of the solution shall be back calculated based on the threshold quantity of the dry component weight.

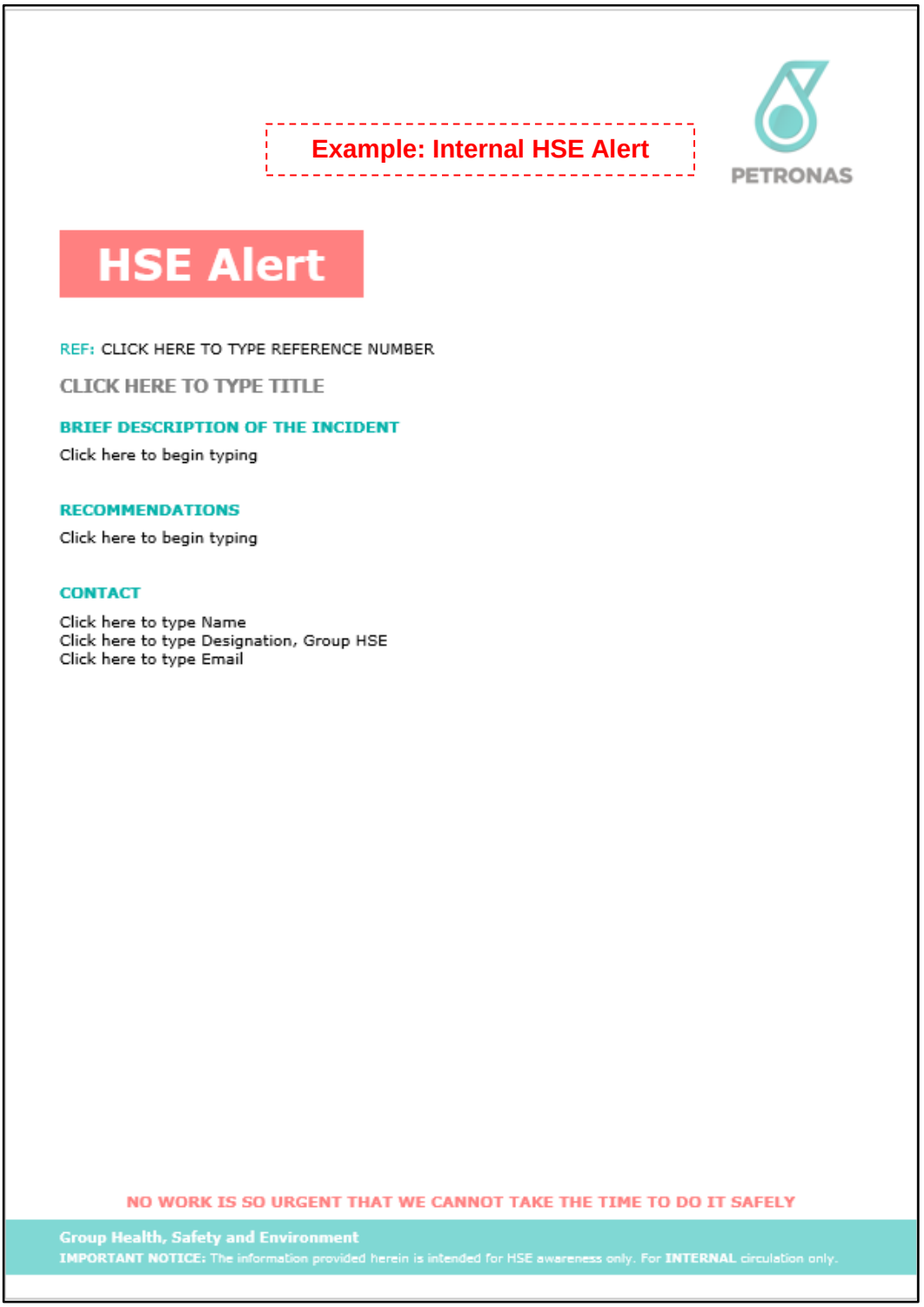
[d] For mixtures where the UNDG classification is unknown, the fraction of threshold quantity release for each component may be calculated. If the sum of the fractions is equal to or greater than 100 %, the mixture exceeds the threshold quantity. Where there are clear and independent toxic and flammable consequences associated with the mixture, the toxic and flammable hazards are calculated independently. See Annex A, Examples 28, 29, and 30.

Source: Process Safety Performance Indicators for the Refining and Petrochemical Industries, ANSI/API Recommended Practice 754, First Edition, April 2010

APPENDIX 2: HSE ALERT TEMPLATE

Guidelines for preparing HSE Alerts:

1. Do not disclose details that might implicate the affected OPU/BU/HCU/JV/Project (e.g. actual date of the incident, location of incident, equipment number, any pictures of the deceased or affected individuals, name of the deceased or affected individuals, etc.)
2. Language used shall be generic in nature



Example: External HSE Alert

PETRONAS

HSE Alert

FROM EXTERNAL INCIDENT

REF: CLICK HERE TO TYPE REFERENCE NUMBER

CLICK HERE TO TYPE TITLE

BRIEF DESCRIPTION OF THE INCIDENT

Click here to begin typing

RECOMMENDATIONS

Click here to begin typing

CONTACT

Click here to type Name
Click here to type Designation, Group HSE
Click here to type Email

NO WORK IS SO URGENT THAT WE CANNOT TAKE THE TIME TO DO IT SAFELY

Group Health, Safety and Environment

IMPORTANT NOTICE: The information provided herein is intended for HSE awareness only. For **INTERNAL** circulation only.

APPENDIX 3: EXAMPLE OF TERMS OF REFERENCE

Below is an example of an investigation terms of reference:

Investigation into the Fire Incident at OPU/JV/HCU X on Monday, 31 October, 2002 at 10:50:00 AM. An investigation is required to look into the circumstances leading to and the causes of fire at Unit XXX, which resulted in asset damage, pollution to the environment and public complaints. XXX has been appointed team leader. Other members of the team are:-

1. XXX
2. XXX
3. XXX

The remit for the investigation is to:-

a) Determine the sequence of relevant events leading up to the incident.
b) Identify the Immediate, Underlying and Root Causes
c) Determine the impact of the incident in terms of asset and reputation damage, and pollution to the environment
d) Make suitable recommendations (SMART actions) to prevent the same or similar occurring again
e) The report should be supported by photographs and Analysis Diagram(s)

The investigation should consider the following:

1. Requirements and compliance with company standards.
2. The effectiveness of safety critical barriers
3. Human factors such as competency and work culture.

A draft report should be completed by Monday, 1 November, 2002 for presentation to the OPU Management.

APPENDIX 4: EXAMPLE OF INCIDENT INVESTIGATION PLANNING CHECKLIST

Note: This list is not exhaustive and should only be used as an example to come up with investigation team's own checklist.

Organisation	People	Asset	Design	Historical Information
• Resources • Planning • Work processes • Culture • Management control • Management of contractors • Competence • Communication • Standards and procedures	• Injury / Potential injury • Behaviour • Supervision • Health condition • Fatigue	• Maintenance • Transport / Vehicle • Vessels & pipework • Materials / Chemicals • House keeping • Sensitivity of location • Error inducing conditions • Pollution / Contamination • Weather	• Drawings • Performance standards • Layout • Codes of Practice • Procurement standards • Risk assessment records	• Quality control • Permit-to-Work • Associated Certificates • Documented communication • Process trends

APPENDIX 5: BASIC RISK FACTOR (BRF) DEFINITIONS

BRF Initials	Short Definition	Single Sentence Definition	Full Definition	Popular (Colloquial) Definition
DE	Design	The creation of the optimum ergonomic solution to a particular set of needs or circumstances	The creation of an appropriate* engineering solution to a specific set of needs or circumstances, most often for the interface between equipment and people. A design failure will most often be recognisable when there is a significant difference between the way the designer intended something to be used and the actual use to which it is put in practice. It is often created when the designer is given a poor or inappropriate specification or where a piece of equipment is used in the wrong context of place. * In engineering terms, an ALARP (as low as is reasonably practicable) solution would be "appropriate"	Applying common sense to equipment and machinery control layout and positioning! Or Remembering that equipment and machinery control layout and positioning has to be used by human beings!
HW	Hardware	Tools, equipment and components to work correctly, efficiently and reliably within their specified operational limits	The quality of materials used in tools, equipment and components insofar as it affects their ability to operate reliably, efficiently and effectively within the limits laid down by the designer, throughout their lifecycle.	Is the bit of kit right for the job?
PR	Procedures	A clear, formal description of tasks to be undertaken at the operating interface between people and equipment	A formal, step by step description of the safest and most efficient way of carrying out a particular task or operation. It will incorporate the accumulated craft wisdom and practical knowledge gained through operating experience. It will be in a clear, unambiguous form that can be understood and utilised by a	In the ideal world, a fool proof, competent person's guide to the job.

EC	Error Enforcing Conditions	Conditions, circumstances and situations which will significantly increase the chance that errors or violations will occur.	A serious circumstance or situation where an inadvertent error or deliberate violation is more likely to occur and have a serious consequence; in the presence of hazardous conditions there is a significantly enhanced risk of injury or damage. Error enforcing conditions may be environmental (e.g. weather, social (e.g. over- confidence) or physical (e.g. tiredness). An error enforcing condition is usually triggered by a change from the norm, where a person's ability to function in his/her environment is compromised, and where existing best practise procedures and habits are likely to be ignored or changed.	"Flying by the seat of your pants" is not the best method of dealing with unexpected problems or opportunities.
HK	House Keeping	The maintenance of a clean and tidy workplace	The provision and management of the resources and systems to keep a workplace clean and tidy and remove waste on a continuous basis. Housekeeping becomes a latent failure when it is neglected for a period of time and when there is an awareness of such neglect and nothing is done. Housekeeping performance will only break down if: 1. Management make site visits, are aware of a poor performance but fail to take remedial action. 2. Management make site visits but are hoodwinked into thinking that there are no problems. 3. 3) Management do not make site visits at all.	A place for everything and everything in its place.

TR	Training	Provision of appropriate instruction to develop competence to enable everyone to carry out their jobs safely to the required standard.	Development of competence in procedures, equipment and systems to enable safe working practises to be undertaken efficiently; this will be through coaching/mentoring as well as through formal training courses. Training also includes the consideration of the appropriateness of qualifications and the management of a system for the checking of those qualifications.	Have you got the knowledge and skill?
IG	Incompatible Goals	The increase in risk arising from the conflict between different and unbalanced priorities.	Conflict between the different priorities and goals of individuals, groups (departments) and the organisation can create latent failures, particularly when management give little or no guidance on the priorities. The conflicting goals that are inevitably inherent in any organisation are particularly likely to generate accidents under extreme time pressure.	Keeping on the tightrope when different weights keep getting added to your balancing pole.
CO	Communication	The transmission and understanding of essential information	The transmission of clear, unambiguous and intelligible information to the right person at the right time to ensure the safe and effective functioning of all or part of the organisation. Communications can break down if: 1. The necessary communications systems or channels do not exist. 2. The channels and systems exist but the necessary information is not sent or is sent too late to be of use. 3. The information is sent at the right time but is misinterpreted or ignored by the recipient.	Providing the right information to the right person at the right time.
OR	Organisation	The implications for safety management from the way the company is structured and conducts its business	The structure of the company, its business philosophy, organisational processes and management strategies should prevent safety responsibilities becoming poorly defined and warning signs being overlooked.	Don't let it "slip between the cracks". It is your responsibility!

MM	Maintenance Management	Systematised management to ensure correct maintenance of processes, plant, equipment and tools	The development and use of appropriate management systems to maintain the technical integrity of all processes, plant, equipment and tools. The choice of maintenance strategies should be suited to the actual environment and sometimes allowing items to breakdown may be the preferred option. (The execution of maintenance is considered in GFT/BRF's Error Enforcing Conditions, Procedures, Design, Hardware and Communication)	Recognising that prevention is better than cure
DF	Defences	Mitigation of the consequences of human and/or technical failure	Defences are what stop you getting hurt when all else has failed - they are the barrier between the "target" (you) and the hazard. Defences should provide layered, in depth protection to warn of and guard against the consequences of human or technical failure. Each layer comes into operation on the failure of its predecessor; this defence in depth sequence should have the following components: 1. Detection/warning 2. Control and interim recovery to a safe state 3. Protection and containment 4. Escape	The "Last Chance Saloon" - defences should only become active in the last stages before an accident occurs.

APPENDIX 6: INCIDENT INVESTIGATION REPORT & PRESENTATION MATERIAL FORMAT

1.0 INCIDENT INVESTIGATION REPORT TEMPLATE (FOR MAJOR INCIDENTS)

(REFER APPENDIX 7)

2.0 FORMAT FOR AN INCIDENT INVESTIGATION PRESENTATION MATERIAL

The presentation material of any incident investigation should consist of the following slides:

1. **Front page**
   - Title
   - Purpose
   - Date

2. **Presentation Outline Titles**
   - Incident Summary Background
   - Sequence of events
   - Investigation Findings
   - Conclusion
   - Recommendation

3. **Incident Summary**
   - What, Date & Time, Location, Impact, Immediate Action
   - Investigation Team Members & Resource Person

4. **Background**
   - Background which may/ may not include photos or video
   - Details of casualty and/or victim (s)

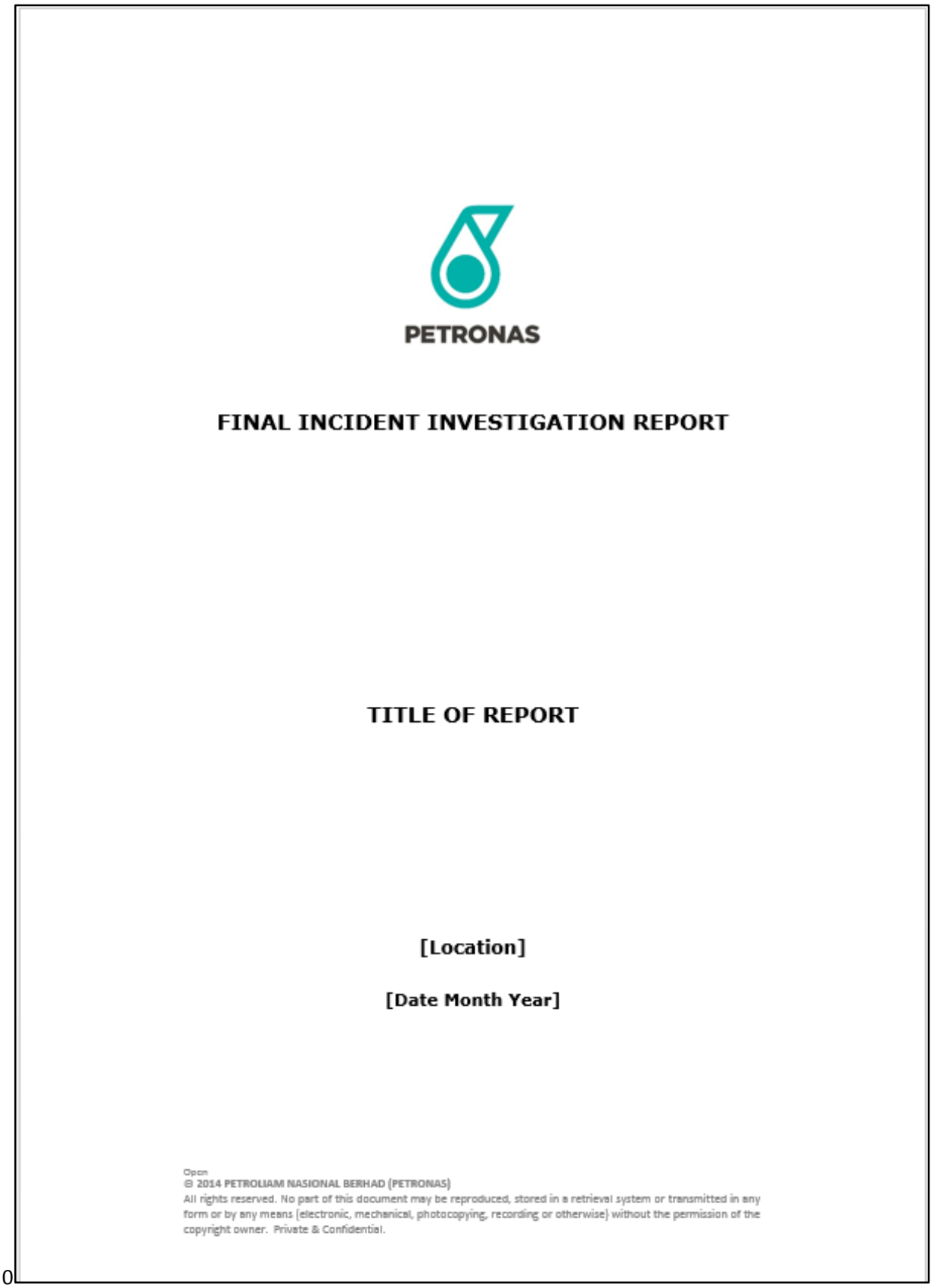
5. **Sequence of events**
   - Times & events

6. **Investigation Findings**
   - Cluster the findings into relevant categories, e.g. training, competency, emergency response, asset integrity, planning, procedures, risk assessment, MOC, safe system of work, etc.
   - What went wrong?

7. **Conclusion**
   - Link the findings to the relevant HSEMS sub-elements to highlight any failures in the system
   - Immediate cause Underlying cause (s) Root causes

8. **Recommendation**
   - Prioritized
   - Proposed time frame for action closure
   - Action parties
   - Report on closure status to Head, Group HSE on quarterly basis

APPENDIX 7: INCIDENT INVESTIGATION REPORT TEMPLATE



PETRONAS

FINAL INCIDENT INVESTIGATION REPORT

TITLE OF REPORT

[Location]

[Date Month Year]

Open

0

PETRONAS	FINAL INCIDENT INVESTIGATION REPORT	Doc No: XXX
	TITLE OF REPORT	Issue Date:
		Page 1 of 17

Disclaimer

The objectives of this report are to identify the most probable cause of this incident as well as to recommend preventive and corrective measures in preventing recurrence of similar incident. This report is not intended to provide a confirmatory or definitive report on the causes of the incident.

Prepared by		**Endorsed for Circulation by**	
Team Leader	Signature & Date	GHSE	Signature & Date
Position		Who appointed the Investigation Team Lead	

Document Classification

(Tick the appropriate box in each classification)

Security Classification		**Vital Classification**	
Secret	☐	Vital	☐
Confidential	☐	Important	☐
Internal Use	☐	Useful	☐
Open	☐		

Open

Choose an item.

PETRONAS	FINAL INCIDENT INVESTIGATION REPORT	Doc No: XXX
	TITLE OF REPORT	Issue Date:
		Page 1 of 17

Distribution List

1. Executive Vice President
   Business Division
2. Vice President
   Business Sector
3. Managing Director / Chief Executive Officer
   Facility / OPU / JV / HCU
4. Head, HSE
   Business Division
5. Head, HSE
   Facility / OPU / JV / HCU
6. Head – Master Copy
   Group HSE Division

Note: Distribution List depends on the seriousness and the final rating of the incident.

Open

Choose an item.

PETRONAS	FINAL INCIDENT INVESTIGATION REPORT	Doc No: XXX
	TITLE OF REPORT	Issue Date:
		Page 1 of 17

List of Abbreviations
(In alphabetical order)

No	Terms	Description

Open
Choose an item.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

Open

Choose an item.

PETRONAS	FINAL INCIDENT INVESTIGATION REPORT	Doc No: XXX
	TITLE OF REPORT	Issue Date:
		Page 1 of 17

EXECUTIVE SUMMARY

A brief summary of the report, giving the background of the Incident, a description of the Incident, description of injuries, damage and loss, and outlining the main facts, principal causes identified, and remedial measures taken.

Open

Choose an item.

1.0 INTRODUCTION

1.1 Overview of the incident

1.2 Investigation team members

1.3 Investigation methodology

Open

Choose an item.

2.0 BACKGROUND

2.1 Facilities information or project background

2.2 (Other relevant facts for the facilities)

Open
Choose an item.

3.0 DESCRIPTION OF THE INCIDENT

A statement of the facts immediately surrounding the incident, covering the period from the initiating events until the situation was under control and identifying, where possible, the sequence of events. In this context photographs, maps or drawings should be used as illustrations to support the narrative.

3.1 Details of incident

Time, Place and Date

3.2 Details of injured person

a. Status, i.e. company employee, contractor employee, or third party (specified)

b. Name, age, whether employee, contractor, or third party, position held, time in that position

c. Length of service (company and area)

d. Nationality and family status

e. Details of injuries, in a form understandable to non-medical readers (medical reports can be attached as appendices).

3.3 Sequence of events

3.3.1 Events leading to the incident

A short narrative which sets the scene of the Incident, for example:

a. Description of the operation in progress

b. Preparations made for the work (work procedures, instructions, permits, supervision)

c. Personnel and equipment involved

d. Environmental conditions

e. Activities taking place at the scene of the incident

f. Activities of key persons prior to the day of the incident that could have affected their actions

3.3.2 Immediate response after the incident

Open

Choose an item.

4.0 IMPACT OF INCIDENT

Actual impact on people, asset, environment, reputation

Open

Choose an item.

5.0 RESULTS OF THE INCIDENT INVESTIGATION

This section should demonstrate that the investigation was carried out in sufficient depth to support the conclusions that follow. It should include, where relevant, references to:

a. Environmental conditions

   i. Example - Environmental conditions 1

      - Example - Environmental conditions 1
      - Example - Environmental conditions 1

   ii. Example - Environmental conditions 2

      - Example - Environmental conditions 2
      - Example - Environmental conditions 2

b. Condition of equipment and facilities, known deficiencies, positioning, operating mode, etc.

   i. Example - Condition of equipment

      - Example – Condition of equipment 1
      - Example - Condition of equipment 2

   ii. Example - Condition of facilities

      - Example – Condition of facilities 1
      - Example – Condition of facilities 2

c. Procedures relating to the operation

d. Pertinent information concerning the principal operators and supervisors (e.g. Training, experience,

e. Hours into shift and days into tour)

f. Work instructions and communications

g. Records and documentation

h. Information derived from the nature of the damage

i. Witnesses' statements

j. Medical information (state of health)

k. Factors affecting alertness or judgement (e.g. Fatigue, social pressures, alcohol, medication or drugs)

Open

Choose an item.

l. Working conditions

m. Survival aspects

n. Results of special investigations and tests

o. Rescue and damage containment activities

p. Emergency response and recovery activities

5.1 Analysis of findings

Establish immediate, underlying and root causes.

a. How it happened

b. Why it happened (e.g. RCA)

Open

Choose an item.

PETRONAS	FINAL INCIDENT INVESTIGATION REPORT	Doc No: XXX
	TITLE OF REPORT	Issue Date:
		Page 8 of 17

6.0 CONCLUSIONS

This section should include the results of the analysis of the findings, identifying the immediate and underlying causes and root causes, and commenting on the effectiveness of rescue and damage containment activities where appropriate.

Conclusions based on circumstantial evidence should be highlighted as such.

Open

Choose an item.

7.0 RECOMMENDATIONS

Recommendations should be prioritized as immediate (complete within a month), short term (complete within 3 months) and long term

Recommendations should identify corrective measures for as many of the listed causes (in the Conclusions) as possible and may be related to:

a. Eliminating the causes

b. Minimising possible consequences

c. Improving rescue or damage containment measures

d. Emphasising that all causes identified should be eliminated.

Open

Choose an item.

Appendix 1: Title

Any other pertinent information considered necessary for the understanding of the report. This should include, among others, photographs, maps, drawings, and interview record to supplement and clarify the written report.

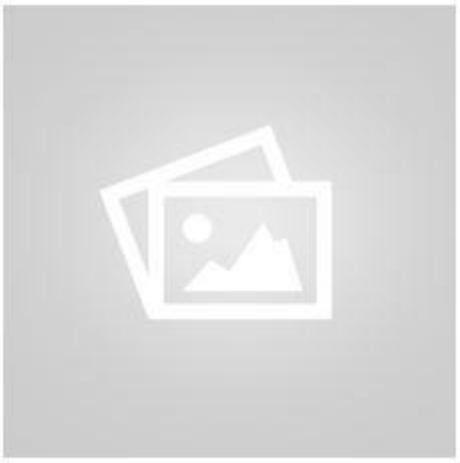


Figure 1: Image/Diagram/Flow Chart/Process Flow

No	Items	Descriptions

Table 1: List

No	Items	Descriptions

Table 2: List

Open

Choose an item.

Appendix 2: Title

Any other pertinent information considered necessary for the understanding of the report. This should include, among others, photographs, maps, drawings, and interview record to supplement and clarify the written report.

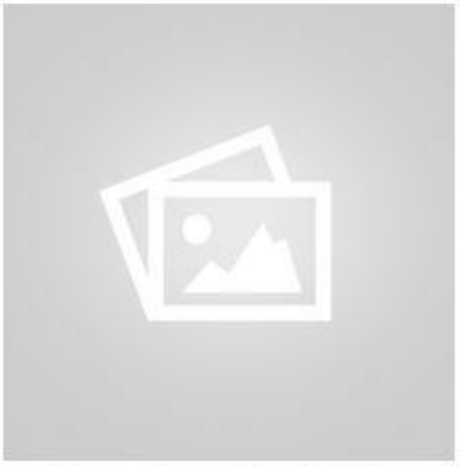


Figure 2: Image/Diagram/Flow Chart/Process Flow

Figure 3: Image/Diagram/Flow Chart/Process Flow

Open

Choose an item.

No	Items	Descriptions

Table 3: List

Open

Choose an item.

APPENDIX 8 : LESSONS LEARNT TEMPLATE

Example: Internal Lessons Learnt

PETRONAS

HSE Incident
Lessons Learnt

REF: CLICK HERE TO TYPE REFERENCE NUMBER
TYPE OF INCIDENT : Click here to begin typing
LOCATION OF INCIDENT : Click here to begin typing
DATE OF INCIDENT : Click here to select date

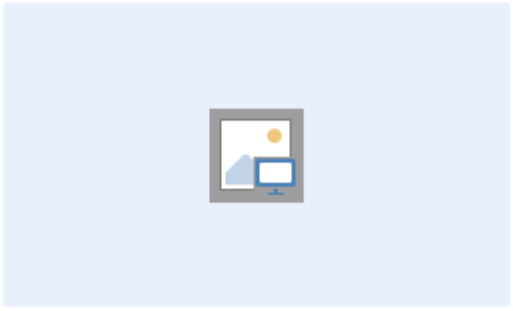
BRIEF DESCRIPTION OF INCIDENT
Click here to begin typing

OUTCOME
Click here to begin typing

ACTIVE FAILURES
Click here to begin typing

KEY FINDINGS
1. Click here to begin typing

LESSONS LEARNT
1. Click here to begin typing



Click here to type photo caption

CONTACT
Click here to type Name
Click here to type Designation, Group HSE
Click here to type Email

NO WORK IS SO URGENT THAT WE CANNOT TAKE THE TIME TO DO IT SAFELY

Group Health, Safety and Environment
IMPORTANT NOTICE: The information provided herein is intended for HSE awareness only. For **INTERNAL** circulation only.

Example: External Lessons Learnt

PETRONAS

HSE Incident
Lessons Learnt
FROM EXTERNAL INCIDENT

REF: CLICK HERE TO TYPE REFERENCE NUMBER
TYPE OF INCIDENT : Click here to begin typing
LOCATION OF INCIDENT : Click here to begin typing
DATE OF INCIDENT : Click here to select date

BRIEF DESCRIPTION OF INCIDENT
Click here to begin typing

OUTCOME
Click here to begin typing

ACTIVE FAILURES
Click here to begin typing

KEY FINDINGS
1. Click here to begin typing

LESSONS LEARNT
1. Click here to begin typing

Click here to type photo caption

CONTACT
Click here to type Name
Click here to type Designation, Group HSE
Click here to type Email

NO WORK IS SO URGENT THAT WE CANNOT TAKE THE TIME TO DO IT SAFELY

Group Health, Safety and Environment
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APPENDIX 9: INVESTIGATION OF NON ACCIDENTAL DEATH

The following is the guide for OPU/BU/HCU/JV/Project to NAD investigation. Decision making to trigger full scale investigation shall be done in consultation with respective Company Health Advisor. In the event that the death is suspected as work related, investigation of fatality shall be triggered as per **Table 2** requirement.

1.0 Incident Description

i. Describe what happened, at what time, in chronological order. In complex incidents, a visual timeline will be useful.
ii. Describe Medical Emergency Response (MER) Tier Response:
   a) MER initiation.
   b) Provision of Basic Life Support and Defibrillation by a Designated First Aider.
   c) Stabilization by a Medical Professional (e.g. a Medic or a Nurse) at a Site Clinic.
   d) Arrival at a Hospital.

2.0 Main Findings

i. Demography. The demographic data includes age, gender, employment status (employee/contractor, and local/migrant), ethnicity, country of origin, and job type.
ii. Diagnosis. Record the medically documented cause of death. If unavailable, a suitably trained medical professional will need to provide a likely cause of death (after a review of the individual's medical history and the incident).
iii. Medical Emergency Response (MER) Tier Response:

   a) Describe the time delay, if any, from the onset of the incident
   b) Comment on the adequacy of MER equipment (e.g. defibrillator, site clinic, ambulance), and the competence of the MER team members (e.g. designated first aider, site medic, nurse etc).
   c) Comment on the robustness of the MER procedures and its execution.

iv. Use the NAD Checklist (See Appendix) to ascertain:

   a) Work-related exposures that could have contributed to the death have been excluded.
   b) Medical Emergency Response (MER) requirements were met.
   c) The individual was fit to work.

3.0 Cause(s) of Death

This is based on the medically documented cause of death e.g. post mortem report. In some countries, this is not always available (e.g. in cultures where an autopsy is commonly avoided). In such instances, obtain a medical opinion from a suitably qualified medical professional.

4.0 Classification

Classify suspected NAD as either:
i. "Non-Accidental Death"- if non-work related
ii. "Fatality"- if work related

Corrective Actions
i. In most NAD cases, there are no corrective actions. This is acceptable.
ii. In some NAD cases, weaknesses in management systems require a list of specific and time-bound corrective actions.
iii. Check with the appropriate technical authority (e.g. Health), of the effectiveness of these corrective actions against its intended outcome. Some "corrective actions" (e.g. more x-rays in periodic Fitness to Work assessment) may increase risk (e.g. cancer) but do not positively impact the intended outcome (e.g. preventing sudden cardiac deaths).

Appendix: NAD Checklist

Include the questions in this checklist in the investigation report

1. *Have all possible work-related exposures that could have contributed to the cause of death been excluded?*
   - The cause of death has been ascertained / reviewed by a suitably trained Health professional.
   - Where there is a possibility of a link between a workplace hazard and the cause of death, obtain a suitably qualified health professional's assessment of the likelihood of a causal relationship. Such an assessment may require further investigation (e.g. exposure data monitoring).

2. *Was the MER requirements met?*
   - MER was correctly initiated, and communicated.
   - All Tier response times were met
   - First Aiders have the competency to identify an emergency, provide basic life support, defibrillation and basic first aid. Site Medical Professionals possess the competency to provide advanced life support.
   - Equipment (e.g. First Aid Box, Defibrillator, Trauma Bag, Site Clinic, Ambulance, etc.) were adequate, available and accessible.
   - MER plans / procedures are in place and fits the workplace risks.

3. *Was the Fitness to Work requirements met?*
   - Where the individual performed tasks requiring FTW evaluations, such evaluations have been completed by a qualified health professional, in accordance to the FTW protocols.
   - Where the individual has pre-existing medical conditions that may be worsened by work or may limit her ability to perform the work, a "with cause" or "return to work" FTW evaluation has been completed.

APPENDIX 10 : SPECIAL SITUATIONS

i. FATALITIES

The classification of Fatalities as recordable is ultimately the responsibility of the Group HSE although the OPU/BU/HCU/JV/Project can propose a classification in its investigation report.

ii. THIRD PARTY FATALITIES

All third party fatalities are to be reported if they are the result of recordable incidents. They are reported and investigated in line with the procedure given above.

Third party fatalities will be included in the statistics if the incident resulted from a failure of management controls that should have been in place. Third party fatalities caused solely by the behavior of the third party when all reasonable OPU/BU/HCU/JV/Project and Contractor management controls were in place, can be proposed to Group HSE as “not to be included in the statistics”.

Final classification, on the basis of the investigation report, is the responsibility of Group HSE.

All recordable third party fatalities resulting from assault, sabotage and theft are to be included in the statistics.

iii. LOST TIME INJURIES (LTI) AND RESTRICTED WORK CASES (RWCS)

Although Lost Time Injury Frequency (LTIF) is regarded within the industry at large as the key safety performance indicator, the low numbers of incidents reported are often not statistically significant at the Company level. Moreover, the undue stressing of LTIF, can often lead to debate on whether the incident should be classified as RWC or Medical Treatment Case (MTC) rather than LTI. For performance monitoring it is now strongly recommended that Companies use Total Recordable Case Frequency (TRCF) as the prime measurement of safety performance, in addition to reporting LTIF.

iv OCCUPATIONAL ILLNESS

An Occupational Illness is defined as any work-related abnormal condition or disorder, other than an injury, which is mainly caused by exposure to environmental factors associated with the employment. It includes acute and chronic illness or diseases which may be caused by inhalation, absorption, ingestion, or direct contact.

Whether a case involves a recordable injury or an Occupational Illness is determined by the nature of the original event or the exposure which caused the case, not by the resulting condition of the affected worker. An Injury results from a single event or from a single instantaneous exposure in the work environment. Cases resulting from anything other than a single event or exposure are considered Occupational Illness.

The key performance indicator for Occupational Health incidents is Total Reportable Occupational Illness Frequency (TROIF).

Examples to clarify the boundaries between Occupational and non-Occupational Illness, and between Injury and Illness, are given in **Appendix 14**. Having determined that an illness is occupational the Company should categorise it according to the classification in **Appendix 16**.

v. ENVIRONMENTAL INCIDENTS

The definition of an Environmental Incident is "an unplanned event or chain of events that has or could have a negative impact on the environment".

OPU/BU/HCU/JV/Project are **advised to develop its own specific guidance** on the type and size of spills and releases that would fall into consequence rating 4 or 5 of the Incident

Classification Criteria. Such guidance should take into account the specific environmental sensitivities in the area of operation.

vi. REPUTATION INCIDENTS

The definition and classification of the severity follows the Incident Classification Criteria and the reporting of such incidents is as **Appendix 1.** The requirement to mobilise the PETRONAS Group Crisis Management Plan needs to be evaluated with reference to it.

OPU/BU/HCU/JV/Project are advised to develop their own specific guidance on the type of Incidents that could trigger adverse attention to the OPU/BU/HCU/JV/Project operations and which would place it into rating 4 or 5 of the Incident Rating descriptor. Such guidance should take into account the specific local circumstances and sensitivities.

APPENDIX 11: EXAMPLES OF FIRST AID CASES AND MEDICAL TREATMENT CASES

The following examples are generally considered first aid treatment, i.e. one-off treatment with/without subsequent observation of minor injuries:

i. Application of antiseptics during the first visit to medical personnel
ii. Treatment of first degree burn(s)
iii. Application of bandage(s) during any visit to medical personnel
iv. Use of elastic bandage(s) during the first visit to medical personnel
v. Removal of foreign bodies not embedded in eye if only irrigation is required
vi. Removal of foreign bodies from wound; if the procedure is uncomplicated, and is, for example by tweezers or other simple technique
vii. Use of non-prescription medications and administration of a single dose of prescription medication on the first visit for a minor injury or discomfort
viii. Soaking therapy on the initial visit to medical personnel or removal of bandages by soaking
ix. Application of hot or cold compress(es) during the first visit to medical personnel
x. Application of ointments to abrasions to prevent them drying or cracking
xi. Application of heat therapy during the first visit to medical personnel
xii. Use of whirlpool bath therapy during the first visit to medical personnel
xiii. Negative X-ray diagnosis
xiv. Observation of injury during a visit to medical personnel (less than 12 hours duration)

MEDICAL TREATMENT CASE (MTC)

The following examples are generally considered medical treatment

i. Treatment of infection
ii. Application of antiseptics during second or subsequent visit to medical personnel
iii. Treatment of second or third degree burn(s)
iv. Application of sutures (stitches)
v. Application of butterfly adhesive dressing(s) or sterile strip(s) in lieu of sutures
vi. Removal of foreign bodies embedded in eye
vii. Removal of foreign bodies from wound; if the procedure is complicated because of depth of embedment, size, or location
viii. Use of prescription medications (except a single dose administered on the first visit for minor injury or discomfort)
ix. Use of hot or cold soaking therapy during the second or subsequent visit to medical personnel
x. Application of hot or cold compresses) during the second or subsequent visit to medical personnel
xi. Cutting away dead skin (surgical debridement)
xii. Application of heat therapy during the second or subsequent visit to medical personnel
xiii. Use of whirlpool bath therapy during the second or subsequent visit to medical personnel
xiv. Positive X-ray diagnosis (fractures, broken bones, etc.)
xv. Admission to a hospital or equivalent medical facility for treatment or observation for more than 12 hours

The following procedures by themselves are not considered medical treatment:

i. Administration of tetanus shot(s) or booster(s). However, these shots are often given in conjunction with more serious injuries. Consequently, injuries requiring these shots may be included in the statistics for other reasons.
ii. Diagnostic procedures, such as X-ray or laboratory analysis, unless they lead to further treatment.

APPENDIX 12: CLASSIFICATION OF OCCUPATIONAL ILLNESSES

INFECTIOUS AND PARASITIC DISEASES: malaria, food poisoning, infectious hepatitis, dysentery, lambliasis, legionnaire's disease.

SKIN DISEASES AND DISORDERS: contact dermatitis, allergic dermatitis, rash caused by primary irritants and sensitisers or poisonous plants, oil acne, chrome ulcers, chemical burns or inflammations.

RESPIRATORY CONDITIONS DUE TO DUST OR TOXIC AGENTS: silicosis, asbestosis, pneumoconiosis, pneumonitis, (allergic) bronchitis, alveolitis, asthma, pharyngitis, rhinitis or acute congestion due to chemicals, dusts, gases, or fumes.

POISONING (CHRONIC SYSTEMIC EFFECTS OF TOXIC MATERIALS): poisoning by lead, mercury, arsenic, cadmium, or other metals; poisoning by carbon monoxide, hydrogen sulphide, or other gases; poisoning by solvents; poisoning by pesticides; poisoning by other chemicals such as formaldehyde, plastics and resins.

DISORDERS DUE TO PHYSICAL AGENTS (OTHER THAN NOISE AND TOXIC MATERIALS): heat-stroke, sunstroke, heat exhaustion and other effects of heat stress; freezing, frostbite and other effects of exposure to low temperatures; caisson disease; effects of ionising (alpha, beta and gamma rays, radium) and non-ionising (welding flash, ultraviolet rays, microwaves, sunburn) radiation; vibration (white finger).

DISORDERS ASSOCIATED WITH REPEATED TRAUMA: synovitis, tenosynovitis, and bursitis; Raynaud's phenomenon; other disorders of the musculo-skeletal system and connective tissue associated with repeated trauma.

CANCERS AND MALIGNANT BLOOD DISEASES: mesothelioma; bladder cancer; leukaemia and other malignant diseases of blood and blood forming organs.

DISORDERS DUE TO MENTAL STRESS: tension headache, depression, neurosis, "stress", functional disorders of the gastrointestinal tract.

NOISE INDUCED HEARING LOSS: definition and criteria for reporting are given in the PTS 60.1504 Hearing Conservation Program.

OTHER ILLNESSES AND DISORDERS: Benign tumours; eye conditions due to dust and toxic agents; other (non-malignant) diseases of blood and blood-forming organs.

APPENDIX 13: EXAMINING FATIGUE AS THE ROOT CAUSE / CONTRIBUTING FACTOR TO AN INCIDENT

To determine whether fatigue contributed to an incident, the investigation should examine the following factors:

i. Time of the incident (pertinent to the circadian rhythm)
ii. Shift pattern
iii. Shift duration on the day of the incident
iv. Whether there was adequate breaks within the shift on the day of the incident
v. Number of consecutive shifts worked
vi. Hours of work during the work set in which the incident occurred
vii. Whether there was adequate rest time between shift in the work set
viii. Number of hours awake
ix. Number of hours of sleep in the past 24 hours by the individual(s) involved
x. Whether the incident occurred under normal operations or during shutdown
xi. Roster changes (sudden changes of roster leading to inadequate rest between the shifts)
xii. Other factors which may contribute or may be associated with fatigue (e.g. medical condition, medication etc)

For more detailed information on fatigue, refer to PTS 18.13.03 Management of Fatigue in the Workplace.

APPENDIX 14: INCIDENT CLASSIFICATION GUIDING PRINCIPLES

All incidents in which PETRONAS or its affiliates have direct influence and control on the personnel, site or activity involved are recordable incidents. These include incidents:

i. Involving ***work-related activities*** carried out inside/outside Company premise
ii. Involving non-work related activities inside company premise which has been caused by negligence, error or omission on the part of the Company
iii. Involving Company product or property resulting in damage or loss of asset and/or pollution to environment

Work-Related activities are those activities for which management controls are, or should have been, in place. These include:
i. all work by Company personnel;
ii. all work by Contractor personnel on Company premises, and
iii. all work by Contractor personnel on non-Company premises for which it is concluded on the basis of risk considerations that Company management controls are required.

For Company personnel, "work" includes attending courses, conferences, business travel[Note1], field visits, Company-organised events/activities[Note2] where the personnel is invited or presence is expected by the Company.

For Contractor personnel, the same activities are included when they are executed under a contract on behalf of the Company. Contractor includes all sub-contracted personnel. Where it is impossible or inappropriate for the OPU/BU/HCU/JV/Project to impose management control on Contractor, exceptions may be justifiable e.g. where Contractor services are not dedicated to the company.

Depending on the nature of the incident e.g. working arrangement, causational factors, facility and personnel involved in the incident, Group HSE in consultation with the respective OPU/BU/HCU/JV/Project, may review and decide on the classification of the incident.

Note:
1 e.g. using Company-organized transports (during/outside working hours); using personal/public transport during working hours.
2 e.g. team building, sports/recreational activities or dinner.

APPENDIX 15: EXAMPLES AND INTERPRETATIONS FOR OCCUPATIONAL ILLNESSES

1.0 DETERMINING WHETHER AN ILLNESS IS OCCUPATIONAL

Occupational Illness is defined as "any work-related abnormal condition or disorder, other than one resulting from an injury, caused by or mainly caused by exposures at work". In order to determine whether an employee's illness is occupational in nature, the following questions should be addressed:

i. Has an illness clearly been identified?
ii. Does it appear that the illness is caused, or mainly caused by, suspected agents or other conditions at work?
iii. Are these suspected agents present (or have they been present) in the work environment?
iv. Was the ill employee exposed to these agents in the work environment?
v. Was the exposure to a sufficient degree and/or duration to result in the illness condition?
vi. Was the illness attributable mainly to a non-occupational exposure?

OPU/JV/BU/HCUs should check the "Material Safety Data Sheets" for those substances suspected of causing employee illnesses in order to verify the relationship between the exposure and the resulting symptoms.

2.0 RECURRENCE OF SYMPTOMS

OPU/BU/HCU/JV/Project are required to report each new Occupational Illness. The recurrence of symptoms from previous cases should not be reported. Deciding whether the emergence of illness symptoms constitutes a new event or the recurrence of a previous illness may be complex. Generally, each Occupational Illness should be reported with a separate entry. However, certain illnesses, such as silicosis, may have prolonged effects which recur over time. The recurrence of these symptoms should not be reported as a new case, unless the Occupational Illness results in death, permanent partial or permanent total disability.

Some Occupational Illnesses, such as certain skin or respiratory conditions, may recur as the result of new exposures to sensitizing or other hazardous agents, and should be reported as new cases.

3.0 PRE-EXISTING CONDITIONS

An employee's physical or mental defect or pre-existing physical or mental condition does not affect the reporting of a subsequently contracted Occupational Illness. If in such circumstances an illness is caused or mainly caused by exposures at work, the OPU/BU/HCU/JV/Project must report it without regard to the employee's pre-existing physical or mental condition.

4.0 EXAMPLES OF OCCUPATIONAL HEALTH ILLNESSES

4.1 BACK PROBLEMS

A back problem shall be considered work-related if:

i. there is a clear record of an Incident such as a slip, trip, fall, sudden effort or blow on the back, or

ii. the employee was engaged in a work activity which produced a physical condition resulting from a single identifiable over-exertion.

A back problem shall be considered an Occupational Illness if it is caused by continued exposure to over-exertion.

Example 1: A worker was installing a window-mounted air-conditioning unit. As the worker was sliding it into place, it tilted and started to fall. As the worker caught it and forced it into place, the worker felt a sharp pain in the back. This would be considered work-related Injury.

Example 2: A woodcutter's foot slipped in the process of swinging an axe and a back pain developed immediately. This would be considered a work related injury, since the onset of symptoms was directly associated with an incident (slip) which occurred in the course of and arose out of employment.

Example 3: An employee reported severe back pain which gradually developed towards the end of each workday, but could not attribute the condition to any specific event or activity. After reviewing the employee's work assignments, it was concluded that the condition resulted from continuous over- exertion in the performance of the employee's duties. The case, therefore, would be considered an Occupational Illness.

4.2 BURNS

Contact with a hot surface or a caustic chemical which produces a burn in a single contact would be defined as an injury. Sunburn or welding flash burns, on the other hand, which result from prolonged or repeated exposure, are considered Occupational Illnesses.

4.3 CUMULATIVE MUSCLE STRAIN

A cumulative muscle strain is where injury results from short-term over-stressing of a group of muscles. For example, a clerk who is usually involved in work that is not physically demanding is asked to assist in unloading a large shipment of heavy items by hand, a task which the clerk is required to do all day. Although the clerk feels no discomfort that day, the following morning the clerk's right shoulder and back muscles are so sore that the clerk is unable to perform the normal job effectively and has to be given specially selected duties. The injury was consistent with the type of work performed on the previous day and the case would be considered a work-related Injury.

4.4 CARPAL TUNNEL SYNDROME

Carpal tunnel syndrome is a condition involving compression of the median nerve in the wrist which results in tingling, discomfort and numbness in the thumb, index, and long fingers. Because work- related carpal tunnel syndrome cases almost always result from repetitious movement, they should be classified as Occupational Illnesses. The classification for these cases should be “disorders associated with repeated trauma"

4.5 DERMATITIS

A chemical worker contracted a mild case of dermatitis on both hands while working with a solution for several hours. The employee was sent to the doctor, who recommended application of a topical lotion (a commercial, non-prescription remedy). The employee bought a bottle of the lotion and treated the rash for a few days until it disappeared. There were no subsequent visits to the doctor. The rash did not prevent the employee from performing all the duties of the job. If considered an Injury, the case would not be reportable since no medical treatment

was provided. However, since the case almost certainly did not involve a single instantaneous exposure, it should be classified as an Occupational Illness. Consequently, the kind of treatment given by the doctor (none in this case) is immaterial, since all Occupational Illnesses are reportable.

4.6 ANIMAL BITES AND INSECT STINGS

Animal and insect bites and stings (and ensuing consequences) are normally considered as work-related Injuries if such bites and stings occur in the course of employment. However, repeated exposure may result in disorders which are considered Occupational Illnesses.

Example 1: A lineman engaged in routine work was bitten by a snake. The injury would be considered a reportable Injury.

Example 2: A member of a party clearing jungle for seismic work was bitten by insects carrying the disease leishmaniasis. The resulting sickness would be considered an Occupational Illness.

Example 3: Malaria or other diseases that result from a single bite, but involve multiple exposures to mosquito/insect stings, are classified as an Occupational Illness

4.7 INFECTED LACERATION

An infection resulting from a laceration should be classified as a work related injury because the classification is based on the original event, the laceration, not on the subsequent developments.

4.8 HEARING

Noise induced hearing loss should be determined solely on the existing criteria contained in PTS 18.34.01 Hearing Conservation Program.

4.9 VISION

An employee goes to a doctor who informs her that prescription glasses must be worn as a result of work-related eye deterioration caused by the nature of her job. If it can be established that the disorder was caused or mainly caused by exposures at work, this case would be reportable as an Occupational Illness since it involves the recognition of an abnormal condition or disorder. However, an OPU/BU/HCU/JV/Project should distinguish work-related eye problems from those due to ageing or hereditary factors unrelated to the job.

4.10 HEART ATTACKS

Work-related heart attacks are not classified as work related Injuries because they normally do not result from work accidents or single instantaneous incidents in the work environment. When they occur, they may be classified as an Occupational Illness, provided they satisfy the same requirements for work relationship as any other type of Occupational Illness. This means that heart attacks are not necessarily reportable if they occur in the work environment, but rather that they must result or mainly result from exposures at work.

5.0 SITUATIONS/FACTORS THAT MAY CAUSE OCCUPATIONAL HEALTH ILLNESSES

5.1 AGGRAVATION OF AN EXISTING PHYSICAL DEFICIENCY

If aggravation of an existing physical deficiency arises out of an Incident in the course of employment, any resulting increased disability shall be considered a work-related Injury and classified according to the ultimate extent of the disability.

Example 1: An employee with a known knee defect wrenched it whilst climbing down a ladder, when the bottom rung gave way. This aggravation required medical attention and would therefore be considered a work-related Injury.

Example 2: An employee with a known knee defect suffered a recurrence of the disability while the employee was walking up steps. The incident arose "solely" out of the employee's pre-existing deficiency and therefore the resulting disability would not be considered a work-related Injury.

Example 3: An employee with a blister unrelated to work knocked the top off the blister in the course of the employee's work activity. The broken blister became infected and resulted in lost time. This would be considered a work-related Injury.

5.2 REACTION TO MEDICAL TREATMENT

The reporting of an employee's disorder as a result of medical treatment depends upon whether the treatment was for work-related purposes.

Example 1: An employee going on a business visit was vaccinated against cholera. Some days later the employee was taken ill and the illness was linked to the vaccination. This would be considered an Occupational Illness.

Example 2: An employee is inoculated against influenza as part of a programme provided by the OPU/BU/HCU/JV/Project. An illness arising from the inoculation would be considered an Occupational Illness.

Example 3: An employee is inoculated by OPU/BU/HCU/JV/Project medical personnel with a specific vaccine prescribed by an outside medical physician for treatment of a non-work-related condition. An illness arising from defective administration of the injection would be an Occupational Illness but not if the illness arose from an adverse reaction to the vaccine.

5.3 INDIVIDUAL SUSCEPTIBILITY

Variations in the characteristics of particular employees of their susceptibility to various illnesses should not affect reporting.

5.4 COMMON SUBJECTIVE SYMPTOMS

Complaints of such common subjective symptoms as general malaise, headache, nausea, are not reportable if they are not caused or mainly caused by exposures at work. However, in evaluating these cases, one should be aware that many subjective complaints, including feelings of malaise, headache, nausea, etc., may be symptomatic of a wide range of diseases, a number of which are occupational in origin. In this regard, one should pay attention to the

distribution of such subjective complaints with respect to time and place, particularly when such complaints are observed to occur among one or more groups of employees.

Infectious diseases such as Malaria, Leptospirosis, Chagas disease are only reportable if they have been confirmed by clinical testing or by a doctor. If an illness is indigenous to the area and National personnel are diagnosed with these illnesses on a regular basis, they should not be recorded if the illness occurs among Nationals who normally do not suffer from the illness it should be recorded.

5.5 PERMANENT OR TEMPORARY TRANSFERS

Permanent or temporary transfers to another job to remove employees from further exposure to health hazards are preventive in nature, and if no Occupational Illness has occurred, are not considered reportable events.

5.6 WORK-RELATED STRESS

Only record those cases where there is an identifiable organisational and/or interpersonal factor in relation to work and the working environment which has resulted in a stress related disorder requiring significant intervention such as specific counselling or treatment, modification of duties or loss of time from work.

5.7 ILLNESSES OCCURING FROM FOOD CONSUMED DURING MEAL BREAK

An illness caused or mainly caused by exposures which occur during the employee's specifically defined meal period or other specifically defined off-duty period would not be considered as caused or mainly caused by exposures at work unless it concerned exposures to hazards specific to the work area.

Example 1: Food poisoning which results from a meal furnished by the employer would be considered an Occupational Illness.

Example 2: If, while eating in the same location as described in **Example 1**, an employee gets food poisoning from his own supplied food, the case would not be considered an Occupational Illness.

5.8 ENTERTAINMENT OF OR BY CUSTOMER, SUPPLIER OR OTHER BUSINESS CONTACTS

An illness caused or mainly caused by exposures which occur while the employee is entertaining a customer, supplier or other business contact, or while the employee is being entertained by a customer, supplier or other business contact, for the purpose of transacting, discussing, or promoting business, would be considered an Occupational Illness.