



บริษัท ปตท.สผ. สยาม จำกัด

รายงานผลการปฏิบัติตามมาตรการป้องกันและแก้ไขผลกระทบสิ่งแวดล้อม และมาตรการติดตามตรวจสอบผลกระทบสิ่งแวดล้อม
โครงการขุดเจาะน้ำมันบนฝั่งที่บ้านหนองจิกและบ้านโนนพลวง และโครงการพัฒนาระบบบำบัดน้ำเสียแหล่งสารบบ ยางเมือง และไทรงาม
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ภาคผนวกที่ 9 Spill Management Plan



PTTEP


PTT Exploration and Production Public Company Limited






Spill Management Plan



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THIS DOCUMENT WILL BE REVIEWED EVERY **5 YEARS** FROM DATE OF APPROVAL OR REVISED EARLIER IF NECESSARY.

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1	<p>Added</p> <ul style="list-style-type: none"> List of approved dispersants in Thailand Request form of dispersant application for approval in Thailand Tier2 Equipment Stockpile <p>Updated</p> <ul style="list-style-type: none"> Role & Responsibility of Corporate and asset during exploration drilling phase Role & Responsibility of Corporate and asset during production drilling phase Role & Responsibility of Corporate and asset for Tier 2 & 3 Equipment Request Tier2 and Tier3 Communication Flow and appendices 	TSH	Dec 2016
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1. PURPOSE

This Spill Management Plan is developed to outline the preparation of response actions and resources needed for the spill incident. The necessary response actions include the following as a minimum; the requirements of the Asset Spill Response Plan preparation, the response organisation and protocol, the notification and interface between PTTEP Headquarters and the Assets and/or the external agencies including government agencies and other related organisations, resources preparation, including capability assessment and document review and update.

This plan will guide Assets and support functions, i.e. seismic exploration, exploration and production drilling, production and decommissioning activities, including the storage, offloading and logistics support, in preparation and implementation of effective spill response. In some case, bridging document from contractors who provide the main activities to PTTEP is required in order to establish the interface between these organisations as well as ensuring the alignment and prompt response.

This Spill Management Plan is a "PDR" which denotes as a Procedure.

2. SCOPE

This plan applies to all PTTEP Assets and supports functions in preparation and implementation of the effective spill response in all activities of Exploration and Production (E&P) Phases.

Compliance with the requirements described in this plan is mandated for all PTTEP Assets and its Subsidiaries. In the countries where the local regulation exists, this plan shall be read and implemented in conjunction with all relevant regulations, or adopted as a minimum requirement if this plan is more stringent than the regulatory requirements. Where PTTEP is a Joint Venture Partner or Joint Operator under PTTEP operational or financial control, compliance with this document is also mandated where PTTEP has legal obligations on the spill response and management, unless otherwise specified in the operational agreement.

3. REFERENCES

3.1 PTTEP SSHE CONTROLLING DOCUMENTS

Document Number	Document Title
11038-STD-SSHE-000	SSHE Management System
11038-STD-SSHE-520-009	Environmental Management Standard
11038-STD-SSHE-600-011	Incident Management Standard
SSHE-106-STD-340	SSHE Training and Competency Standard
SSHE-106-STD-400	SSHE Risk Management Standard
SSHE-106-STD-500	Emergency and Crisis Management Standard

Document Number	Document Title
SSHE-106-PDR-501	Crisis Management Plan
SSHE-106-PDR-502	Emergency Management Plan
SSHE-106-PDR-521	Waste Management Procedure
SSHE-106-GDL-526	Net Environmental Benefit Analysis Guideline

3.2 OTHER REFERENCE DOCUMENTS

Document Number	Document Title
12145-GDL-004-R02	Crisis Communications Guideline
-	Dispersants: Subsea Application, the International Petroleum Industry Environmental Conservation Association (IPIECA) and International Association of Oil & Gas Producers (IOGP), 2015.
-	Oil Spill Response Field Guides, Oil Spill Response Limited (OSRL), 23 July 2015.
-	Thailand's Oil Spill Protection and Control Plan (แผนป้องกันและขจัดมลพิษทางน้ำเนื่องจากน้ำมันแห่งชาติ, Thai version), Marine Department, the Ministry of Transport Thailand, 6 August 2002.
-	Documents and Guides, The International Tanker Owners Pollution Federation Limited (ITOPF), accessed 2 March 2018, URL: http://www.itopf.com/knowledge-resources/documents-guides
-	Intergovernmental Agreement on the National Plan to Combat Pollution of the Sea by Oil and other Noxious and Hazardous Substances, Australian Maritime Safety Authority, accessed 2 March 2018, URL: https://www.amsa.gov.au/about-us/who-we-work/intergovernmental-agreement-national-plan-combat-pollution-sea-oil-and-other
-	Oil Spill Response Joint Industry Project (OSR-JIP), the International Petroleum Industry Environmental Conservation Association (IPIECA) and International Association of Oil & Gas Producers (IOGP), accessed 2 March 2018, URL: http://www.oilspillresponseproject.org

4. DEFINITIONS

4.1 GENERAL DEFINITIONS

Terminology	Description
Crisis Management Team (CMT)	Asset crisis management team responsible for responding to an actual or potential incident (whether of PTTEP origin or not) be in Local, National or International, on a scale that may become of significant concern to Company business.
Emergency Management Team (EMT)	Asset emergency management team responsible for strategic responses.
Emergency Response Team (ERT)	Site emergency response team responsible for conducting the tactical/in-field responses.
Net Environmental Benefit Analysis (NEBA)	A process used by the spill response organisation or team for making the best response options to minimise impacts of oil spills on people and the Environment.
Planning scenario	Selected scenarios derived from the risk assessment result that is used as the basis for planning of oil spill response. The selection should represent the full range of response challenges and risks against which response strategies and a tiered capability can be defined.
Spill	<p>Any loss of containment that reached the Environment. The spill volume reported should reflect the volume of material that reached the Environment only (i.e. not inclusive of any released volume retained within secondary or other confinement). Reported volume reaching the Environment is irrespective of the quantity recovered (i.e. represents the gross volume reaching the Environment, not a net volume remaining in the Environment).</p> <p>Spills of produced water or process wastewater are excluded. Loss of containment resulting from acts of sabotage (such as theft of oil from pipelines and storage) shall be reported. Loss as a result of "acts of terrorism"/ attacks on infrastructure should not be reported.</p> <p>Intentional discharges of drill cutting (only offshore operations exceed 12 nautical miles) during drilling activities are excluded.</p>

Terminology	Description
Worst credible case discharge	The scenario with the largest release that could reasonably be expected from a facility or operation. Such events may lead to the most severe consequences.

4.2 ORGANISATION AND DEPARTMENTS

Terminology	Description
Corporate	Refers to the PTTEP business groups hierarchically above Asset level, and located in the PTTEP headquarters, Bangkok.
Function Group	Refers to a corporate level business group. These may have associated Divisions, Departments, or operational Assets within their hierarchy.
Division	A business group may have one or more distinct groups within its hierarchy. These are referred to as Divisions.
Asset	Refers to an operating Asset, site, or location within a respective Function Group.
Department	A subgroup within a Function Group, Division or Asset.

4.3 LANGUAGE

May	Indicates a possible course of action
Should	Indicates a preferred course of action
Shall	Indicates a course of action with a mandatory status

4.4 COMMON ACRONYMS

Set out below are common specific terms presented in alphabetical order:

AMOSC	Australian Marine Oil Spill Centre
API	American Petroleum Institute
ART	Arthit Field
CEC	Coastal Energy Company Limited
BCP	Bangchak Petroleum Company Limited
CEN	Environment Management Department
CEN/E	Environmental Applications Section

CEO	Chief Executive Officer
CLG	Legal Division
CMM	Communications Department
CPA	Process Safety and Assurance Department
CRM	Enterprise Risk Management and Internal Control Division
CSA	Safety Management Department
CTEP	Chevron Thailand Exploration and Production Company Limited
CSH	Safety, Security, Health and Environment Division
CMT	Crisis Management Team
CVX	Caltex Thailand
DDPM	Department of Disaster Prevention and Mitigation
DMF	Department of Mineral Fuels
DSV	Drilling Supervisor
E&P	Exploration and Production
EDE	Engineering and Development Group
EMT	Emergency Management Team
ERT	Emergency Response Team
ESI	Environmental Sensitivity Index
ESM	Environmental Sensitivity Maps
EVP	Executive Vice President
FPSO	Floating Production Storage and Offloading
GBN	Greater Bongkot North Field
GBS	Greater Bongkot South Field
GSX	Geoscience and Exploration Group
IC	Incident Commander
IESG	Oil Industry Environmental Safety Group Association
IMO	International Maritime Organisation
IOGP	International Association of Oil & Gas Producers
IPIECA	Global Oil and Gas Industry Association for Environmental and Social Issues

ITOPF	International Tanker Owners Pollution Federation Limited
M&A	Merger and Acquisition
MD	Marine Department, Ministry of Transport
NEBA	Net Environmental Benefit Analysis
OIM	Offshore Installation Manager
OPS	Operations Support Group
OSC	On Scene Commander
OSCT	Oil Spill Combat Team (Indonesia)
OSRL	Oil Spill Response Limited
OSRO	Oil Spill Response Organisation
PCD	Pollution Control Department
PDT	Production Asset Group
PEP	President, Exploration and Production
PIMMAG	Petroleum Industry of Malaysia Mutual AID Group
PTT	PTT Public Company Limited
SCAT	Shoreline Clean-up Assessment Technique
SOPEP	Shipboard Oil Pollution Emergency Plan
SSHE	Safety, Security, Health and Environment
STSC	South Area Sub-committee under Oil Industry Environmental Safety Group Association
SVP	Senior Vice President
VP	Vice President

5. ROLES AND RESPONSIBILITIES

5.1 DOCUMENT OWNER

The owner of the Spill Management Plan is the VP, Environment Management Department, with responsibilities for:

- Approval and issuance of the Procedure and its revisions.
- Ensuring effective implementation of the Procedure.

5.2 CUSTODIAN OF THE DOCUMENT

The custodian of the Spill Management Plan is Manager, Environmental Applications Section, with responsibilities for:

- Identifying deficiencies or potential improvements.
- Initiating periodic revision.
- Maintaining revision history and document status register.

Note: Roles and Responsibilities of relevant personnel shall follow the Emergency and Crisis Management Standard (SSHE-106-STD-500), Emergency Management Plan (SSHE-106-PDR-502), and Crisis Management Plan (SSHE-106-PDR-501).

6. SPILL MANAGEMENT

Generally, spill management in oil and gas exploration and production business is classified based on the 3-Tiered response system in accordance with the International Petroleum Industry Environmental Conservation Association (IPIECA, the Global Oil and Gas Industry Association for Environmental and Social Issues) and International Association of Oil & Gas Producers (IOGP) good practice guide related to oil spill preparedness and response.

Activation of each Tier response and management team is based on the capability of response resources and/or consequences, not correspond to the volume of the spill, as defined below:

- **Tier 1:** Asset capability necessary to handle the local spill and/or initial response;
- **Tier 2:** Local and National capability to supplement a Tier 1 response; and
- **Tier 3:** Global and International capability required due to scale, complexities and/or global potential impact.

PTTEP Assets and support functions could pre-define and document the expected spill volume of each Tier, based on their production scale and the capability of response resources.

Classification of risk level and Tier response shall follow the below documents for more details and definition of severity or impact to people, Environment, Asset and reputation as well as incident management and reporting protocol.

- SSHE Risk Management Standard (SSHE-106-STD-400),
- Emergency and Crisis Management Standard (SSHE-106-STD-500), and
- PTTEP Incident Management Standard (11038-STD-SSHE-600-011).

6.1 SPILL MANAGEMENT ORGANISATION

6.1.1 PTTEP 3-Tiered Response

Figure 1 shows the 3-Tiered spill response organisation as well as necessary internal and external resources. Tier 1 response requires internal resources, whereas Tier 2 and 3 response require National and International resources, respectively. Member of each Tier response team shall refer to the Emergency and Crisis Management Standard (SSHE-106-STD-500).

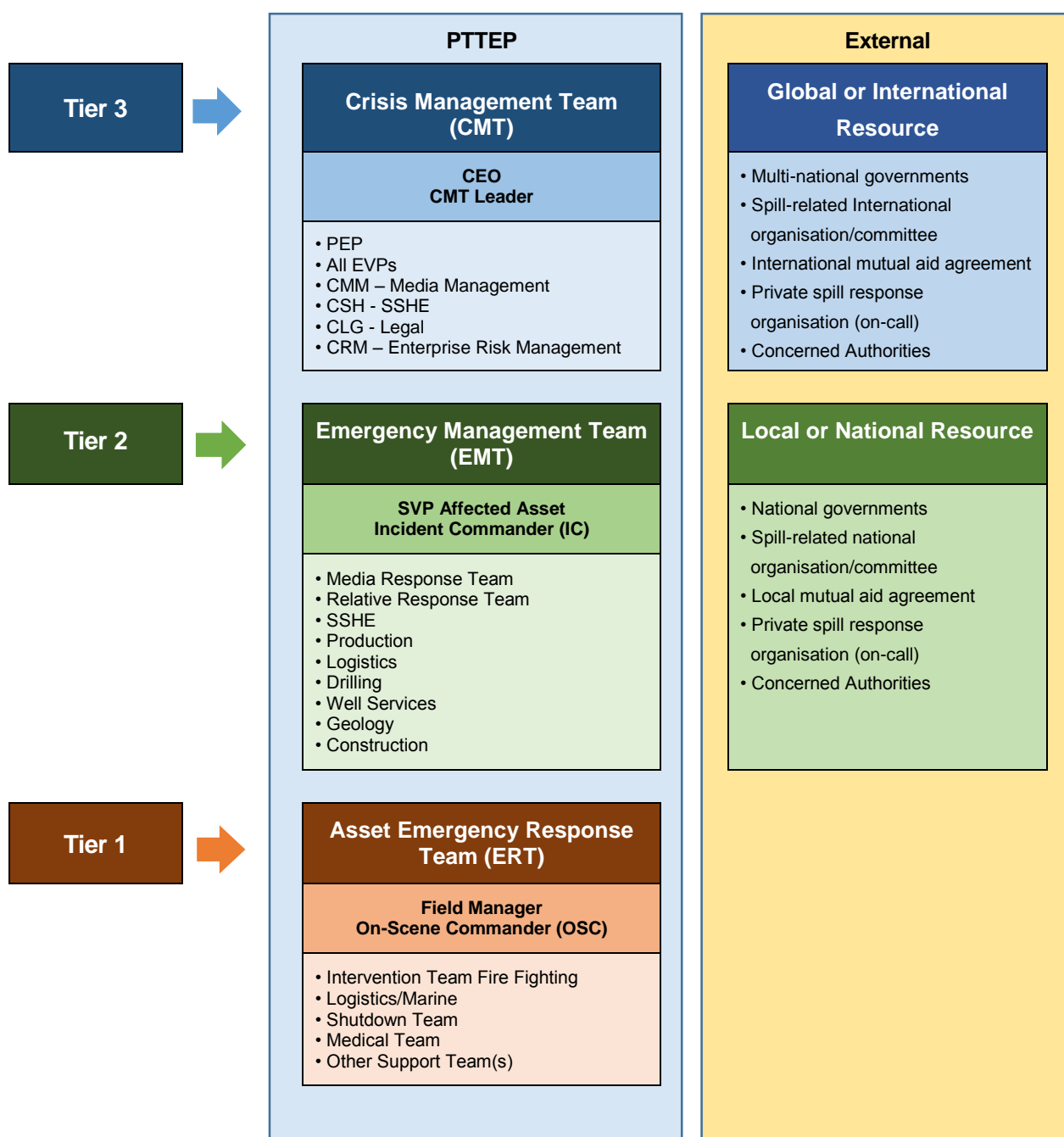


Figure 1: Tier Response Organisation and Resources

6.1.2 Spill Response and Management Team Duty

The different authorized persons of E&P activities in each phase could result in the different designated persons of spill response and management team leader at each Tier response as summarized in Table 1. Although the team leader is nominated depending on the activities, however the team member of each Tier at each phase is commonly the same, except the technical support, as listed in 6.1.1 PTTEP 3-Tiered Response, which their specific duties shall be described in the Asset Spill Response Plan, the Emergency Management Plan (SSHE-106-PDR-502) and the Crisis Management Plan (SSHE-106-PDR-501). The technical support will be requested from each relevant discipline subjected to the incident description.

Table 1: Summary of Team Leaders

Team Leader	Spill Management Team Leader of each E&P Phases			
	Seismic Exploration	Drilling Exploration	Drilling Production	Production
ERT: Tier 1 On-scene Commander	VP under GSX	Drilling Supervisor (DSV)/ Offshore Installation Manager (OIM)		Field Manager
EMT: Tier 2 Incident Commander	SVP of affected Asset (Thailand) Asset Country Manager (Overseas)			
CMT: Tier 3 CMT Leader	CEO or Designated Top Management			
Technical Support	VP/Field Manager of affected Asset	Field Manager of affected Asset/Drilling Contractor		VP of affected Asset
	Depend on an incident situation and shall be requested from the affected Asset.			

6.2 SPILL NOTIFICATION PROCESS

Initial internal and external notification of spill incident shall follow the protocol and reporting requirements as determined in the Incident Management Standard (11038-STD-SSHE-600-011) which covers the reporting channel, period and organisation to be notified within PTTEP and externally to the government agencies both for Thailand and International Assets. External notification of spill incident occurred within Thailand jurisdiction is summarized in Table 2. Contact numbers of Thailand and International authorities and organisations are provided in Appendix A.

It is the responsibility of the International Assets to determine the in-country notification process of all internal and external communications for all Tiers of spill incidents, including communication with PTTEP Headquarters. The communication protocol shall be documented in the Asset Spill Response Plan. The protocol shall include the communication channel to the authorities, notification timelines to the authorities, and the responsible person who is authorised to initiate the communication. The contact number of authorities in each operating country shall be provided and kept up-to-date.

Table 2: Summary of External Notification for Spill Incident in Thailand

Spill Incident Volume	Notify	Reporting timescale	Reported by
>1 bbl	Department of Mineral Fuels (DMF)	The initial report by phone or e-mail within 24 hrs and followed by the written report within 72 hrs	Safety Management Department
> approx. 149.75 bbls (20 tonnes)	Marine Department (MD) <i>for the spill to water</i> Department of Disaster Prevention and Mitigation (DDPM) <i>for the spill on land</i> PTT Group	The initial report by phone or e-mail within 24 hrs	EMT for Tier 2 and CMT for Tier 3/Safety Management Department

Any updated situation to external media and relatives shall refer to Crisis Communications Guideline (12145-GDL-004-R02) under Corporate Communications and Public Affairs Division.

6.3 SPILL RESPONSE RESOURCES

Spill response resources in this plan are defined as spill response and management plan and other supporting documentation, trained personnel, and sufficient equipment and supplies. The resources may come from local, regional or International sources in accordance with 3-Tiered Classification. These resources shall be identified in the Asset Spill Response Plan based on their operational risk assessment results, regulatory requirements, hydrocarbon amount and characteristic, nearby sensitive area and supporting facility, and planning scenarios.

The agreement or spill response organisation for spill response resources support at each activity for each Tier response is recommended to prepare in advance to ensure the availability of the resources when the spill incident occurred.

6.3.1 Asset Spill Response Plan Preparation

PTTEP Assets and support functions shall prepare and implement the Asset Spill Response Plan and the supporting documents. As noted in section 1, the Asset Spill Response Plan is defined as, either the operating Asset Spill Response Plan or the support functions Spill Response Plan or combination of both. The Asset Spill Response Plan shall be scoped and scaled according to the type of operation undertaken, the level of risk associated with the operations/activities, and in compliance with applicable local and national regulation. The Asset Spill Response Plan shall include the necessary information which helps to assist the Assets and support functions to identify and specify the key processes and resources that are crucial to respond to the spill incidents, both for the initial and subsequent stages.

It is required that PTTEP Assets and support functions shall develop their own Plan separately from the Asset Emergency Response Plan. However, the integration of the Asset Spill Response Plan into the Asset Emergency Response Plan is acceptable, as long as its Plan is comprised of the required structures as listed in Appendix B and updated regularly.

In general, the Asset Spill Response Plan shall include the following essential information as a minimum:

- The governing legislative framework where PTTEP operates;
- A summary of the spill planning scenarios resulted from the risk assessment, SSHE Case, Environmental Impact Assessment, and other relevant documents;
- Response strategy and justification for each scenario;
- Stakeholder engagement and notification Procedure internally and externally;
- Action checklist for key personnel;
- Available Tier 1 resources, including details of location, mobilisation, and response timescales and Procedures;
- Tier 2 mutual aid agreements, including the available resources capability, activation Procedures, indicative response times, as well as mobilisation logistics and Procedures;
- Tier 3 arrangements, including accessing International mutual aid, contracted Oil Spill Response Organisations (OSRO) mobilisation Procedures, resources and response timeframes. Procedures for immigration and customs, and any emergency dispensation information for cross-border movement of personnel, equipment and material;
- Reference to the Source Control Procedures and any other response specific plans, e.g. Well Blowout Contingency Plan, tactical response plans where applicable; and
- Summary of the escalation process and resource integration Procedures for the activation and mobilisation of the identified Tier 2 and Tier 3 resources, if a spill exceeds the response capability at Tier 1.

The above requirements shall be used for development of the Asset Spill Response Plan which shall be complied with the National Oil Spill Response Plan of the country of operation as well as relevant PTTEP Standards and Procedures. The Asset Spill Response Plan shall be reviewed by Corporate SSHE Division for advisory and alignment with this plan and other compulsory documents.

6.3.2 Spill Scenario Consequence Analysis

Based upon the risk assessment results, the Assets and support functions shall identify spill planning scenarios and documented in the Asset Spill Response Plan. Afterwards, the detailed consequence analysis shall be conducted to confirm consequences from the spill risks and identify which environmental and socio-economic resources could be affected, and the degree of sensitivity of those resources, as well as impact mitigation and minimisation, specifically for:

- The worst credible case of spill planning scenario(s) for oil type(s) that potentially have a significant contribution to the risk (high likelihood, high potential discharge volume or low likelihood but high severity); and
- Any additional spill planning scenarios that generate essential planning factors.

Criteria for justification are referred to the SSHE Risk Management Standard (SSHE-106-STD-400).

6.3.2.1 Spill Trajectory Model

The objective of numerical simulation of spill fate and trajectory is to estimate the physical changes which spilled oil undergoes especially offshore or on open waters (i.e. the weathering processes which include evaporation, spreading, natural dispersion, emulsification and shoreline stranding) and its potential pathways, travel times, surface distribution and associated volumes under the prevailing climate.

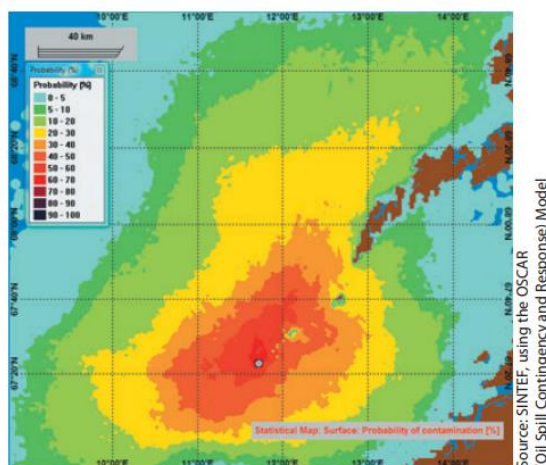
The spill trajectory model shall be developed to provide the area of impact or consequence for consideration in the environmental and socio-economic severity risk assessment and to guide decisions for a suitable response strategy.

For Domestic offshore Assets, the spill trajectory model has been developed to summarise the possible spill plume trajectory, travelling period from the point of the spill to a shoreline and expected location. The trajectory model may incorporate the sensitive area mapping for evacuation planning, spill response strategy and predicted impact area. This trajectory model is available at PTTEP Corporate SSHE Division Library, SSHE intranet, and PDT SSHE manager office.

Examples of 2 types of spill trajectory modelling output are shown in Figure 3;

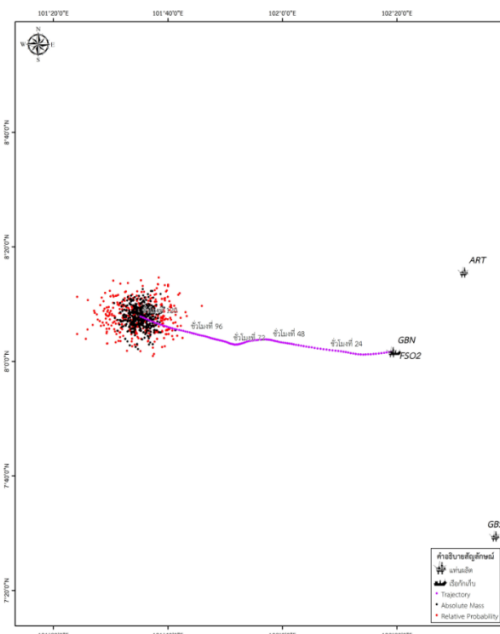
- Stochastic models primarily used for contingency planning purposes which apply historical wind and current conditions to simulate multiple spill trajectories that together give a statistical output; and
- Deterministic models typically used in both response and contingency planning scenarios, which utilise a single set of wind and current conditions (for example the most probable) to simulate a single spill trajectory.

Example of Stochastic Modelling Output (IPIECA and IOGP Good Practice Guide)



This image of a statistical analysis of multiple trajectories predicts the probability of where water surface oiling might occur based on a 10-day simulation using a dataset of historical hydrodynamic and wind conditions.

Example of Deterministic Modelling Output (PTTEP for offshore Thailand Bongkot operations)



This image shows a single trajectory simulation using one input set of hydrodynamic and wind conditions. It depicts the absolute mass and relative probability of the spilled oil.

Figure 2: Example of Spill Modelling Output

6.3.2.2 Sensitivity Mapping

Once the Assets and support functions have identified the spill planning scenario, the trajectory of the oil, and how it behaves in the Environment, it is necessary to identify and characterize relevant sensitive resources and receptors within the influence area.

Mapping of ecological and socio-economic resources allows the identification of those which may lie in the trajectory of the spill. Mapping shall be performed within the influence area of the potential spill. The IPIECA, International Maritime Organisation (IMO) and IOGP good practice guidance on sensitivity mapping for oil spill response (2012) provides examples of mapping both ecological and socio-economic resources. Environmental impact assessments and monitoring data can provide valuable input to the mapping of resources and sensitive receptors. With the confidentiality agreement, the E&P companies operating within the same area are encouraged to share information on ecological and socio-economic resources to secure efficient mapping and consistent input.

The assessment of potential consequences should be made for time periods (i.e. monthly, seasonal or yearly) as relevant to the activity or operation that is posing a risk. It is recommended that a full year field activity at least should have a seasonal resolution in the consequence assessment as

this can provide important information and input to risk management and advice on risk-reducing measures for time-limited operations.

Assets and support functions can access to the information, such as the Environmental Sensitivity Index (ESI), Environmental Sensitivity Maps (ESM), etc. which are available from published sources or national database or equivalent. Moreover, Asset and support functions can partially apply the sensitivity map from the Environmental Impact Assessment report. The sensitivity mapping in the boundary of the South China Sea published by Marine Department is currently available at Corporate SSHE Division Library in hard copy. With its sensitivity, this information cannot be posted on the Company share drive or the Company intranet.

6.3.2.3 Net Environmental Benefit Analysis (NEBA)

When considering the suitable response technique, NEBA shall be considered to determine the best response options that are the most effective, feasible and will minimise the impact from the selected planning scenario on the Environment and the community. As such, the Asset Spill Response Plan shall document the following information when selecting the response option:

- Evaluate data - Collect information on the physical characteristics and environmental resources of the area.
- Predict outcomes - Review previous spill case histories and experimental results which are relevant to the area, and to response options which could possibly be used.
- Balance trade-offs - On the basis of previous experience or key studies; predict the likely environmental outcomes if the proposed response is used, and if the area is left for natural recovery.
- Select the best response option - Compare and weigh the advantages and disadvantages of possible response options with those of natural clean-up.

Refer to PTTEP's Net Environmental Benefit Analysis Guideline (SSHE-106-GDL-526) for further details on the application of NEBA.

Assets and support functions shall ensure that the response priorities selected are aligned with the National or regional register of priority areas. Where different protection priority ranking is assigned to a specific resource compared to these National or regional register, justifications for the difference is to be specified.

The requirements of the response technique, waste management and restoration methods are provided in Appendix C. Restoration components may include environmental impact, remediation, environmental and community restoration as well as compensation of financial impact, depending on the incident case.

6.3.3 Spill Response Equipment Preparation

6.3.3.1 Tier 1 - Asset Resources

PTTEP Assets and support functions shall provide and ensure the availability of spill response resources on each location as identified in their planning scenario. The identification of necessary spill response resources shall be documented in the Asset Spill Response Plan. The Assets and support functions representative shall ensure the readiness of the Asset Spill Response Plan and the sufficient equipment and resources for combating spill up to a Tier 1. The Asset ERT member shall be trained to promptly respond and familiar with all available spill response equipment.

For exploration phase either seismic exploration or drilling exploration, Geoscience and Exploration Group (GSX) and/or the project owners of the exploration activities shall prepare the spill response equipment and services from the reliable local contractor as per their contract agreement under advisory of Corporate SSHE Division.

For drilling production, the drilling contractor, with the Asset's support, shall provide on-site spill response equipment and personnel as per their contract agreement to ensure that Tier 1 can be handled. The drilling contractor is responsible for any spills occurring within the boundary of the rig itself, while Asset is responsible for the spills reaching the environment.

In case that the dispersant application is required for Thailand Assets, it is the Asset representative to request the approval from Pollution Control Department (PCD) before use. The request form for approval of dispersant application in Thailand and list of approved dispersants for Thailand Assets is provided in Appendix D and E, respectively. To avoid the delay of dispersant application, the completeness of information and the appropriate volume of dispersant application filled in the form will expedite the approval period. In general, the consideration result would be sent to the requestor within 5 hours after submitting the request to PCD. This process could be different for the International Assets which may require the different approval process in order to comply with the local regulation. Be aware that some dispersant is not permitted to use in some country.

Noted that once the incident reaches Tier 2 and 3, or after activation of EMT and CMT, Corporate SSHE Division will be responsible for the dispersant application approval process.

Should the spill escalate beyond Tier 1 level, additional resources and support are required.

6.3.3.2 Tier 2 – Local and National Resources

For Domestic Asset, Corporate SSHE Division shall provide and seek other available equipment and resources to support in the Asset spill response. These resources shall be included in the Asset Spill Response Plan and this plan may specify equipment and personnel from nearby operators, regional operators, National level regulators or agencies, or OSROs.

Where possible, the Asset and Corporate SSHE Division should make an agreement to ensure the availability and validity of Tier 2 resources by conducting pre-arrangement or exercise in order to test the mobilisation and to secure support to respond to the spill.

PTT Group is a member of the Oil Industry Environmental Safety Group Association (IESG) in Thailand. All PTTEP Assets in Thailand are able to request additional resources and the trained personnel from outsource under IESG's contract via Corporate by using South Area Sub-Committee (STSC) of IESG Spill Response Equipment Request Form as provided in Appendix F and list of IESG available resources stored at Caltex Thailand (CVX) and Shell Depot in Songkhla is shown in Appendix G.

Table 3: Estimated Mobilisation Time for National Assistance from IESG

Asset	IESG Nearest Site	Nearest Airport to PTTEP Assets	In-land Mobilisation time (hrs)	Vessel Mobilisation time (hrs)	Total time (hrs)
ART	Songkhla	Hat Yai	2	16	18
GBN	Songkhla	Hat Yai	2	18	20
GBS	Songkhla	Hat Yai	2	18	20

Further, Assets in Thailand may also request resources from the Marine Department through activation of the National Oil Spill Response Plan. This allows the Asset to have access to the national resource which includes equipment, vessels and technical specialists. PTTEP Assets and support functions are encouraged to identify Tier 2 Resources in the Asset Spill Response Plan for the purpose of pre-assessment whether the available resources are sufficient to handle with Tier 2 Spill or otherwise refer to this plan. When resources from in-country mutual aid agreement are required to respond the spill, the National Oil Spill Response Plan will incorporate with the Company Plan including the Asset Spill Response Plan. The role and responsibility of the emergency response team and support team will be in accordance with both Plans.

For International Asset, it is recognised that some International Assets may also be legally bounded to attain membership for their local Tier 2 Organisations or Contractors as specified by laws and regulations of the country where PTTEP operates (e.g. PIMMAG, OSCT, AMOSC, etc.). All Assets shall adhere to the in-country legislative requirements and ensure the familiarity of the call-out Procedure for the respective Tier 2 Organisations or Contractors.

Similarly to Thailand Assets, the International Assets should ascertain similar processes to access the National resources of the operating country. In case National resources are not capable of or are overwhelmed, the resources from International service contractor is necessary.

6.3.3.3 Tier 3 – Global and International Resources

Currently, the International service provider for PTTEP is the Oil Spill Response Limited (OSRL) Group which PTTEP has access to their resources via PTT Group membership. The OSRL Activation can be done through PTT Group as the following steps, which list of PTTEP Authorised Personnel is provided in Appendix H.

- PTTEP Authorised Personnel shall complete the PTT Group Notification form and Mobilisation Authorisation Form and submit to PTT for their information as provided in Appendix I and J respectively.
- Then, the OSRL Notification and Mobilisation Procedure shall be followed as described in Appendix K. PTTEP Authorised Personnel shall fill out the OSRL Notification Form and Mobilisation Authorisation Form, and submit to OSRL for requesting their services as provided in Appendix L and M, respectively.

Corporate SSHE Division will assist the Asset in securing OSRL resources for their prompt response. OSRL resources available for membership can be found in [OSRL website](https://www.oilspillresponse.com) (<https://www.oilspillresponse.com>).

For planning purpose, the Assets and support functions shall take into account the lead time required for mobilisation of OSRL resources in their Asset Spill Response Plan. However, the global alliance from PTTEP and OSRL requires lead time for internal preparation and logistics arrangement. Table 4 shows the OSRL nearest support site to the nearest airport to PTTEP Asset's location, estimated mobilisation time and flight time from these airports to PTTEP Potential incident locations. Noted that contingency time; e.g. customs clearance and immigration; are not included.

Table 4: Estimated mobilisation time for International assistance from OSRL

Country	OSRL Nearest Site	Nearest Airport to PTTEP Assets	Mobilisation time (hrs)	Flight time (hrs)	Total time (hrs)
Algeria	United Kingdom	Houari Boumediene (Airport D'Alger)	6	9	15
Australia	Singapore	Darwin	5	8	13
Canada	United State of America	Fort Lauderdale, Miami Airport	6	7	13
Mozambique	United Kingdom	Maputo	5	20.5	25.5
Myanmar	Singapore	Yangon	5	4	9
Thailand	Singapore	Suvarnabhumi	5	4	9

6.3.4 Spill Training and Exercise

The Assets and support functions shall develop spill training and exercise programme with consultation from Corporate SSHE Division based on the applicable national and local regulation as well as the requirements stated in this plan and SSHE Training and Competency Standard (SSHE-106-STD-340). The training and exercise programme shall include the personnel with their role and responsibility to manage and respond to the spill incident.

Determining the frequency and number of personnel to be trained in each role and involved in exercises should consider factors such as staff turnover rate, staff rotation to prepare for a prolonged response, and standby requirements for on-duty responders as well as backup staff to support an ongoing response.

In addition to the applicable National and local regulation, Each Asset and support functions shall organise the spill exercise to cover the scenario either for tabletop exercise or equipment deployment as shown in Table 5.

These exercises may be conducted separately or in conjunction with other emergency or crisis exercises as long as it is included the below requirements. The training and exercise programmes and records shall be documented for further tracking and reference. Opportunities for improvement and actions arise from these activities shall be documented and recorded in close-out exercise or audit report to ensure that the actions are being implemented in a timely manner.

Assets and support functions shall also ensure the periodic monitoring of training with expiration date and require refresher is being done and documented properly to ensure the sustainability of personnel's knowledge and competence.

6.3.5 Spill Capability Assessment

Assets and support functions shall plan to conduct the capability assessment, with the consultation of Corporate SSHE Division, on a regular basis in order to assess and ensure that the Asset spill response meets the needs of the operation's risk level. The frequency of the capability assessment depends on the results of risk assessment. The higher risk results are identified, the more frequency of capability assessment shall be. The capability review process is undertaken in line with the IPIECA and IOGP industry good practice Guidelines for a tiered response, and includes the following assessments:

- Review of Oil Spill Response Plans and relevant tactical plans.
- Availability and suitability of oil spill response Tier 1 (onsite) equipment.
- Availability of Tier 2 and Tier 3 equipment.
- Review of logistical arrangements.
- Review of your training and exercise programme.

For an effective Tier 2 and Tier 3 Capability assessment, PTTEP shall utilize the third party to conduct the activities. The assessment results shall identify the gaps and recommendations for improvement of the Asset and Company spill response capability.

The spill capability assessment checklist is provided in Appendix N.

6.3.6 Spill Response and Management Plan Review and Update

Where the National or local regulation dictates a system of review and evaluation for approved plans, it shall take precedence. In the absence of regulatory guidance, the Assets and support functions shall develop and implement a programme for review and ensure the sustained readiness and competency to align at least with document review period or significant deviation.

Table 5: Minimum Requirements for Spill Exercise

Type	Objective	Frequency	Response Team
Notification	Test communication; contact details and notification Procedures as per the Asset Spill Response Plan and this plan.	At least once internal and once with external involvement, per year	ERT, EMT, and/or CMT as necessary
Tabletop Exercises (Duration: 2 to 8 hrs)	Build competency and confidence in the implementation of the spill response and management plan, test the functionality of the plan and emergency response using potential spill scenario. The predetermined set of specific objectives. Involve external agencies including Tier 2 and Tier 3 support, as necessary. No equipment mobilisation required.	At least once internal or once with external involvement, per year	ERT, EMT, and/or CMT as necessary
Equipment Deployment	Deploy Tier 1 equipment to confirm operability as well as the competence of response teams.	At least once per year	ERT (and Contractor – if applicable), with EMT involvement as necessary
Full-scale exercise (Duration: 10 to 14 hrs)	May involve multiple authorities, relevant organisations and jurisdictions, and can validate many elements of preparedness. Test plans and Procedures across the span of Asset's crisis management and emergency response arrangements. Can involve national capability (Tier 2) and regional or International support (Tier 3), i.e. trans-boundary response issues. Includes personnel and resources mobilisation and deployment. The new Merger & Acquisition (M&A) project is included after M&A process is completed.	At least one or two Assets every three years	ERT (and Contractor – if applicable), EMT, or CMT,

The review and update to the Spill Response and Management Plan shall be undertaken when there are any updates from:

- Oil spill risk profile, e.g. new Assets are introduced or additional oil types are identified;
- Oil handling operations/significant changes in the hydrocarbon inventory;
- Response arrangements, including any changes to response contractors;
- Oil spill incident reporting and notification Procedure;
- Sensitive resources;
- Location of operation (e.g. drilling campaigns);
- Lessons learned or feedback from spill response exercises;
- Lessons learned or feedback from actual spill response activities;
- Legislation or regulations in the country of operation;
- International Standards and industry good practices; or
- Relevant PTTEP Corporate Standards and Procedures.

Regardless whether the Spill Response and Management Plan are updated or not for the reasons listed above, this plan shall also be reviewed in its entirety at least every five years to ensure its validity and directions are in alignment with recent good practice, advancements and improvements in equipment and techniques in the industry. Also, to reflect any improved knowledge of the potential response area and sensitivities. Whilst external notification channel and contact details shall be checked at a minimum every year.

Where applicable, if major changes occur that could potentially affect the validity or effectiveness of the Plan, re-submission to the approving authority in the country of operations shall be undertaken as required per local regulations and PTTEP Corporate requirements.

Hard copies of the Asset Spill Response Plan and other relevant documents shall be available at Asset's Emergency Command Centre and PTTEP Headquarters Emergency Management Room.

APPENDIX A: NATIONAL AND INTERNATIONAL AUTHORITIES AND ORGANISATION CONTACT LIST

Organisation	Telephone	Fax
Department of Mineral Fuels	+66(0)2794 3472 +66(0)2794 3474	+66(0) 2794 3362
Department of Disaster Prevention and Mitigation	Hotline 1784	+66(0) 2241 7466 +66(0) 2241 7499
Marine Department	1194 (24 hrs) +66(0)2234 8342 +66(0)2233 1311-8 ext. 330 and 331	+66(0) 2234 3832 +66(0) 2236 1802 +66(0) 2238 3017
Oil Industry Environmental Safety Group Association	+66(0)2239 7955 - 56	+66(0)2239 7917
PTT Command Centre	+66(0)2537-3111/3222/3333	+66(0)2537 3498
OSRL Singapore base	+65 6266 1566	+65 6266 2312

Remark: Updated information will be available in the SSHE intranet.

APPENDIX B: REQUIRED STRUCTURE OF ASSET SPILL RESPONSE PLAN

Notes:

- ✓ = Required
- + = Recommended (may depend on the planning scenario)
- ✗ = Not required

Section	Description	Offshore	Onshore
1. Introduction			
1.1 Objective	Describe the overall purpose of the Spill Response Plan. Include the statement of PTTEP's guiding principles of protecting people, Environment, asset and reputation.	✓	✓
1.2 Scope	A summary description of operations and facilities covered by the Spill Response Plan.	✓	✓
1.3 Interface with Other Plan	Identifies other plans which the Spill Response Plan interfaces with and demonstrate how it integrates with other plans. These plans include, but not limited to: <ul style="list-style-type: none"> • Crisis management plan. • Emergency management plan. • Net Environmental Benefit Analysis Guideline. • Environmental Impact Assessment Report. • Bridging documents/Well control plans. 	✓	✓
1.4 Document Control	Specifies approval dates and sign-offs by internal management, plan custodian, distribution list, review and update records. Include approvals obtained from authority, if applicable.	✓	✓
2. Notifications And Reporting			
2.1 Internal Notification	A clear written Procedure to immediately notify and report to internal stakeholder and initiate a response showing appropriate response levels, as well as response escalation Procedure. <i>Refer to Spill Management Plan for an example of internal notification Procedure.</i>	✓	✓

Section	Description	Offshore	Onshore
	Includes contact details, notification method (e.g. phone, fax, email, etc.) and team/person responsible for performing the notification. This may be reflected in the form of a flowchart. <i>Refer to Emergency and Crisis Management Standard (SSHE-106-STD-500) for emergency notification Standard.</i>		
2.2 External Notification	A clear written Procedure to notify and report to external stakeholder which needs to be done at the early stage of the incident, i.e. authorities, shareholder, OSROs and other contractors. Includes contact details, notification method (e.g. phone, form, fax, email, etc.) and team/person responsible for performing the notification.	✓	✓
3. Assessments			
3.1 Site Assessment	Provide a checklist/Guideline to conduct initial site safety and spill assessment.	✓	✓
	Key facility information.	✓	✓
	Identification of environmental and socio-economic sensitivities.	✓	✓
	Determining current and forecasted meteorological and hydrodynamic conditions.	✓	x
3.2 Volume and Trajectory Assessment	A summary or checklist of: <ul style="list-style-type: none"> Spill surveillance methods (aerial surveillance, tracking buoys, etc.). Spill observation and assessment guidance. Spill trajectory and modelling. 	✓	+
3.3 Tier Assessment	Evaluate the scale, Tier level, and impact of the incident (following the National Oil Spill Contingency Plan, if any or as described in this Guideline) as well as the escalation potential.	✓	✓
4. Response Management			
4.1 Response Organisation	The organisation of the response teams (ERT, EMT, CMT) and its relationship with each other. Includes overall responsibility of the team and management of processes and Procedures within each team. Include the response management facility location and activation Procedure. <i>Refer to Emergency Management Plan (SSHE-106-PDR-502) and Incident Management Standard (11038-STD-SSHE-600-011).</i>	✓	✓

Section	Description	Offshore	Onshore
4.2 Roles and Responsibilities	Main role and responsibility of the key personnel in the response team, including action checklist described for each stage of response. <i>Refer to Emergency Management Plan (SSHE-106-PDR-502) and Incident Management Standard (11038-STD-SSHE-600-011).</i>	✓	✓
5. Action Checklist			
Initial action checklists for key personnel in the EMT to establish: <ul style="list-style-type: none"> Initial response priorities and objectives. Initial actions and strategy decision guide. Activation of response management team. Activation and deployment of resources. 		✓	✓
6. Response Strategy			
6.1 Response Strategies	Strategy decision procedure (flow charts, scenario matrix, and NEBA decision consideration), include scenario-specific response strategy summaries and regulatory pre-approvals and/or approval application Procedures, if any. <i>Refer to Section 6.2 Spill Notification Process.</i>	✓	✓
6.2 On Water Response	Offshore and near-shore response capabilities and general tactical plans. <i>Refer to Appendix C: A List of Response Techniques.</i>	✓	✗
6.3 Shoreline Response	Shoreline response capabilities and general tactical plans. <i>Refer to Appendix C: A List of Response Techniques.</i>	+	+
6.4 Inland Response	Inland waterway and onshore response capabilities and general tactical plans. <i>Refer to Appendix C: A List of Response Techniques.</i>	✗	✓
7. Sensitive Areas			
Summary of sensitivities identified in the area as well as the protection priorities. May include maps for ease of reference. This information should be supported by with the Baseline Environmental Settings information in the Reference Material.		✓	✓

Section	Description	Offshore	Onshore
8. Response Resources			
8.1 Tier 1 Capability	A summary and reference to Tier 1 resources inventories including required logistics support, internal contact information (can be referred to Supporting Documentation – Directories), and mobilisation timescale.	✓	✓
8.2 Tier 2 Arrangement	A summary and reference to Tier 2 Arrangement including: <ul style="list-style-type: none"> Contracted resources inventories and services list. Mobilisation Procedure and timeframes. Contact information (can be referred to Supporting Documentation – Directories). Required logistics support. Additional non-contracted resources and services list including government resources, vessels of opportunity, local labour sources and volunteers, and subject matter experts or speciality expertise. Resourcing Procedures for non-contracted services. 	✓	✓
8.3 Tier 3 Arrangement	A summary and reference to Tier 3 arrangements, including accessing International mutual aid, contact information (can be referred to Supporting Documentation – Directories), contracted OSRO mobilisation Procedures, resources and response timeframes. Procedures for immigration and customs, and any emergency dispensation information for cross-border movement of personnel, equipment and material.	✓	✓
9. Supporting Response Element			
9.1 Waste Management Procedure	Provide the procedure for handling oily waste. <i>Refer to Waste Management Procedure (SSHE-106-PDR-521).</i>	✓	✓
9.2 Oiled Wildlife Response	Provide guidance for handling wildlife impacted by oil spill, if any. <i>Refer to Net Environmental Benefit Analysis Guideline (SSHE-106-GDL-526).</i>	+	+

Section	Description	Offshore	Onshore
9.3 Stakeholder Engagement And Communications	Provide guidance for engaging and communicating with Stakeholders. <i>Refer to Crisis Communications Guideline (12145-GDL-004-R02) and Appendix C: A List of Response Techniques.</i>	+	+
9.4 Economic Assessment and Compensation	Provide guidance for conducting economic assessment and compensation. <i>Refer to Appendix C: A List of Response Techniques.</i>	+	+
9.5 Environmental Impact Assessment (Including Sampling)	Provide the procedure for conducting an environmental impact assessment. <i>Refer to Environmental Impact Assessment for Exploration and Production Procedure (SSHE106-PDR-401).</i>	+	+
10. Decontamination			
10.1 Requirement	Summarises Health, Safety, and Environmental requirement for decontamination.	✓	✓
10.2 Decontamination Procedure	Procedure for developing a spill-specific decontamination plan including Standard Procedures for setting up decontamination area, zoning, etc. and list of approved cleaning agents. Provide information on pre-designated decontamination sites, if any.	✓	✓
11. Termination of Response			
11.1 Demobilisation Procedure	Provide the procedure for developing a spill-specific demobilisation plan. Also provide Standard Procedures for demobilising resources, i.e. final equipment and vessel inspections, personnel checkout, resupply of consumables, claims for repairs, a return of hired gear, etc.	✓	✓
11.2 Response Termination	Provide the procedure for establishing treatment endpoints and response termination criteria. Include information regarding the roles with authority to sign off on completed areas and approve termination of the response.	✓	✓
12.3 Response Debrief	Responsibilities and procedures for conducting post-response debrief, conducting post-spill analysis and develop report, etc. Include documentation requirements. <i>Refer to Incident Management Standard (11038-STD-SSHE-600-011)</i>	✓	✓

Section	Description	Offshore	Onshore
Supporting Documentation or Appendices			
Site- Specific Tactical Response Plan	Provide operational maps identifying the sensitivity the site-specific tactical plans that cover the area to be protected, worksite configuration, and other considerations and useful information necessary to facilitate rapid and effective response. <i>Refer to Section 6.3 Spill Response Resources.</i>	+	+
Reference Material	Consist of the justification and other preparedness material including: <ul style="list-style-type: none"> Oil spill risk assessment result and scenario planning, The applicable requirement from international convention, national and local regulations on oil spill response, The operational overview which describes the facility and/or operations (including facility information, oil types and volumes handled, oil properties and weathering data, etc.), Oil spill modelling result, Baseline environmental settings (including meteorological and hydrodynamic information) and socio-economic information, Training and exercise programme, and Plan and equipment review and audit schedule. 	✓	✓
Directories	Provide directories of resources and contact that are potentially needed during response including, external contractors, response organisation, a vessel of opportunity, logistics contractors, etc. This may be updated frequently.	✓	✓

APPENDIX C: A LIST OF RESPONSE TECHNIQUES

Response Technique Options	Requirements
Source Control	<p>Source control techniques are usually linked to other Asset emergency response plans/documents which provide specific actions to stop or minimise the release of oil from the source. Details in the Asset Spill Response Plan or supporting document shall include a description of the interface between the Asset Spill Response Plan and other specific internal/external emergency response documents. For the incident management, the Asset Spill Response Plan should describe how the source control team interface with the spill response team. Where specialised resources are required, the Spill Response Team shall inform EMT/CMT in advance for the availability of these resources.</p> <p>Source control technique shall be considered for the following scenarios:</p> <p><u>For spills originating from the well</u>, source control techniques are linked to Well Blowout/Source Control Contingency Plan which should already detailed the emergency response procedures in the event of an incident involving the well. Specialised resources include vessels and technical specialists who are trained in conducting well control management are often required for such spills. Confirm availability or provide contact of the specialised resources e.g. support vessels equipped with dynamic positioning and cranes with appropriate lifting capacity.</p> <p><u>For spills originating from vessels</u> (e.g. oil tankers, FPSOs, etc.), source control techniques on board are linked with SOPEP which shall be executed by the vessel captain and vessel emergency response team, while on-water spills shall include containment by booming around the source and on-water recovery. Deployment techniques will be the same as At Sea Containment and Recovery. Communication linkage and mobilisation period between spill site and support site are recommended to exercise to ensure the readiness and effectiveness.</p> <p><u>For spills from stationary offshore storage tanks or pipelines</u>, the source control measures shall consider the loss of primary containment. The response techniques are linked to the Asset Emergency Response Procedures to shutdown, contain and recover the spill. Migration of oil from the source is managed with the same techniques as At Sea Containment and Recovery. Communication linkage and mobilisation period between spill site and support site is recommended to exercise to ensure the readiness and effectiveness.</p>

Response Technique Options	Requirements
Source Control (continued)	<p>For spills from onshore storage tanks, pipelines or land transports, the source control measures shall consider the loss of primary containment. The response techniques are linked to the Asset Emergency Response Procedures to shut down, contain and recover the spill. Migration of oil from the source is managed with the same techniques as Inland Response.</p>
Surveillance, Modelling and Visualisation	<p>Description of the surveillance platform (e.g. aircraft, vessels, installations, on-foot, vehicles, subsea) and trained observers to support the implementation of the response technique. If specialist monitoring and/or remote sensing techniques (e.g., satellite imagery, oil detecting radar) are available to supplement surveillance methods, these shall be described in the Asset Spill Response Plan or supporting documentation. However, Safety shall be considered as the first priority when monitoring at the spill site. Remote sensing observation is recommended for Safety issue found while entering the spill area.</p> <p>When spill modelling is intended to be used together with the surveillance capability, the model shall be capable of being recalibrated regularly as new field data is generated. Communication methods to relay information between response teams (strategic (EMT) and tactical/field (ERT) shall be described in a Plan or supporting documentation.</p>
Offshore Dispersant Application Surface and Subsea	<p>Pre-approval from applicable regulators/authorities for the use of surface and/or subsea-applied dispersant, or where no formal pre-approval mechanism exists, seek approval on the basis that such approval may be granted by or at the time of a spill incident response. The authorised person who asks for approval will be indicated in the Asset Spill Response Plan and this plan.</p> <p>Confirm that the capability includes dispersant(s) for surface and/or subsea application that are effective for the oil type(s) included in the selected spill planning scenarios and are identified in the applicable country-approved list of dispersants (if available). Confirm that any applicable country-specific legal and regulatory restrictions on applying dispersant (e.g., water depth, distance from shore) are known, are described in the Asset Spill Response Plan, and that the intended dispersant use complies with those restrictions.</p>

Response Technique Options	Requirements
Offshore Dispersant Application Surface and Subsea (continued)	<p>Confirm local availability of on-site stocks of dispersant to support an initial response to the selected spill planning scenarios and identify supplementary dispersant stocks and supply chains needed to maintain on-going dispersant operations. Exercise the mobilisation period for additional dispersant from support site to spill area. Confirm the means to monitor the effectiveness of the oil-dispersant mix.</p> <p>Confirm the availability of suitable subsea dispersant injection devices and related ancillaries, and the platforms for transport and deployment. The subsea dispersant application technics and details can be found at http://www.iogp.org/bookstore/product/dispersants-subsea-application/.</p>
In Situ Burning	<p>Pre-approval from applicable regulators/authorities for the use of in-situ burning, or where no formal pre-approval mechanism exists, seek approval on the basis that such approval may be granted by or at the time of a spill incident response.</p> <p>Consider the weather condition and limitation before burning.</p> <p>Confirm the availability of resources such as vessels and boom designed for burning operations, ignition sources and related ancillaries.</p> <p>Confirm the means to monitor the effectiveness of the burning operations and atmospheric dispersion.</p>
At Sea (Offshore and Nearshore) Containment and Recovery	<p>Describe in the Asset Spill Response Plan or supporting documentation, the availability of specialist and non-specialist resources, including:</p> <ol style="list-style-type: none"> Vessels, booms and skimmers suitable for the prevailing operating conditions and oil characteristics. Offshore temporary storage available for recovered oil and water. Methods to transfer recovered oil and water and pre-separation. Onshore reception and temporary storage facilities for recovered oil and water. Surveillance aircraft to locate oil, direct the vessels and monitor effectiveness.

Response Technique Options	Requirements
Protection of Sensitive Resources (Offshore, Shoreline and Inland)	Identify environmental and socio-economic sensitivities and agree on priorities for protection with applicable stakeholders and in accordance with regulatory requirements. Information regarding environmental and socioeconomic sensitivity can be found in the environmental impact assessment report. A summary of this and initial response actions shall be presented in the Asset Spill Response Plan or supporting documentation as site-specific tactical response plans.
Shoreline and Inland Assessment	If planning scenarios show there is potential for shoreline oiling, describe in the Asset Spill Response Plan or supporting documentation, the capability for carrying out a Shoreline Clean-up Assessment Technique (SCAT).
Shoreline Clean-up	<p>If planning scenarios show there is potential for shoreline oiling, describe in the Asset Spill Response Plan or supporting documentation the roles and responsibilities for shoreline clean-up operations with national and provincial agencies/authorities. Clean-up resources shall be identified, including potential contractors and sources of plant/labour, etc.</p> <p>Reception and temporary storage facilities for recovered oil and materials shall be described in the Asset Spill Response Plan or supporting documentation. Describe the processes to locate oil, direct the clean-up operations and monitor effectiveness.</p>
Inland Response	<p>If planning scenarios show there is potential for an inland response, whether it is on land or on inland waterway, describe in the Asset Spill Response Plan or supporting documentation, the range of logistical issues that could influence the response implementation (e.g. access, remoteness of operations, special precautions for designated, private and/or sensitive areas) and the availability of resources for the response. The communication system shall be available 24/7 and exercise as scheduled, especially mobile carriers.</p> <p><u>For spill scenarios at a fixed location (e.g. drilling well pad, storage tank, product pipeline, pump house or other fixed structures) :</u> Confirm the availability of specialist and non-specialist resources, including, vehicles, heavy machinery, equipment and tools for the Environment, terrain, and hydrological and geological conditions, above and below ground. Reception and temporary storage facilities for recovered oil and materials shall be described in the Asset Spill Response Plan or supporting documentation.</p>

Response Technique Options	Requirements
Inland Response (continued)	<p>Describe the processes to locate oil, direct the clean-up operations and monitor effectiveness. Specialist and non-specialist equipment to monitor on/below ground and groundwater contamination as determined by the selected spill planning scenarios shall be described, along with the means to measure the quantities of recovered oil and other materials.</p> <p><u>For spill scenarios on mobile carriers on land (e.g. road/rail tankers) :</u></p> <p>Map out the available resources and critical sensitive area/receptor within the known transportation route. Provide estimated response times of nearest specialist and non-specialist resources, including vehicles, heavy machinery, equipment and tools to respond to different types of Environment, terrain, and hydrological and geological conditions. The processes to locate oil, direct clean-up operations and conduct monitoring programme shall be similar to the processes described for fixed structures.</p>
Oiled Wildlife Response	<p>If planning scenarios identify the potential for oiled wildlife or the presence of endangered or legally-protected species, then identify the available oiled wildlife specialists (whether locally available or internationally available) to respond to the incident. This may be sourced from the relevant government authorities, response organisations or non-governmental organisations. Critical information to be included in the Asset Spill Response Plan or supporting oiled wildlife response plan is the notification Procedures to engage these specialists, arrangements for wildlife protection and the response methodology for oiled wildlife.</p>
Waste Management	<p>Identify any country-specific or local legal and regulatory requirements pertaining to hazardous and non-hazardous waste management (including notification requirements, and how to set up temporary storage areas). Local availability of sufficient waste storage equipment and approved waste contractors for transportation of hazardous wastes shall be identified with contractual agreements for these services in place. Further, the final waste disposal location for each type of waste stream shall be identified with verification that the facility has the capability to accept the estimated volume of waste as identified in the planning scenario.</p> <p>Refer to the PTTEP's Waste Management Procedure for further guidance in waste management Procedure (SSHE-106-PDR-521).</p>

Response Technique Options	Requirements
Waste Management (continued)	A summary of this information shall be presented in the Spill Response Plan or supporting documentation as the site-specific tactical response plans.
Stakeholder Engagement and Communications	Identify stakeholders who share the risk and maintain a database of these stakeholders and their contact information. A programme shall be drawn to conduct regular communication with the stakeholders based on country-specific or local legal requirements and the duration of the operation. The frequency and need of stakeholders' engagement should be specified in the Asset Spill Response Plan or supporting documents for engagement during the planning process or in a response stage.
Economic Assessment and Compensation	Identify environmental and socio-economic sensitivities that may be potentially impacted by a spill from the operations. The Asset Spill Response Plan or supporting documents should include a process for mobilising resources to assess the impacts, to evaluate and to process claims and compensation to impacted communities. This shall include documentation preservation processes and any associated legal requirements of records and data. The general information of socio-economic can be found in environmental impact assessment report related-organisation in operating country.
Environmental Sampling, Monitoring and Assessment	<p>A monitoring programme shall be implemented before, in between and after an accident to aid in decision making, to monitor technique effectiveness or to determine the extent of spill impact to the Environment.</p> <p>Confirm the capability of subject matter experts, qualified sampling organisations and laboratories, and the equipment and logistics required to execute the monitoring programme. This shall include the local compliance requirements for environmental monitoring.</p> <p>The sampling and monitoring Procedures and the resources to support this assessment shall be included in the Asset Spill Response Plan or supporting documents.</p>

APPENDIX D: EXAMPLE OF REQUEST FORM FOR APPROVAL OF DISPERSANT APPLICATION IN THAILAND

กรมควบคุมมลพิษ คำขออนุญาตใช้สารเคมีขจัดคราบน้ำมัน	
เขียนที่.....	
วันที่.....เดือน.....พ.ศ.....	
เรียน อธิบดีกรมควบคุมมลพิษ	
หน่วยงาน.....	
ขออนุญาตใช้สารเคมีขจัดคราบน้ำมันชนิด.....	
เพื่อขจัดคราบน้ำมันที่รั่วไหลจากสาเหตุ.....	
สถานที่เกิดเหตุ.....	
พิกัด.....	
วันที่เกิดเหตุ.....เดือน.....พ.ศ.....เวลา.....	
ชนิดน้ำมันที่รั่วไหล.....ปริมาณ.....ลิตร	
น้ำมันรั่วไหลมาแล้ว.....วัน โดยทางหน่วยงานมีความประสงค์ในการใช้สารเคมีขจัดคราบน้ำมันชนิดดังกล่าวข้างต้นเพื่อขจัดคราบน้ำมันบริเวณ.....	
จำนวน.....ลิตร โดยวิธี.....	
ลงชื่อ.....ผู้ยื่นคำขอ (.....) ตำแหน่ง.....	
สถานที่ติดต่อของผู้ยื่นคำขอ.....	
โทรศัพท์.....โทรสาร.....	
Pager.....e-mail	
สถานที่ติดต่อกรมควบคุมมลพิษ	
ในเวลาราชการ	นอกเวลาราชการ
กรมควบคุมมลพิษ 92 ซอยพหลโยธิน 7 ถนนพหลโยธิน แขวงสามเสนใน เขตพญาไท กรุงเทพฯ 10400	อธิบดีกรมควบคุมมลพิษ 0 2521 8682 / 0 1896 3594
โทรศัพท์ 0 2298 2239, 0 2298 2241-2, 0 2298 2246	รองอธิบดีกรมควบคุมมลพิษ 0 2235 6536 / 0 1938 8019
โทรสาร 0 2298 2240	รองอธิบดีกรมควบคุมมลพิษ 0 2465 8938 / 0 1442 2661
e-mail : marpol.m@pcd.go.th	ผอ. สำนักจัดการคุณภาพน้ำ 0 2411 1341 / 0 1622 4124
email : marinepollution_pcd@yahoo.com	ผอ. ส่วนแหล่งน้ำทะเล 0 2973 4088 / 0-1816-4280

Remark: Updated information will be available in the SSHE intranet.

APPENDIX E: LIST OF APPROVED DISPERSANTS FOR THAILAND ASSETS

NO.	Product Name	Approved use ¹	Expiry Date	Revised Date	Agency permit ²
1	Accell Clean® DWD	*		18 July 2011	U.S. EPA.
2	Agma DR 379	S B RS	20 June 2021		MMO
3	Ardrox 6120*	*		1 January 2012	AMSA
4	BIODISPERS (FROMERLY PETROBIODISPERS)	*		28 June 2002	U.S. EPA.
5	Caflon OSD	S B RS	20 December 2018		MMO
6	CHEMAX 307 oil spill dispersant	*	-	-	TISI
7	COREXIT® EC9500A	S	12 December 2018	13 April 1994/ 18 December 1995	MMO U.S. EPA. AMSA
8	COREXIT® EC9500B	*	13 July 2020	1 August 2013	U.S. EPA.
9	COREXIT EC9527A (Formerly Corexit 9527)	*		10 March 1978/ 18 December 1995	U.S. EPA.
10	DASIC SLICKGONE NS/ Slickgone NS	S B RS	20 February 2019	4 December 2012	AMSA / MMO
11	DASIC SLICKGONE EW/ Slickgone EW	S B RS	25 April 2018	4 April 2013	AMSA / MMO
12	Dasic Slickgone LTSW*	*		1 January 2012	AMSA
13	De Solv It 1000	S B RS	28 October 2020		MMO
14	Disperex 12	S	13 July 2021		MMO
15	DISPERSIT SPC 1000TM	*		22 April 1999	U.S. EPA.
16	Eflochem OSD	S B RS	7 February 2022		MMO
17	FFT-Soluion®	*		1 November 2011	U.S. EPA.
18	Finasol OSR 51	S B RS	27 June 2017	12 November 2014	AMSA
19	Finasol OSR 52	S B RS	18 March 2020	30 January 2003	MMO U.S. EPA. AMSA

NO.	Product Name	Approved use ¹	Expiry Date	Revised Date	Agency permit ²
20	JD-109	*		20 September 2000	U.S. EPA.
21	JD-2000 TM	*		6 August 2001	U.S. EPA.
22	MARE CLEAN 200	*		23 February 1988/ 26 January 1996	U.S. EPA
23	MARINE D-BLUE CLEAN TM	*		23 April 2012	U.S. EPA
24	Micro-Fiton	S B RS	6 August 2019		MMO
25	NEOS AB3000	*		22 April 1985/ 26 January 1996	U.S. EPA.
26	NOKOMIS 3-AA	*		31 July 2008	U.S. EPA
27	NOKOMIS 3-F4	*		4 March 2002	U.S. EPA.
28	OD 4000	S B RS	18 March 2020		MMO
29	Oil Spill Eater II	S B RS	23 January 2020		MMO
30	OSD/LT Oil Spill Dispersant	S B RS	20 June 2016		MMO
31	OSR 4000	S B RS	7 August 2018		MMO
32	Radiagreen OSD	S	19 February 2020		MMO
33	SAF-RON GOLD (a/k/a SF-GOLD DISPERSANT	*		3 January 2005	U.S. EPA.
34	SEA BRAT #4	*		26 November 2002	U.S. EPA.
35	SEACARE ECOSPERSE 52 (see FINASOL OSR 52)	S B RS	25 April 2018	30 January 2003	MMO U.S.EPA
36	Seacare Ecosperse LT23	S B RS	28 October 2018		MMO
37	SEACARE E.P.A. (see Dispersit SPC 1000 TM)	*		22 April 1999	U.S. EPA.
38	Seacare OSD	S B RS	10 May 2018		MMO
39	Seacare OSD2	S B RS	28 October 2018		MMO

NO.	Product Name	Approved use ¹	Expiry Date	Revised Date	Agency permit ²
40	SF-GOLD DISPERSANT (see SAF-RON GOLD)	*		3 January 2005	U.S.EPA
41	Super-dispersant 25	S B RS	17 March 2020		MMO
42	ZI-400	*		16 June 2005	U.S.EPA
43	ZI – 400 OIL SPILL DISPERSANT (see ZI-400)	*		16 June 2005	U.S.EPA

Update at 29 May 2017

Remark

¹Approved use

S	=	Sea
B	=	Beach
RS	=	Rocky shore
*	=	Unidentified

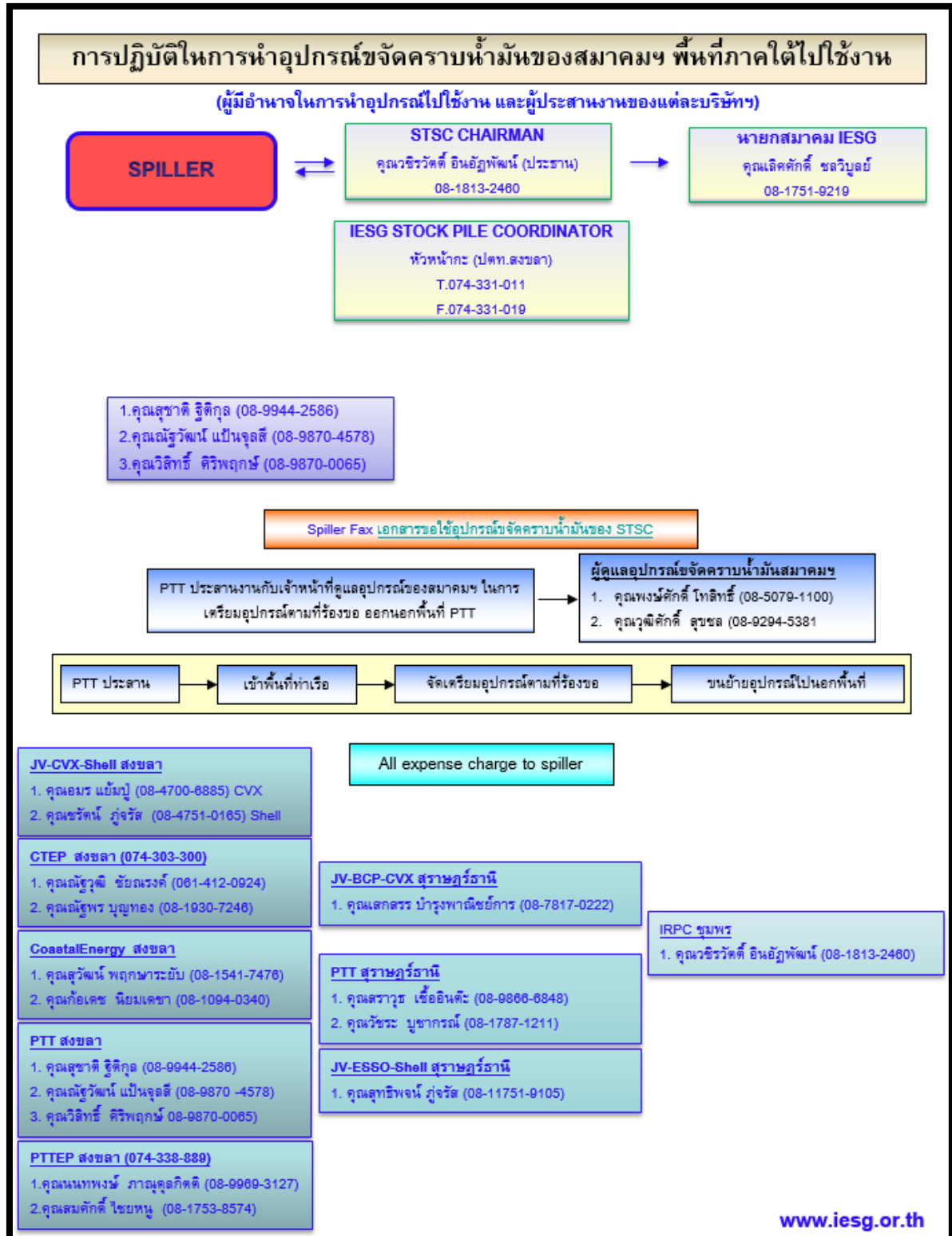
²Reference Agencies

- Marine Management Organisation : MMO
- U.S. Environmental Protection Agency : U.S. EPA
- Australian Maritime Safety Authority : AMSA
- Thai Industrial Standards Institute : TISI

Reference: Pollution Control Department

Remark: Updated information will be available in the SSHE intranet.

APPENDIX F: SPILL RESPONSE EQUIPMENT REQUEST PROCESS AND EXAMPLE FORM



Remark: Updated information will be available in the SSHE intranet and www.iesg.or.th.



ส่วนที่ 1 แบบฟอร์มการขอใช้อุปกรณ์จัดคราบน้ำมันของ STSC

วันที่

ถึง	<input type="checkbox"/> ประธาน STSC	โทรศัพท์ 08-1813-2460	โทรสาร 0-7432-1192
	<input type="checkbox"/> นายกสมาคมฯ	โทรศัพท์ 08-1751-9219	โทรสาร 0-2239-7917
จาก	<u>จ.สงขลา</u>		
	<input type="checkbox"/> JV-CVX-Shell	โทรศัพท์ 074-331-778	โทรสาร 074-331-290
	<input type="checkbox"/> CTEP	โทรศัพท์ 074-303-300	โทรสาร 074-321-192
	<input type="checkbox"/> CEC	โทรศัพท์ 074-331-027-31	โทรสาร 074-331-029
	<input type="checkbox"/> PTT	โทรศัพท์ 074-331-778	โทรสาร 074-331-019
	<input type="checkbox"/> PTTEP	โทรศัพท์ 074-338-845	โทรสาร 074-338-890
	<u>จ.สุราษฎร์ธานี</u>		
	<input type="checkbox"/> JV-CVX-Bangchak	โทรศัพท์ 0-7728-3045	โทรสาร 0-7728-2935
	<input type="checkbox"/> JV-ESSO-Shell	โทรศัพท์ 0-7722-4121	โทรสาร 077-.....
	<input type="checkbox"/> PTT	โทรศัพท์ 0-7728-3978	โทรสาร 0-7728-1081
	<u>จ.ชุมพร</u>		
	<input type="checkbox"/> IRPC	โทรศัพท์ 0-7752-1074	โทรสาร 0-7752-1355
	<u>จ.ภูเก็ต</u>		
	<input type="checkbox"/> PTT	โทรศัพท์ 0-7728-3978	โทรสาร 0-7728-1081

รายการอุปกรณ์จัดคราบน้ำมันของ STSC ที่ร้องขอ

การจัดส่ง

☐ Spiller มารับอุปกรณ์เอง

ลงชื่อผู้ร้องขอ

วันที่ เวลา โทรศัพท์/ โทรสาร

ส่วนที่ 2 แบบตอบรับการร้องขอ

รายละเอียดการสนับสนุนอุปกรณ์

ลงชื่อผู้อนุมัติ

วันที่ เวลา โทรศัพท์/ โทรสาร

จัดทำโดย : คณะอนุกรรมการงานป้องกันและแก้ไขการรั่วไหลของน้ำมัน เขตพื้นที่ภาคใต้ (STSC)

Remark: Updated information will be available in the SSHE intranet and www.iesg.or.th.

APPENDIX G: LIST OF IESG RESOURCES AT SONGKHLA

No.	Equipment	Trade Mark	Model	Quantity	ประเภท
1	Rope Mop Skimmer (OSR-IESG-STSC-001) - Length of 3 metres-150 mm. Diameter Oleophilic - Floating rope mop pulley (1) - Kit,2 year operation spares kit (1)	Ro-Clean	OM 260 DP	1 set	Skimmer
2	Weir Skimmer (OSR-IESG-STSC-002) - Spate induced self – priming flow pump (1) - House set (1)	Ro-Clean	Deemi mini-max	1 set	Skimmer
3	Disc Skimmer (OSR-IESG-STSC-003) - Power Pack (1เครื่อง) - Hydraulic hose (2 เส้น) - Discharge/ suction hose (2 เส้น) - Manual (1 เล่ม)	Vikoma	T 12	1 set	Skimmer
4	Floating Suction Head (OSR-IESG-STSC-004)	Vikoma	Delta Head	1 set	Skimmer
5	Vacuum Unit (OSR-IESG-STSC-005-U1&U2) - Hopper (Manual 2 เล่ม)	Vikoma	Powervac	2 sets	Skimmer
6	WB 20 X water pump (OSR-IESG-STSC-010) - สาย Discharge / Suction - Manual (1 เล่ม)	Honda	Wp 20X	1 เครื่อง 2 เส้น	Pump
7	Air Compressor (Electric)	PUMA	XM-2525	1 เครื่อง	Air Compressor
8	Air Boom (Hydraulic) (OSR-IESG-STSC-007-U1&U2) - Type 100 hydraulic reel - Heavy duty PVC reel cover - Tow bridle set - Type "H" Power pack - PB 4600 Air inflator (Manual 5 เล่ม) - Air Tube interconnection - Boom repair kit for sea sentinel boom (2 กล่อง)	Vikoma	Sea Sentinel 400 m	2 ชุด 2 ผืน 4 อัน 1 เครื่อง รวม 8 เส้น	Boom
9	Air Boom (Manual) (OSR-IESG-STSC-009) - Reinforced PVC boom bags (8 ถุง) - Tow bridle set (4 อัน)	Vikoma	Sea Sentinel	200 m	Boom
10	Beach Boom (OSR-IESG-STSC-010) - Reinforced PVC boom bags	Vikoma	Shore guardian	100 m	Boom

No.	Equipment	Trade Mark	Model	Quantity	ประเภท
11	Flexi Boom (OSR-IESG-STSC-011)	Vikoma	Flexi Boom 900	405 m	Boom
12	Oil Containment Boom (OSR-IESG-STSC-012)	SK Boom	SK C105U	400 m	Boom
13	AutoBoom Hydraulic OSR-IESG-STSC-008 - Power Pack 1 set - Roller 1 set - Air inflator 1 set	Lamor Lamor	LPP 7HA B8	200 m	Boom
14	Anchor System (OSR-IESG-STSC-017)	Abasco	ASB-25	14 Each	Boom Accessories
15	Tow Bridle (OSR-IESG-STSC-016)	Abasco	TB 25	6 Each	Boom Accessories
16	Sorbent Boom (OSR-IESG-STSC-013)	Abasco	A-8-10	50 Bundles	Absorbent
17	Sorbent Sheet (OSR-IESG-STSC-014)	Abasco	A-150	20 Rolls	Absorbent
18	Tempory Storage (Fast Tank 2000) (OSR-IESG-STSC-018-U1&U2) - Pipe saddle for mumping over tank wall - Ground mat for under tank on rough terrain	Fast Engineering	Fast Tank 2000	2 Sets	Tank
19	Oil Dispersant OSR-IESG-STSC-015 - AGMA DR 379 Oil Dispersant - Slickgone NS Type 2/3 (200 Liters/ Drum) y.2011	AGMA Slickgone NS	DR 379 Type 2/3	7 ถัง 9 ถัง	Dispersant
20	Dispersant Spray Set Boat Spray 100 Dual OSR-IESG-STSC-006 - Pump Unit - AFEDO Nozzles - ถังอลูมิเนียม	Lamor	BS100DFW-TS	1 Set 1 ใบ	Dispersant Spray
21	Cargo Basket OSRE-IESG-BU-001,002/2014	Saftrol	Cargo Basket	2 set	Basket
22	Container 40 feet OSR-IESG-STSC-020	Saim cargo container	Lp 20-005	3 set	Container
23	Container 20 feet (จำหน่ายแล้ว 1 ส.ค 2559 30,000 บาท)	Siam cargo Container	Storage container	1 set	Container
24	CONTAINER 10 feet (OSRE-IESG-001/2014)	Saftrol	Storage container	1 set	Container
25	WATER PUMP สนาม OSR-IESG-STSC-021	yanma		1 set	pump
26	Oil spill Dispersant ;Dasic;slickgone NS -Contain 25L./Pail	Dasic Internationt Limited	Type II/III	32 Pails (800 L)	Dispersant

Remark: Updated information will be available in the SSHE intranet.

APPENDIX H: 2018 PTTEP AUTHORISED PERSONNEL FOR OSRL ACTIVATION

Name	Position/Job Title	Contact No.	Email
Kesara Limmeechokchai	Senior Vice President, Safety, Security, Health & Environment Division	+66 2 537 4753 +66 818181957	Kesara@pttep.com
Waranon Laprabang	Acting EVP., Production Asset Group	+66 2 537 5363 +66 81827 9735	Waranon@pttep.com
Vuthiphon Thuampoomngam	EVP., Engineering and Development Group	+66 2 537 4298 +66 89892 1310	VuthiphonT@pttep.com
Piya Sukhumpanumet	Senior VP, Myanmar Asset	+9595128851 +66 81 8181964	PiyaS@pttep.com
Luck Pasutanavin	Vice President, Safety Operation Department	+66 2 537 4441 +66 2936 2678	LuckP@pttep.com
Lawan Pornsakulsakdi	Vice President, Environment Management Department	+66 2 537 5173 +66 81 801 4149	LawanP@pttep.com
Nirandorn Rojanasomsith	Vice President, Australia Asset	+66 2 537 4413 +61894839411 +66 89 2025894	NirandornR@pttep.com
Khomsan Lertwiriya-prapa	Manager, SSHE	+66 2 537 4000 ext.804 3816 +66 98 826 5452	KhomsanL@pttep.com
Sutus Preuksjamas	SSHE Manager, Myanmar Asset	+66 2 537 2614 +959 431 93374	SutusP@pttep.com
Paul McCormick	SSHE Manager, Australia Asset	+61417958520 +61893209564	PaulM@pttep.com

Remark: Updated information will be available in the SSHE intranet.

APPENDIX I: PTT GROUP NOTIFICATION FORM

PTT Public Company Limited (PTT)

Communication Centre: +66(0)2537 3111/3222/3333/3444 (Tel)
+66(0)2537 3498-9 (Fax)

Oil Spill Response and East Asia Response Limited (OSRL)

Singapore Base: +65 6266 1566 (Tel) +65 6266 2312 (Fax)

Southampton Base: +44 23 8033 1551 (Tel) +44 23 8033 1972 (Fax)

Notification Form – Page 1 of 2

To: PTT Communication Center	Date:
Cc: OSRL	Warning! Ensure telephone contact has been established with the Duty Manager before using Email communication.
From:	Position:
Company:	Contact Number:
Subject: For Your Information	Incident name:
OBLIGATORY INFORMATION REQUIRED – COMPLETE ALL DETAILS	
Name of person in charge	
Position	
Company	
Contact telephone number	
Contact fax number	
Email address	
Spill Details	
Location of spill	
Description of slick (size/direction appearance)	
Latitude / Longitude	
Situation (cross box)	
Date & Time of spill	
Source of spill	
Quantity (if know)	
Spill status (cross box)	
Action taken so far	
Oil type & characteristics	
Name	
Viscosity	
API/SG	
Pour point	
Asphaltene	
Weather	
Wind speed and direction	
Sea state	
Sea temperature	
Tides	
Forecast	

PTT Public Company Limited (PTT)

Communication Centre: +66(0)2537 3111/3222/3333/3444 (Tel)
+66(0)2537 3498-9 (Fax)

Oil Spill Response and East Asia Response Limited (OSRL)

Singapore Base: +65 6266 1566 (Tel) +65 6266 2312 (Fax)
Southampton Base: +44 23 8033 1551 (Tel) +44 23 8033 1972 (Fax)

Notification Form – Page 2 of 2

ADDITIONAL INFORMATION REQUIRED – COMPLETE DETAILS IF KNOW	
Resources at risk	
Clean up resources	
On site / Ordered	
Nearest airport (if know)	
Runway length	
Handling facilities	
Customs	
Handling agent	
Vessel availability	
Equipment deployment	
Recovered oil storage	
Equipment logistics	
Transport	
Secure storage	
Port of embarkation	
Location of command centre	
Other designated contacts	
Special requirements of country	
Security	
Visa	
Medical advise	
Vaccinations	
Others (specify)	
Climate information	

Remark: Updated information will be available in the SSHE intranet.

APPENDIX J: PTT GROUP MOBILISATION AUTHORISATION FORM

Mobilisation Authorisation

To: PTT Communication Center	Date:
Tel: +66 (0) 2537 3111/222/333/444/555	Fax: +66 (0) 2537 3498 - 9
From:	Position:
Company:	Contact Number:
Subject: Mobilisation of OSRL	Incident name:

I, _____ (Name in Block Capitals)
 hereby authorise to request PTT for the activation of OSRL and its resources in connection
 with the oil spill incident of _____ (Name of Ship/Oil Rig or Terminal)
 as of _____ (Time) on _____ (Date)

OSRL shall work under the direction of:
 Name: _____
 Position: _____
 Company: _____

Signature _____ Position _____
 Company name _____

To: OSRL	Date:
Tel: Singapore Base: +65 6266 1566 Southampton Base: +44 23 8033 1551	Fax: Singapore Base: +65 6266 2312 Southampton Base: +44 23 8033 1972
From: PTT Public Company Limited	Contact Number: +66 (0) 2537 8844/55
Subject: Mobilisation of OSRL	Incident name:

I, _____ (Name in Block Capitals)
 hereby authorize the activation of OSRL and its resources in connection with the oil spill
 incident of _____ (Name of Ship/Oil Rig or Terminal)
 as of _____ (Time) on _____ (Date)

Signature _____ Position _____
 PTT Public Company Limited

Remark: Updated information will be available in the SSHE intranet.

APPENDIX K: OSRL NOTIFICATION AND MOBILISATION PROCEDURE

OSRL Request Step

PTTEP is a participant member with OSRL, and therefore has immediate access to Tier 3 technical advice, resources and expertise 365 days a year on a 24 hours basis. The following steps should be followed to request for OSRL's support:

1. In the event of an incident, a call should be placed to one of the following numbers. The Duty Manager (DM) will call Client back within 10 minutes of receiving notification of the call.

Emergency Contact (TELEPHONE)

Singapore **+65 6266 1566**

Southampton **+44 (0)23 8033 1551**

Emergency Contact (FAX)

Singapore **+65 6266 2312**

Southampton **+44 (0)23 8033 1972**

2. Complete the Notification (Appendix L) and Mobilisation Authorisation forms (Appendix M) as necessary, which can be sent to OSRL by fax or email. Under the Participant Member Agreement which governs the mobilisation of resources from OSRL, OSRL must receive official notification to mobilize from one of PTTEP's Nominated Call-out Authorities, summarized in the table on the next page. These are individuals within PTTEP who have been appointed to approve the expenditure of mobilizing Tier 3 equipment.

Remark: Updated information will be available in OSRL website.

APPENDIX L: OSRL NOTIFICATION FORM



OSRL Notification Form

(Initial Incident Information)

Warning! Please telephone the Duty Manager before e-mailing or faxing this form

To	Duty Manager		
OSRL Base	Southampton, UK	Loyang, Singapore	Fort Lauderdale, USA
Telephone	+44 (0)23 8033 1551	+65 6266 1566	+1 954 983 9880
Emergency Fax	+44 (0)23 8072 4314	+65 6266 2312	+1 954 987 3001
Email	dutymanagers@oilspillresponse.com		

Guidance: This information will be used to develop and recommend the most appropriate response strategy. If new information should become available, or the situation changes, please inform the Duty Manager as soon as possible.

Section 1 – Contact Details					
Member Company					
Name of Person Notifying OSRL					
Job Title (Designation)					
Direct Phone Number	Country code		Number		
Mobile Number	Country code		Number		
Fax Number					
Email Address					
Command Centre Address					
Date and Time of Notification	Date and Time		Time Zone		

Section 2 – Location					
Country / Region of Spill					
Latitude of spill (north/south)					
Longitude of Spill (east/west)					
Area Affected	<input type="checkbox"/> Offshore	<input type="checkbox"/> Subsea	<input type="checkbox"/> Shoreline	<input type="checkbox"/> Estuary	<input type="checkbox"/> Other
	<input type="checkbox"/> Port	<input type="checkbox"/> Harbour	<input type="checkbox"/> Inland	<input type="checkbox"/> River	
Water Depth (if applicable)					

Section 3 – Spill Details					
Date and Time of Spill				Time Zone	
Source of Spill					
Cause of Spill					
Status of Spill	<input type="checkbox"/> Secured		<input type="checkbox"/> Uncontrolled		<input type="checkbox"/> Unknown
Product Properties	Product Name / Type				
	Specific Gravity	API			
	Pour Point				
	Wax Content				
	Asphaltene				
	Sulphur Content				
	Viscosity	Reference Temperature		°C	
Type of Release	Instantaneous Release	<input type="checkbox"/>	Volume		
	OR				
	Continuous Release	<input type="checkbox"/>	Release Rate		

State Units

Provide an assay sheet if available.

☐ Assay sheet provided

State Units

Section 3 – Spill Details continued				
Description of Observed Spill	Estimated Quantity			State Units
	Size			
	Appearance			
	Direction of Travel			
Section 4 – Weather and Modelling				
Weather forecast provided? e.g. Excel/Word	<input type="checkbox"/> Yes	<input type="checkbox"/> No, OSRL to source a weather forecast		
Sea Temperature			State Units	
Sea State				
Visibility				
Cloud Base				
Do you require Oil Spill Trajectory Modelling?	<input type="checkbox"/> Surface 2D	<input type="checkbox"/> Sub-surface 3D Additional time and costs apply	<input type="checkbox"/> Not at this time	
Sub-surface 3D Modelling Information if requested	Gas to Oil Ratio	Sm ³ /m ³	Release Hole Diameter	m
Section 5 – Safety and Security				
Highlight any known safety or security risks e.g. high levels of H ₂ S, high risk country				<input type="checkbox"/> Not Applicable
Describe security arrangements for OSRL staff				<input type="checkbox"/> Not Applicable
Section 6 – Resources at Risk (if available)				
Environmental or socio-economic sensitivities that may be impacted. Provide the relevant oil spill contingency plan and sensitivity maps if available.				<input type="checkbox"/> Contingency plan included <input type="checkbox"/> Sensitivity maps included
Section 7 – Equipment (if available)				
Equipment already deployed or being mobilised (other than OSRL resources)				
Section 8 – Further Information				

Remark: Updated information will be available in the SSHE intranet and OSRL website.

APPENDIX M: OSRL MOBILISATION AUTHORISATION FORM



Mobilisation Authorisation Form

Please do not hesitate in contacting the duty manager at the earliest opportunity in the event of an incident or potential incident. Please ensure you telephone the Duty Manager before e-mailing or faxing this completed form

Safety and Security

Oil Spill Response Limited's safety policy requires us to work closely with the mobilising party to ensure all aspects of safety and security are addressed for our personnel.

To	Duty Manager		
OSRL Base	Southampton, UK	Loyang, Singapore	Fort Lauderdale, USA
Telephone	+44 (0)23 8033 1551	+65 6266 1566	+1 954 983 9880
Emergency Fax	+44 (0)23 8072 4314	+65 6266 2312	+1 954 987 3001
Email	dutymanagers@oilspillresponse.com		

Details of Authorised Contact			
Incident Name			
Mobilising Company			
Name of Person Authorising OSRL			
Position of Authorising Representative			
Direct Phone Number	Country Code	Number	
Mobile Number			
Fax Number			
Email Address			

Invoice Address if available	
Purchase Order Number	

I, the above named Authorising Representative for the Mobilising Company, approve activation of Oil Spill Response Limited and its resources in connection with the above incident under the terms of the Agreement in place between the above stated Company and Oil Spill Response Limited.

Signature:		Date / Time:		
------------	--	--------------	--	--

If Oil Spill Response Limited personnel are to work under another party's direction please complete details below:

Directing Party's Details	
Company	
Contact Name	
Position in Incident	
Direct Phone Number	
Mobile Number	
Fax Number	
Email Address	

Remark: Updated information will be available in the SSHE intranet and OSRL website.

APPENDIX N: SPILL CAPABILITY ASSESSMENT CHECKLIST

Process for completion

The 'Self Check' is divided into four sections dealing with each aspect of response preparedness: Management Organisation & Training, Planning, Notification and Mobilization, and Response.

A number of questions are asked to gauge the levels of preparedness particularly in the context of interface with IESG and its members. The aim is to conduct a quick and simple gap analysis of the relationship and identify any actions that should be completed to ensure that IESG and its members resources could be effectively integrated into the response.

Answers to the questions are recorded on a numerical matrix indicating whether the issue is considered to be adequately addressed. Certain aspects are considered critical success factors, and failure in these areas would be material to the ability of IESG and its members to assist the member (spill owner), or more importantly, for the member to be able to respond effectively. The answers should be dependent upon the question context.

Answers	Status
Yes/Satisfactory/this year	1
In need of action/Review/last year	2
No/Unsatisfactory/Before last year	3

Section 1 Management Organisation & Training

It is essential that there is a robust management structure to lead the response to any incident. The members of the response team should be aware of their individual roles and responsibilities and trained in oil spill response. The team should be aware of how IESG and its members interface with their response organisation. The organisation should be regularly exercised.

Management Organisation & Training		1	2	3
Reference document - Spill Response Plan				
M1	Is there a management structure for dealing with an oil spill incident?			
M2	Are all members of the team aware of their individual Roles and Responsibilities?			
M3	Is there a Response management System in place?			
M4	Have all of the team members been trained in oil spill response?			
M5	Have members of the management team been briefed in how IESG and its member operate and their respective responsibilities?			
M6	When was the management team last exercise?			

Section 2 Planning

There should be a contingency plan in place to co-ordinate the response to an oil spill which will bring together various elements of the response, including cleanup equipment. It should be kept up to date and tested on a regular basis. The plan should interface with other adjacent plans. And, should have an appropriate and relevant risk assessment and identify where resources to support tier 1, 2 and 3 response can be accessed.

Planning		1	2	3
Reference document - Spill Response Plan				
P1	Is there a contingency plan in place?			
P2	When was it last review/update?			
P3	When was the plan last exercise?			
P4	Does the plan integrate with IESG response?			
P5	Does the plan interface with national and other adjacent local plans?			
P6	Does the plan risk assessment reflect the scope of the operation and anticipate credible level of IESG and its members' involvement?			
P7	Does the credible Tier 1 spill scenario identified?			
P8	Does the cleanup equipment appropriate with the Tier 1 spill scenario?			
P9	Does the equipment maintenance and test program in place?			
P10	Does the equipment mobilization & deployment logistics been planned and tested?			

Section 3 Notification and Mobilization

An effective response is dependent upon an effective notification and mobilization system to alert the responders. This section deals with the alerting system, and ensures that all parties are aware of the required information and authorities to mobilize the support response from IESG and its members.

Notification and Mobilization		1	2	3
Reference document - Spill Response Plan				
N1	Is there a procedure in place to notify IESG of an incident?			
N2	When was it last review/update? (<i>notification procedure</i>)			
N3	When was the procedure last exercise?			
N4	Is there a procedure in place to mobilize IESG support in the event of an incident?			
N5	When was it last review/update? (<i>mobilization procedure</i>)			
N6	When was the system last exercise?			
N7	Are you aware of the information needed by IESG & members to mobilize a response?			
N8	Are you aware of the advice and information support that can be accessed from IESG?			
N9	Are you aware of the response time likely to be achieved in the event of a call?			

Section 4 Response

In order for IESG and its members to be able to respond effectively with the member (spill owner) there is a need for infrastructure items to support the response. This section deals with these elements.

Response		1	2	3
Reference document - Spill Response Plan				
R1	Is there a safety management plan in place for response operations?			
R2	Have response personnel been trained in the safety aspects of oil spill response?			
R3	Is there a communications system to enable effective co-ordination of the response?			
R4	Have secure equipment stockpile areas been identified?			
R5	Have the logistical arrangements been identified to import and deploy additional equipment delivered by IESG and its members?			
R6	Has a waste management plan been developed for the response operation?			
R7	When was the system last exercise?			

Action Summary

Action to be taken		Who	When
Management Organisation & Training			
M1			
M2			
M3			
M4			
M5			
M6			
Planning			
P1			
P2			
P3			
P4			
P5			
P6			
P7			
P8			
P9			
P10			
Notification and Mobilization			
N1			
N2			
N3			
N4			
N5			
N6			
N7			
N8			
N9			
Response			
R1			
R2			
R3			
R4			
R5			
R6			
R7			
TO BE COMPLETED BY BOTH PARTIES.			

Site representative.....

Check by.....

Date.....



บริษัท ปตท.สผ. สยาม จำกัด

รายงานผลการปฏิบัติตามมาตรการป้องกันและแก้ไขผลกระทบสิ่งแวดล้อม และมาตรการติดตามตรวจสอบผลกระทบสิ่งแวดล้อม
โครงการขุดเจาะน้ำมันบนฝั่งที่บ้านหนองจิกและบ้านโนนพลวง และโครงการพัฒนาระบบท่อส่งน้ำมันจากแหล่งผลิต ยางเมือง และไทรงาม
พื้นที่แปลงเอส 1 จังหวัดกำแพงเพชร พิชณุโลก และสุโขทัย
ฉบับเดือนมกราคม - ธันวาคม พ.ศ.2565

ภาคผนวกที่ 10

S1 Emergency Response Plan



PTTEP

PTT Exploration and Production Public Company Limited

S1 Emergency Response Plan






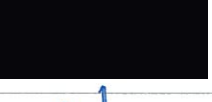




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Review and Approve

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THIS DOCUMENT WILL BE REVIEWED EVERY 5 YEARS FROM DATE OF APPROVAL OR REVISED EARLIER IF NECESSARY.

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INTRODUCTION

1. PURPOSE

In the context of S1 Emergency Response Plan (herein referred to as “Plan”), an emergency is any event, happening with or without advance warning, causing, or which may cause, death or injury, damage to property or the environment or disruption to the community and/ or business within PTTEP S1 onshore operation premises.

The plan is developed for guiding S1 asset personnel to clearly understand the roles and responsibilities of the S1 Emergency Response Team (ERT) during an actual or potential emergency that could cause an impact to S1 asset and its associated stakeholders, especially staff, contractors and surrounding communities. The emergency response shall be actioned to align with the plan as well as related Thai laws and regulations. Apart from S1 ERT member roles and responsibilities and their responsive actions outlined in this document, the emergency preparedness, resources, training and competency, drills & exercises, and recovery/mitigation measures should be also included in this document for ensuring effective emergency management.

- The objectives of emergency response are to:-
- prevent fatalities and injuries;
- reduce damage to plants, facilities, and equipment;
- protect the communities and the environment; and
- accelerate the resumption of normal operations.

The development of the Emergency Response Plan (ERP) begins with a vulnerability assessment. The results of study:-

- Identifies the emergency situations likely to occur and threaten life, environment, community, and S1 operations;
- Identifies means and resources necessary for a given emergency situation;
- Defines S1 emergency organization and key personnel involved with their roles & responsibilities;
- Defines the actions to be taken by S1 ERT members for the emergency preparedness and response;
- Defines the actions to be taken by S1 Community & Media Response Team (CMRT) and Relative Response Team (RRT) for emergency preparedness and response;
- Defines the correct and clear lines of command and reporting in an emergency;
- Describes the guidelines for community handlings in an emergency; and
- Defines interface between S1 ERT and PTTEP corporate Emergency Management Team (EMT) and Crisis Management Team (CMT) and other external parties.

The plan should ensure an integrated response at the appropriate level to any related emergency situations and to minimize the potential impact on People, Environment, Legal Compliance, Asset & Property, and Reputation.

The response of S1 ERT at all levels of the organization will follow the following priorities.

1. Protection of People
2. Protection of Environment
3. Protection of Asset and Property (including infrastructure, machinery, equipment, and facilities)
4. Protection of Reputation and Business

2. SCOPE

This plan applies to all emergency situations occurred within PTTEP S1 and L22/43 Operation premises owned or controlled by PTTEP subsidiaries.

This also includes other relevant agencies that may be requested to provide assistance or expertise to cope with PTTEP S1 emergency situations.

Scope of S1 emergency response covers all operating areas of S1 asset and L22/43 concession areas as well as the activities outside the owned premises, but under the responsibility of S1 asset e.g. land or rail transports, accommodating facilities, etc.

The areas which S1 ERP shall cover are:-

- LKU flow station including crude process area, LPG process, spheres & loading area, and LKU crude depot;
- Production sub-stations including NTM-A, STN-A, and NSG-A;
- Active production well locations;
- Non-productive well locations;
- Flow lines connecting to well locations;
- Bung Pra depot;
- S1 well services workshop;
- S1 material yard and material storage locations;
- Chong Non See (CNS) rail tanker inspection and maintenance workshop; and
- PHS housing compounds.

The activities which S1 ERP shall cover are:-

- Production operation;
- Brownfield construction project activities;

- Drilling activities;
- Well service activities;
- Maintenance & inspection activities;
- Land transports including oil movement, materials and personnel transportation; and
- Other emergency situations which may arise e.g. community concerns, security concerns, natural disasters, etc.

Pertaining to other operations in S1 concession area e.g. drilling, greenfield construction, seismic survey, rig camps, etc. within the scope of S1 concessionaire's liability that have their own emergency organization, they shall establish their own On-Scene Commander (OSC) and responsive team.

The OSC shall report all incidents to S1 Emergency Response Team (ERT) primarily via S1 telecom officer. In any case when situation becomes uncontained by site emergency response organization, S1 ERT comes to take over the command. The OSC constantly report to Deputy Emergency Team Leader (DERTL).

Note: All appendices of this document shall cover:-

- Appendix A: Emergency Call Message from LKU Telecom Officer
- Appendix B: Initial Emergency Report Form
- Appendix C: Emergency Log Sheet
- Appendix D: Locations of Predetermined Muster Points
- Appendix E: Examples of Communication Tools
- Appendix F: Example of S1 Duty Roster
- Appendix G: Incident Guideline for Emergency Situations
- Appendix H: Prompt Cards
- Appendix I: Emergency Contact Lists and Numbers

All appendices of this document shall be reviewed and endorsed by the document owner, Vice President (VP) of S1 Production Operations Department. The appendices will be amended and added without requirements for the document's revision and approval endorsement.

REQUIREMENTS

3. EMERGENCY MANAGEMENT

3.1 PTTEP EMERGENCY AND CRISIS CLASSIFICATION

With reference to the 3-Tier definition of Emergency & Crisis in PTTEP Emergency Crisis Management Standard (SSHE-106-STD-500), emergency covers the situations in tier 1 and tier 2; whereas, a crisis situation is classified as and treated by **a tier 3 response level**.

Tier 1:

- The situation involves a problem, which has limited impact and minimal potential for escalating, poses a threat to the safety & the environment **and poses no threat to the general public**.
- The situation can be handled by the on OSC with the site operation team and/or intervention team within a reasonable timeframe. Tier 1 emergency response can be totally managed by DERTL, being appointed based on the area affected by an incident. After tier 1 emergency situation can be managed and resumed to normal operation, the situation and response details shall be reported to the duty officer and ERTL respectively.

Examples of tier 1 emergency situations in the S1 operation area are, but not limited to, the following.

- Small manageable fires and/or gas leaks, accidents or safety & security threats;
- No hazard to the public in adjacent areas exists;
- Minor injuries may have occurred (treatable through first aid); and
- Danger to the environment is minimal, however, the potential for escalation exists.

Tier 2:

- The situation involves an emergency with greater magnitude and major severity in nature or has the potential to escalate and continue for a significant period of time, or cause a significant impact to public or environment that requires sophisticated implications with external parties.
- The situation involves damage to S1 facilities/assets and/or impact on 3rd parties and may pose a significant threat to safety, environment, and facilities/assets.
- The situation may request external assistance from local authorities in the affected areas i.e. local fire brigade, Sub-district Administrative Office (SAO), local hospital/public health center, Oil Industry Environment Safety Group Association of Thailand (IESG) or the nearby external organizations, and etc.
- The situation may result in the activation of S1 Asset EMT in BKK.

For tier 2 emergency situations, ERT will respond to the emergency site while S1 asset EMT in BKK may be established to manage and provide relevant support to the S1 ERT and/or the affected site.

S1 asset EMT members should include the top management/authorized person of the S1 asset and other key positions from various disciplines that are, but not limited to, the following.

1. EMT Leader – Thai Onshore Asset Senior Vice President (SVP) acts as EMT Leader;
2. Common members such as BKK S1 asset duty, logistic duty, SSHE duty, corporate RRT duty, communication team, IT duty, administration team duty, event logger, etc.
3. Specific members such as drilling duty, construction duty, well operation duty, etc.

Examples of tier 2 emergency situations in S1 operation area are the followings:

- Employees, contractors, service providers, visitors, community, the environment, property, facilities (or any combination of these) are exposed to a significant hazard.
- Non-essential personnel in adjacent areas of S1 operating areas such as LKU flow station, production sub-stations, active well sites, flow lines, BPR depot and etc will need to be evacuated.
- Deaths, and/or multiple serious injuries may have occurred (ambulance and/or medivac may be required).
- There may be significant environmental impacts such as the large volume of hydrocarbon leaks to site surrounding areas.

Tier 3:

- Involves a catastrophic scenario resulted in multiple injuries, fatalities, major fires, environmental damage, toxic gas release, significant business interruption and poses a significant threat to the environment or damage to PTTEP assets and finally brings in significant media attention.
- Requests external assistance from aboard or international resources i.e. the Oil Spill Response Limited Company (OSRL) and the East Asia Response Limited Company (EARL), etc.
- Results in the activation of CMT.

The CMT members consist of the PTTEP top management at the Corporate Level and other supporting functions. Their responsibilities and procedures are defined in the PTTEP CMP (12148-PDR-SSHE-501).

PTTEP Risk Assessment Matrix (RAM) demonstrated in appendix D of PTTEP SSHE risk management standard (11038-STD-SSHE-401) can be used as a guideline to consider the initial appropriate levels of response to any particular event.

3.2 S1 EMERGENCY RESPONSE TEAM ORGANIZATION

S1 production operations are governed by Vice President (VP) of S1 Production Operations Department with a total of six (6) sections of the followings:

1. Production Section (PS1/P);
2. Maintenance Section (PS1/M);
3. Oil Movement and Transportation Section (PS1/O);
4. Production Operations Support Section (PS1/T);
5. Land Acquisition, Permits & Operation Services Section (PS1/L); and
6. Safety, Security, Health, and Environment (SSHE) Section (PS1/S).

Additionally, there are eight (8) support functions providing supports to S1 production operations. These support functions consist of:

1. Public Affairs Section (PTN/A)
2. Operations Training Center Section (HRC/O)
3. Onshore Construction Execution Section (ECM/N)
4. Drilling Operations Section (ETN/D)
5. Well Services Section (ETN/W)
6. Well Services Workshop (ETN)
7. Lan Krabue Support Base Section (PLG/M)
8. Lifting Equipment & Services (PLG/L)

An organigram of S1 production operations is illustrated in **Figure 1**.

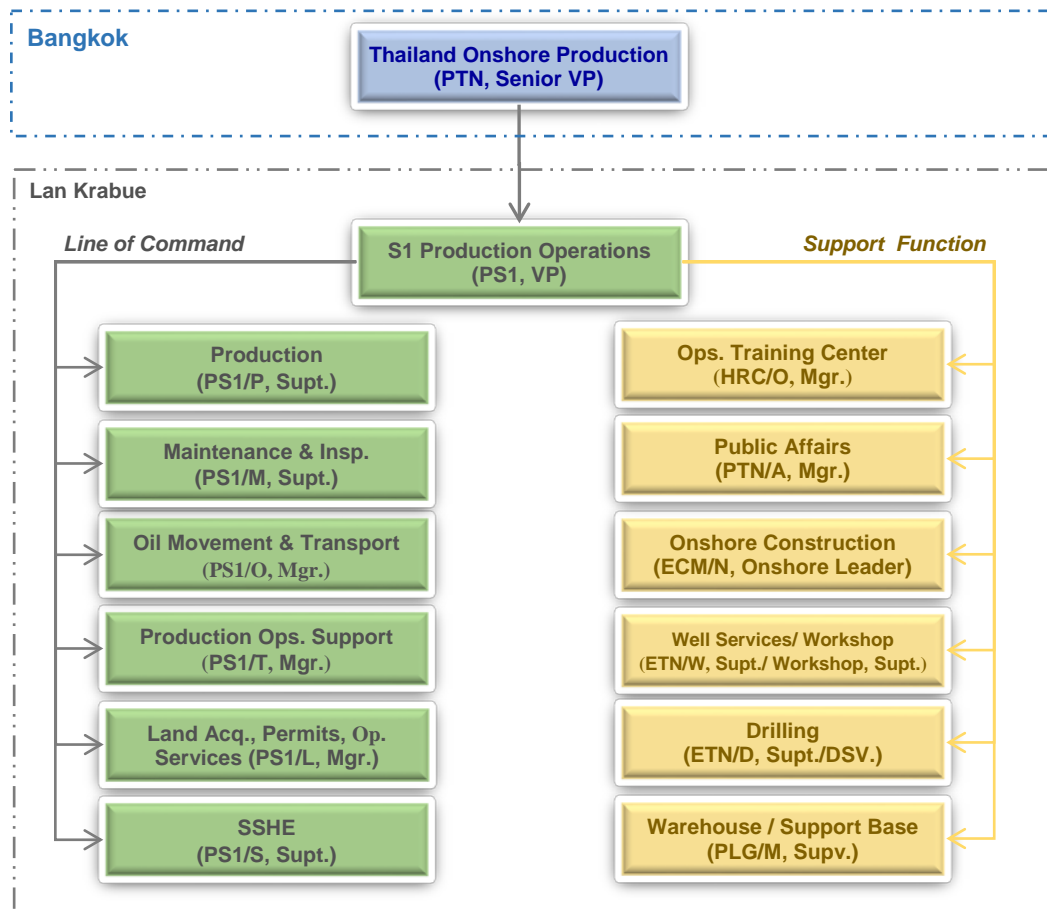


Figure 1: Organigram of S1 production Operations

S1 production operations management team including VP, section heads and representatives from support functions specified in the above organigram is assigned to take roles and responsibilities in ERT depicted in the following paragraphs of this document.

ERT is lead by VP and consists of staff with roles and responsibilities necessary for responding to emergency situations likely to occur in S1 production operations as well as with the conjoined activities e.g. drilling, well workover, project construction, road transport, etc.

ERT assesses the occurring emergency situation & consequences, then determines & prioritize the potential impacts and responsive actions to ensure that emergency operations are conducted in a safe manner while the given emergency situation is sufficiently contained and controlled. To do so, ERT directs, supports and collaborates with the on-scene responsive team, concerned external parties e.g. local authorities, local communities, media, staff's relatives, contractors, customers, etc. In parallel, ERT communicates and collaborates with S1 asset duty person and EMT.

ERT members are:-

1. Emergency Response Team Leader (ERTL) – Vice President of S1 production operations department;
2. Deputy Emergency Response Team Leader (DERTL) – appointed by ERTL, by default the top authority of the area affected by the given emergency situation otherwise specifically appointed by ERTL;
3. Duty Officer – S1 production superintendent otherwise specifically appointed by ERTL;
4. S1 SSHE Advisor – S1 SSHE superintendent or his delegate;
5. Event Logger – S1 production engineer;
6. Muster Logger / Deputy Muster Checker – S1 SSHE officer (operational safety);
7. Muster Checkers – the trained persons assigned to the given muster points;
8. On-scene Commander (OSC) – appointed persons in charge of site location affected by the given emergency situation;
9. Site Operation Team – Normally regular staff who are working at site location;
10. Intervention Team/Firefighting Team – Trained staff who are competent in emergency, fire and rescue operations appointed by ERTL;
11. Medical Team – LKU Doctor/Nurse, Ambulance, and Stretcher Team;
12. LKU Telecommunication Officer (24/7); and
13. On-call Support Team – includes transportation/logistic, drilling, well service, construction, maintenance, IT/Telecom, spill response team, medical response team (CMRT), relative response team (RRT), security, and administration & finance.

The organigram of S1 ERT is illustrated in **Figure 2**.

ERT member assignments for the areas under S1 premise are illustrated in **Table 1 - 5**.

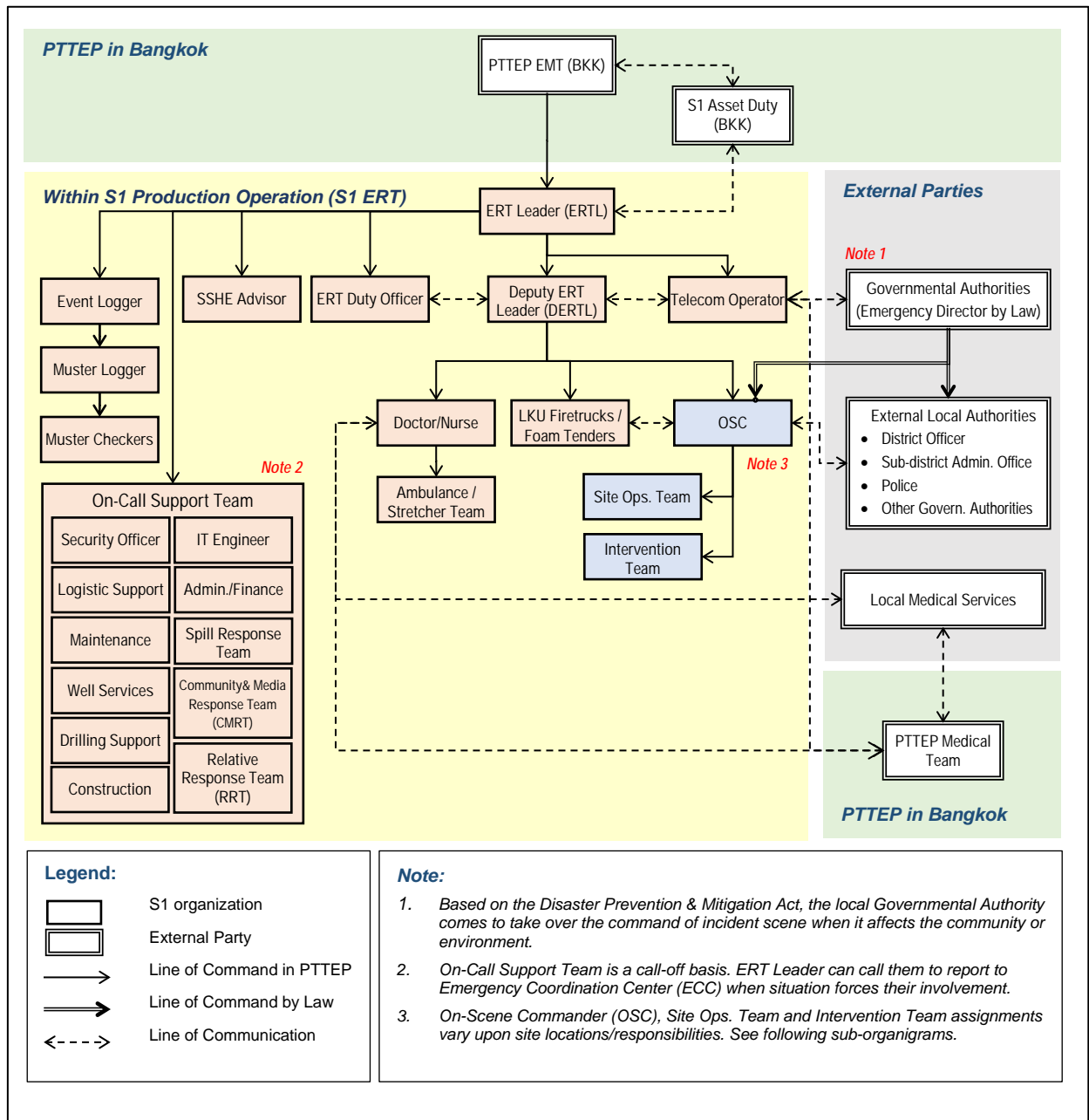


Figure 2: Overall S1 Emergency Response Team Organization

Table 1: ERT Assignment for LKU Flow Station, Workshops and Offices

ERT Assignment for LKU Flow Station, Workshops and Offices		
Role	Assigned to:	Primary Master Point
ERT Leader	VP, S1 Production Operations	ECC
ERT Duty Officer	Production Superintendent	ECC
Deputy ERT Leader	Production Superintendent Workshop Superintendent (Well Service Workshop)	ECC
SSHE Advisor	SSHE Superintendent	ECC
Telecom Operator	On duty telecom Operator	Telecom Room
Event Logger	Production Engineer	ECC
<u>LKU Flow Station and Offices</u>		
On-Scene Commander (OSC)	LKU Plant Supervisor	LKU CCR
Main Muster Logger	SSHE Officer (operation safety)	ECC
Muster Checker 1	Wellsite Supervisor 2	Main Muster Point @ Fire station
Muster Checker 2	Public Affairs Officer	Muster Point #2 @ PNEC Building
Muster Checker 3	LKU Plant Foreman	Muster Point #3 @ LKU CCR
<u>Well Services Workshop</u>		
On-Scene Commander (OSC)	Workshop Supervisor	Well Services Workshop
Area Muster Logger	Workshop Team Leader	Well Services Workshop
Muster Checker	Snr. Tech. (Workshop and General Services)	Muster Point @ In front of the workshop
<u>Material Yard and Material Storage Locations</u>		
On-Scene Commander (OSC)	LKU Support Base Supervisor	Material Yard
Area Muster Logger	Warehouse & Material Yard Team Leader	Material Yard
Muster Checker	Snr. Store Keeper	Muster Point @ In front of the material yard
ERT Assignment Details		
Doctor/Nurse	Doctor/Nurse	Clinic
Ambulance	On duty Ambulance Driver	Clinic
LKU Fire Truck FT01	SSHE Officer (Emergency)	Fire Station
LKU Fire Truck FW01	SSHE Senior Tech. (Emergency)	Fire Station
LKU Foam Tender Truck 1	LKU Depot Operator #1	LKU Depot
LKU Foam Tender Truck 2	LKU Depot Operator #2	LKU Depot
Site Operations Team: <ul style="list-style-type: none"> - Production Supervisor - Power Plant Operator - Panel Operator 	LKU Plant Supervisor Maintenance Power Plant Operator Lead Production Operator (CCR) Senior Production Operator (CCR)	LKU CCR LKU Switchgear Room LKU CCR LKU CCR

ERT Assignment for LKU Flow Station, Workshops and Offices		
Intervention Team: Fire Chief Fireteam Leader 1 - Fireteam 1 member - Fireteam 1 member Fireteam Leader 2 - Fireteam 2 member / Crude/LPG Fire Pump - Fireteam 2 member Fireteam Leader 3 (Backup – F/S) - Fireteam 3 member - Fireteam 3 member Fireteam Leader 4 (Backup – West Well Sites) - Fireteam 4 member - Fireteam 4 member Fireteam Leader 5 (Backup – East Well Sites) - Fireteam 5 member - Fireteam 5 member - Fireteam 5 member	Lead Production Operator (LKU Flow Station) On-duty Production Operator #1 On-duty Production Operator #2 On-duty Production Operator #3 On-duty Production Operator #4 On-duty Production Operator #5 On-duty Lab Technician Off-duty Production Operator #1 Off-duty Production Operator #2 Off-duty Production Operator #2 On-duty Production Operator #1 On-duty Production Operator #2 On-duty Production Operator #3 On-duty Production Operator #1 On-duty Production Operator #2 On-duty Production Operator #3 On-duty Production Operator #4	LKU CCR LKU Flow Station LKU Flow Station LKU Flow Station LKU Flow Station LKU Flow Station LKU Flow Station LKU Accommodation LKU Accommodation LKU Accommodation West Well Sites West Well Sites West Well Sites East Well Sites East Well Sites East Well Sites East Well Sites
On-Call Support Team: - Security Officer - IT Engineer - Logistics Support - Admin./Finance - Construction - Maintenance - Spill Response Team - Community & Media Response Team - Relative Response Team	GGI security Supervisor IT and Telecommunications Supervisor Oil Movement and Transportation Manager Cost Coordination Officer Onshore Execution Team Leader Maintenance Superintendent BRK Intertransport Co., Ltd. Public Affairs Manager Operations Training Center Manager	LKU Gate 1 Officer Main Muster Point @ Fire Station Main Muster Point @ Fire Station Main Muster Point @ Fire Station Main Muster Point @ Fire Station Main Muster Point @ Fire Station BRK Office Main Muster Point @ Fire Station Main Muster Point @ Fire Station

Table 2: ERT Assignment for Well Sites and MPFs (West, East & North)

ERT Assignment for Well Sites and MPFs (West, East & North) including DDC training center		
Role	Assigned to:	Primary Master Point
ERT Leader	VP, S1 Production Operations	ECC
ERT Duty Officer	Production Superintendent	ECC
Deputy ERT Leader	Production Superintendent	ECC
SSHE Advisor	SSHE Superintendent	ECC
Telecom Operator	On duty telecom Operator	Telecom Room
Event Logger	Production Engineer	ECC
Muster Logger	SSHE Officer (operation safety)	ECC
Muster Checker	Assigned Operator	Affected Well Site / MPF
Doctor/Nurse	Doctor/Nurse	Clinic
Ambulance	On duty Ambulance Driver	Clinic
LKU Fire Truck FT01 LKU Fire Truck FW01	SSHE Officer (Emergency) SSHE Senior Tech. (Emergency)	Fire Station
LKU Fire Truck FT02 LKU Fire Truck FW02	Fire Truck Driver (Emergency) Fire Truck Driver (Emergency)	NTM-A
LKU Foam Tender Truck 1 LKU Foam Tender Truck 2	LKU Depot Operator #1 LKU Depot Operator #2	LKU Depot LKU Depot
On-Scene Commander (OSC)	Affected Area Supervisor (Field Supervisors – North, East, West)	LKU Office
Site Operations Team: <ul style="list-style-type: none"> - Production Supervisor - Production Operator - LKU CAO Operator - NTM CCR Operator - STN CCR Operator 	Field Supervisors (North including NTM-A & STN/A, East, West) Affected Area Operators (MPFs) Lead Production Operator (CAO) Production Operator (CAO) Production Operator (NTM-A) Production Operator (STN-A)	LKU Office Affected Well Site / MPF CAO Room NTM-A STN-A
Intervention Team (Well Sites): <ul style="list-style-type: none"> - Fire Chief - Fireteam Leader 1 <ul style="list-style-type: none"> - Fireteam 1 member - Fireteam 1 member - Fireteam Leader 2 (Back-up – Well Sites) <ul style="list-style-type: none"> - Fireteam 2 member - Fireteam 2 member - Fireteam 2 member - Fireteam Leader 3 (Back-up – Well Sites) <ul style="list-style-type: none"> - Fireteam 3 member 	Well Sites in a radius of 30 km from LKU Flow Station including DDC training center Lead Production Operator (Well Sites) On-duty Production Operator #1 On-duty Production Operator #2 On-duty Production Operator #3 On-duty Production Operator #1 On-duty Production Operator #2 On-duty Production Operator #3 On-duty Production Operator #4	Affected Well Sites Affected Well Sites Affected Well Sites Affected Well Sites Other Well Sites Other Well Sites Other Well Sites Other Well Sites Other Well Sites LKU Accommodation

ERT Assignment for Well Sites and MPFs (West, East & North) including DDC training center		
<ul style="list-style-type: none"> - Fireteam 3 member - Fireteam 3 member 	Off-shift duty Production Operator #1 Off-shift duty Production Operator #2 Off-shift duty Production Operator #3 Off-shift duty Production Operator #4	LKU Accommodation LKU Accommodation LKU Accommodation
Intervention Team (NTM-A): <ul style="list-style-type: none"> - Fire Chief - Fireteam Leader 1 <ul style="list-style-type: none"> - Fireteam 1 member - Fireteam 1 member - Fireteam 1 member - Fireteam 1 member - Fireteam 2 member 	Lead Production Operator (NTM-A) On-duty Production Operator #1 Off-shift duty Production Operator #1 Off-shift duty Production Operator #2 Off-shift duty Production Operator #3 Off-shift duty Production Operator #4 Operators assigned to LKU Flow Station, E&W well sites	NTM-A NTM-A NTM-A Accommodation NTM-A Accommodation NTM-A Accommodation NTM-A Accommodation LKU Flow Station, East/West Well Sites
Intervention Team (STN-A): <ul style="list-style-type: none"> - Fire Chief - Fireteam 3 member 	On-duty Production Operator #1 Production Operators assigned to NTM-A, east & west well sites	STN-A East/West Well Sites, NTM-A
Intervention Team (MPFs):	Request support by nearby production hub and/or external local authorities	The other production hub
On-Call Support Team: <ul style="list-style-type: none"> - Security Officer - IT Engineer - Logistics Support - Admin./Finance - Construction - Maintenance - Spill Response Team - Community & Media Response Team - Relative Response Team 	GGI security Supervisor IT and Telecommunications Supervisor Oil Movement and Transportation Manager Cost Coordination Officer Onshore Execution Team Leader Maintenance Superintendent BRK Intertransport Co., Ltd. Public Affairs Manager Operations Training Center Manager	LKU Gate 1 Officer Main Muster Point @ Fire Station Main Muster Point @ Fire Station Main Muster Point @ Fire Station Main Muster Point @ Fire Station Main Muster Point @ Fire Station BRK Office Main Muster Point @ Fire Station Main Muster Point @ Fire Station

Table 3: ERT Assignment for Bung Pra (BPR) Depot

ERT Assignment for Bung Pra (BPR) Depot		
Role	Assigned to:	Primary Master Point
ERT Leader	VP, S1 Production Operations	ECC
ERT Duty Officer	Production Superintendent	ECC
Deputy ERT Leader	Oil Movement and Transportation Manager	ECC
SSHE Advisor	SSHE Superintendent	ECC
Telecom Operator	On duty telecom Operator	Telecom Room
Event Logger	Production Engineer	ECC
Main Muster Logger	SSHE Officer (operation safety)	ECC
Affected Area Muster Logger	BPR Depot Operator	BPR Depot
Muster Checker (Road Side)	BPR Depot Senior Security Guard	Muster Point @ In front of T-904
Muster Checker (Rail Side)	BPR Depot Security Guard	Muster Point @ In front of security guardhouse
Doctor/Nurse	Doctor/Nurse	Clinic
Ambulance	On duty Ambulance Driver	Clinic
LKU Fire Truck FT01 LKU Fire Truck FW01	SSHE Officer (Emergency) SSHE Senior Tech. (Emergency)	Fire Station
NTM Fire Truck FT02 NTM Fire Truck FW02	Fire Truck Driver (Emergency) Fire Truck Driver (Emergency)	NTM-A
LKU Foam Tender Truck 1 LKU Foam Tender Truck 2	LKU Depot Operator #1 LKU Depot Operator #2	LKU Depot LKU Depot
On-Scene Commander (OSC)	BPR Depot Supervisor	BPR Depot
Site Operations Team: - Depot Supervisor	BPR Depot Supervisor	BPR Depot
Intervention Team: - Fire Chief - Fireteam Leader 1 - Fireteam 1 member - Fireteam 1 member - Fireteam 1 member - Fireteam 1 member - Fireteam Leader 2 - Fireteam 1 member - Fireteam 1 member - Fireteam 1 member - Fireteam 1 member - Fire Water Pump Operator - First Aider	BPR Depot Operator Rail Side Loader Foreman Rail Side Loader North #1 Rail Side Loader North #2 Rail Side Loader North #3 Rail Side Loader North #4 Rail Side Loader South #1 Rail Side Loader South #2 Rail Side Loader South #3 Rail Side Loader South #4 Road Side Loader Road Side Loader Foreman Tractor Driver	BPR Depot BPR Depot (Rail Side) BPR Depot (Rail Side) BPR Depot (Rail Side) BPR Depot (Rail Side) BPR Depot (Rail Side) BPR Depot (Rail Side) BPR Depot (Rail Side) BPR Depot (Rail Side) BPR Depot (Rail Side) BPR Depot (Rail Side) BPR Depot (Road Side) BPR Depot (Rail Side)
On-Call Support Team: - Security Officer	GGI security Supervisor	LKU Gate 1 Officer

ERT Assignment for Bung Pra (BPR) Depot		
- IT Engineer	IT and Telecommunications Supervisor	Main Muster Point @ Fire Station
- Logistics Support	Oil Movement and Transportation Manager	Main Muster Point @ Fire Station
- Admin./Finance	Cost Coordination Officer	Main Muster Point @ Fire Station
- Construction	Onshore Execution Team Leader	Main Muster Point @ Fire Station
- Maintenance	Maintenance Superintendent	Main Muster Point @ Fire Station
- Spill Response Team	BRK Intertransport Co., Ltd.	BRK Office
- Community & Media Response Team	Public Affairs Manager	Main Muster Point @ Fire Station
- Relative Response Team	Operations Training Center Manager	Main Muster Point @ Fire Station

Table 4: ERT Assignment for CNS Rail Tanker Inspection and Maintenance Workshop

ERT Assignment for CNS Rail Tanker Inspection and Maintenance Workshop		
Role	Assigned to:	Primary Master Point
ERT Leader	VP, S1 Production Operations	ECC
ERT Duty Officer	Production Superintendent	ECC
Deputy ERT Leader	Oil Movement and Transportation Manager	ECC
SSHE Advisor	SSHE Superintendent	ECC
Telecom Operator	On duty telecom Operator	Telecom Room
Event Logger	Production Engineer	ECC
Main Muster Logger	SSHE Officer (operation safety)	ECC
Affected Area Muster Logger	CNS Site Manager (contractor)	CNS
Muster Checker	CNS Safety Officer (contractor)	Muster Point @ In front of security guardhouse
Doctor/Nurse	Doctor/Nurse	-
On-Scene Commander (OSC)	Depot Supervisor (BCP/ TOC/ PTTGC) or CNS Site Manager (contractor)	CNS
Intervention Team	Request support by external local authorities such as BKK metropolitan officer, sub-district office, local medical services, police and/or other government authorities	External local authorities
On-Call Support Team: <ul style="list-style-type: none"> - Security Officer - IT Engineer - Logistics Support - Admin./Finance - Construction - Maintenance - Spill Response Team - Community & Media Response Team - Relative Response Team 	GGI security Supervisor IT and Telecommunications Supervisor Oil Movement and Transportation Manager Cost Coordination Officer Onshore Execution Team Leader Maintenance Superintendent BRK Intertransport Co., Ltd. Public Affairs Manager Operations Training Center Manager	LKU Gate 1 Officer Main Muster Point @ Fire Station Main Muster Point @ Fire Station Main Muster Point @ Fire Station Main Muster Point @ Fire Station Main Muster Point @ Fire Station BRK Office Main Muster Point @ Fire Station Main Muster Point @ Fire Station

Table 5: ERT Assignment for PHS Housing Compounds

ERT Assignment for PHS Housing Compounds		
Role	Assigned to:	Primary Master Point
ERT Leader	VP, S1 Production Operations	ECC
ERT Duty Officer	Production Superintendent	ECC
Deputy ERT Leader	Production Superintendent	ECC
SSHE Advisor	SSHE Superintendent	ECC
Telecom Operator	On duty telecom Operator	Telecom Room
Event Logger	Production Engineer	ECC
Main Muster Logger	SSHE Officer (operation safety)	ECC
Affected Area Muster Logger	Security Guard	PHS Housing Compounds
Muster Checker	Security Guard	Muster Point @ In front of security guardhouse
Doctor/Nurse	Doctor/Nurse	Clinic
Ambulance	On duty Ambulance Driver	Clinic
LKU Fire Truck FT01 LKU Fire Truck FW01	SSHE Officer (Emergency) SSHE Senior Tech. (Emergency)	Fire Station
NTM Fire Truck FT02 NTM Fire Truck FW02	Fire Truck Driver (Emergency) Fire Truck Driver (Emergency)	NTM-A
On-Scene Commander (OSC)	Operation Services Supervisor	LKU office
Intervention Team	Request support by external local authorities such as district officer, -sub-district office, -local medical services, -police and/or -other government authorities	External local authorities
On-Call Support Team: <ul style="list-style-type: none"> - Security Officer - IT Engineer - Logistics Support - Admin./Finance - Construction - Maintenance - Spill Response Team - Community & Media Response Team - Relative Response Team 	GGI security Supervisor IT and Telecommunications Supervisor Oil Movement and Transportation Manager Cost Coordination Officer Onshore Execution Team Leader Maintenance Superintendent BRK Intertransport Co., Ltd. Public Affairs Manager Operations Training Center Manager	LKU Gate 1 Officer Main Muster Point @ Fire Station Main Muster Point @ Fire Station Main Muster Point @ Fire Station Main Muster Point @ Fire Station Main Muster Point @ Fire Station BRK Office Main Muster Point @ Fire Station Main Muster Point @ Fire Station

3.3 ROLES AND RESPONSIBILITIES

This section advises each S1 ERT member of their roles and responsibilities in dealing with emergency situations.

Emergency Response Team Leader (ERTL)	
Responsible Person	Vice President of S1 Production Operations Department
Work Station	S1 LKU Emergency Coordination Centre (ECC) room
Responsibilities	<p>Protect life, environment, plant, production, and reputation by taking effective actions; managing the S1 ERT and collaborating with PTTEP EMT and necessary external parties to ensure the potential for escalation and risk of injury and damage is minimised. S1 ERT leader shall:-</p> <ul style="list-style-type: none"> • Ensure all ERT, CMRT & RRT have received adequate training to cope with their assignments; • Maintain a state of readiness; • Assess the situation; • Take effective actions; • Maintain communication; • Delegate authorities to act; • Manage team performance; and • Deal with stress.
Key Actions	<ul style="list-style-type: none"> • Establish early contact with PTTEP EMT and S1 asset duty persons; • Consider to activate Emergency Coordination Centre (ECC) and call in the ERT members and the On-Call Support Team as deemed necessary. • Manage and coordinate the activities of all S1 ERT members; • Develop an incident response strategy; • Control the incident to prevent escalation; • Maintain communications with PTTEP EMT, SVP of S1 asset, and necessary external parties; • Minimize risk to personnel including intervention team, S1 staff, contractors, and 3rd parties; • Minimize impact on the environment; • Ensure sufficient resources are available to support all response teams; • Plan the delegations of ERT members for rests if the emergency situation has been prolonged; • Plan and prepare for safe evacuation when necessary; • Keep closely informed and monitor the emergency situation, response, and recovery; • Provide any advice and support requested by the operating site;

Emergency Response Team Leader (ERTL)	
	<ul style="list-style-type: none"> Be a focal point to report and update the emergency situation to BKK S1 Asset Duty by phone as specified in the S1 weekly duty roster or direct report to BKK PTTEP EMT; Maintain records of events through Event Logger; Utilise "Time Outs" to update EMT of ongoing situation including: <ul style="list-style-type: none"> The exact status of the event at the accident scene and evacuation details. Status and priority of supports provided to the site such as firefighting, medical evacuation, transportation, etc. Brainstorming and resolving key issues/problems faced. <p>For Tier 2 and 3 other than above:</p> <ul style="list-style-type: none"> Activate S1 Emergency Coordination Center (ECC) and call in all ERT members and necessary On-Call Support Team. <p>In case of a press release to local media or communities:</p> <ul style="list-style-type: none"> Call in CMRT to support in dealing with media and community; Consult with the Crisis Communication Team (CCT) Leader on the general approach to be taken when speaking to the media; Be a spokesperson for disclosure of information and public statement to local media or communities; Represent the company externally, in interviews, and at a press conference; Ensure aid materials (charts, maps, etc) & Technical Advisor are available; Assess the effectiveness of the press conference with the CCT Leader; and Log own actions, messages on communication, involved party, and time on the log sheet and pass it to event logger.

ERT Duty Officer	
Responsible Person	The person appointed by ERTL, or by default, the S1 Production Superintendent
Responsibilities	<ul style="list-style-type: none"> Take a role and responsibility as ERTL until his/her arrival (see ERTL responsibility); and Keep ERTL informed of the emergency situation, response, and recovery.
Key Actions	<ul style="list-style-type: none"> Act as ERTL until his/her arrival (see Roles and Responsibilities of ERTL); Share workloads of ERTL as directed; and Direct and approve for the mobilization of ambulance, firetrucks, and Spill Response Team.

Deputy Emergency Response Team Leader (DERTL)	
Responsible Person	<p>The person appointed by ERTL based on the area affected by an incident.</p> <ul style="list-style-type: none"> • PS1/P for LKU flow station, well sites, MPF locations, workshops, offices, material yard and material storage locations, PHS housing compounds and DDC training center. • PS1/O for BPR depot in Phitsanulok Province and CNS rail tanker inspection and maintenance workshop in BKK.
Responsibilities	<ul style="list-style-type: none"> • Minimise injury, environmental pollution, asset/property damage and reputation; • Assist ERTL to manage and direct actions of the emergency response team, medical team, and incident support function to contain and control the emergency situation; • Collaborate with local external parties; and • Coordinate with RRT and CMRT when necessary.
Key Actions	<ul style="list-style-type: none"> • Update the situation with OSC and assess for the effective response strategy; • Provide the resources e.g. manpower, fire/foam trucks, spill response team, financial support, etc. required for the emergency response to OSC, medical team and affected area; • Provide technical advice to OSC, ERTL/ERT Duty Officer; • Closely report to and take constant directions from ERTL/ERTL Duty Officer for uninterrupted and effective management of the emergency situation. • Communicate, directly or through Telecom Operator, with local external parties e.g. governmental authorities, community, etc involving in the emergency situation; • Support in collaboration between OSC and external parties; • Communicate and collaborate with CMRT and RRT when the situation requires; and • Log own actions, messages on communication, involved party, and time on the log sheet and pass it to event logger.

On-scene Commander (OSC) or Deputy OSC		
Responsible Person	The person appointed by DERTL based on the area affected by an incident.	
	Location	OSC
	LKU flow station, workshops, offices	LKU Plant Supervisor
	Well sites and MPFs including DDC training center	Affected Area Supervisors (Field Supervisors – West, East & North)
	Well services workshop	Workshop Supervisor
	Material yard and material storage locations	LKU Support Base Supervisor
	BPR Depot	BPR Depot Supervisor
	CNS rail tanker inspection and maintenance workshop	Depot Supervisor (BCP/ TOC/ PTTGC) or CNS Site Manager (contractor)
	PHS housing compounds	Operation Services Supervisor
Responsibilities	<ul style="list-style-type: none"> • Protect personnel including staff, contractors, community, intervention & medical teams; • Minimise the impact to environment and community in the vicinity; • Assess the situation and establish the tactical response; • Take commands of all immediate responsive activities on the incident scene; • Report to and provide constant updates of the situation to DERTL; • Collaborate with involving local authorities; and • Maintain records of events. 	
Key Actions	<ul style="list-style-type: none"> • Assess the current emergency situation, associated hazards, impacts, and their potentials; • Establish tactical response plan e.g. isolation, blowdown, spill containment, evacuation, intervention, etc; • Command the site operation, intervention & medical teams on the scene; • Provide necessary resources to site operation, intervention and medical teams; 	

On-scene Commander (OSC) or Deputy OSC	
	<ul style="list-style-type: none"> • Ensure all personnel are adequately protected against arising hazards, especially site operation and intervention teams; • Regularly call “time out” to update and assess the current status of the situation and changes, then direct site operation, intervention, & medical teams as appropriate; • Initiate site evacuation if necessary; • Provides necessary initial information to immediate local authority e.g. SAO, police, hospital, etc; • In consultation with PTN/A (public affairs), assess the impacts and inform the nearby community as necessary; • In consultation with DERTL, consider community evacuation if situation deemed dangerous or has potential to cause danger; • Plan the staff change over for site operation, intervention and medical teams if the situation is prolonged; • Keep DERTL updated with situation, changes, progress, and potentials; and • Log own actions, messages on communication, involved party, and time on the log sheet and pass it to event logger. <p>According to the “Disaster Prevention and Mitigation Act”, when emergency situation poses or has potential to pose the significant danger to community and environment, the governmental authority of the affected area will overtake the command of overall emergency response as “Emergency Director”.</p> <ul style="list-style-type: none"> • When a situation deemed as in the above condition, provides initial information on the emergency situation to the local authority; • When local authority comes to take over the command, report to Emergency Director, and in parallel collaborate with ERT for effective emergency response and recovery; and • Provide necessary technical advice to the Emergency Director and teams.

Site Operation Team	
Responsible Person	The staff assigned by OSC to operate and/or control the affected facility and area. In an emergency, they assist OSC to recover or make safe the facility and area by operating the facility, isolating & removing the arising hazards and providing necessary supports to the intervention team to contain the situation.
Responsibilities	<ul style="list-style-type: none"> • Be under command of the OSC; • Operate/control/stabilize the affected facility and area; and • Support the intervention and medical teams.
Key Actions	<ul style="list-style-type: none"> • Provide detailed current status of facility and area to the OSC e.g. process & area condition, process safety system, F&G system, firefighting system, etc; • Control and stabilize the facility and area e.g. shutdown, isolation, blowdown, inhibit/override of system, removal of hazards, etc; • Maintain safe conditions of facilities and area throughout emergency situation; • Notify hazards associated with process, facility, and area to OSC and intervention team; • Keep OSC updated with changes in conditions of the process, facilities, and area; and • Log own actions, messages on communication, involved party, and time on the log sheet and pass it to event logger as applicable.

Intervention Team Leader (ITL)	
Responsible Person	The person assigned to lead the intervention team and direct tactical intervention activities e.g. firefighting, rescue, recovery of distressed personnel, etc.
Responsibilities	<ul style="list-style-type: none"> • Provide a frontline response to the incident scene as directed by OSC; • Lead intervention team in coordination with site operation and medical teams.
Key Actions	<ul style="list-style-type: none"> • Update the status of situation and potential with OSC and intervention team; • Take priority on the safety of the intervention team and others; • Consider the hazards and potentials of a gas cloud, oil spill, fire, boil over, BLEVE, collapse of structure & vessel, traffic, etc.; • Size up the situation and establish tactical frontline action plan; • Utilize automatic system e.g. fire pumps, monitor, deluge, etc. • Ensure adequate and effective communication amongst the intervention team and with others; • Establish the forward control point for intervention and medical teams as necessary; • Collaborate with other supporting teams e.g. site operation & medical team, and others e.g. fire brigade, police, etc.; • Brief the intervention team on the situation, potentials, target of achievement, and tactical action plan; • Direct the intervention team to accomplish the tactical action plan; • Monitor closely the intervention actions and assess the result. The intervention action plan may change upon the upcoming changes with the situation; • Make regular contact with the intervention team and OSC for updates and changes; and • Request external supports and resources when necessary.

Intervention / Fire Team Member	
Responsible Person	The persons assigned as an intervention team member shall be adequately trained and competent to conduct the hand-on intervention activities e.g. firefighting, rescue, oil spill response, etc.
Responsibilities	<ul style="list-style-type: none"> • Ensure the safety of own and others; • Under command of ITL • Provide frontline responsive actions on the emergency situation as directed.
Key Actions	<ul style="list-style-type: none"> • Wear adequate and proper PPE to conduct the assigned task e.g. firefighting, rescue, chemical intervention, oil spill, etc.; • Receive a briefing on the situation, hazards, preventive measures and responsive action plan from ITL; • Conduct the actions assigned by ITL in a safe manner that may involve: <ul style="list-style-type: none"> - Reconnaissance of incident scene; - Operating the automatic firefighting device; - Conducting firefighting task; - Conducting rescue, extraction, recovery, and handling of casualties; and - Assisting in control of traffic and access.

Medical Team	
Responsible Person	Medical Team consists of <ol style="list-style-type: none"> 1. LKU Doctor/Nurse 2. Ambulance Driver 3. Off-shift Duty Ambulance Driver 4. Stretcher Team
Responsibilities	<ul style="list-style-type: none"> • Safety of own and others; • Size up the situation and activate the appropriate medical procedure; • Stabilize the casualties and initiate the transfer of casualty to hospital/medical centre in a safe manner as necessary; • Assess the extents of injuries and provide advice to the DERTL and/or OSC for appropriate treatment and further supports and resources required; • Assist in arranging medical evacuation/referral; • Coordinate with the PTTEP medical team and casualty-receiving hospitals; and • Log all actions, communication made, detail & number of injury, time, etc. on the log sheet.

Medical Team	
Key Actions	<p>LKU Nurse</p> <ul style="list-style-type: none"> • Make ready, at all times, the medical equipment, and supplies at the clinic, in portable packs, and on the ambulance required for emergency response; • Size up the situation and take appropriate actions and give adequate first aid/initial medical treatment; • Utilize the available supporting staff in casualty handling e.g. intervention team, stretcher team, etc.; • For multiple casualties, consider to activate triage procedure and request for support from the selected hospital and medical service centre; • Seek advice from PTTEP medical team when necessary; • Assess and advise on the appropriate medical evacuation/referral to OSC and/or DERTL; • Coordinate with PTTEP medical team and hospital receiving the casualty to ensure the appropriate treatment and followup; and • Keep records of casualties and treatments. <p>On-Duty Ambulance Driver</p> <ul style="list-style-type: none"> • Have undergone the defensive driving and advanced first aid training courses; • Have ensured the ambulance is in ready & clean condition with adequate fuel (minimum half a tank); • Get familiarized with the routes for transport; • Drive the ambulance in a safe manner based on defensive driving principle; • Assist the handling of casualties under supervision of doctor/nurse; and • Make entries into a driving log. This information includes injured persons'/ patients' names and addresses, trip times, mileage, and services performed. <p>Off-Duty Ambulance Driver</p> <ul style="list-style-type: none"> • Assist doctor/nurse to provide first aid treatment and handling of casualties. <p>Stretcher Team</p> <ul style="list-style-type: none"> • Assist medical team in manual transfer of casualty. <p>Remark: In case of PTTEP ambulance absence, a back-up van having medical equipment as equal to the ambulance should be available.</p>

SSHE Advisor	
Responsible Person	Superintendent, SSHE of S1 Asset or his delegation
Responsibilities	<ul style="list-style-type: none"> • Advise ERTL, DERTL, ERT duty officer, OSC, etc on SSHE matters and procedures relevant to emergency response & management; • Observe the situation, taken actions, deficiencies, gaps for improvement, and advise ERTL & ERT duty officer; • Ensure the procedure and actual practice are consistent and appropriate to regulations; and • Collect all information for the summary report to be further issued.
Key Actions	<ul style="list-style-type: none"> • Evaluate the hazards and potentials of the incident and impacts; • Provide necessary information to ERTL, ERT duty officer and other members in ECC room; • Observe the ERP, relevant legislations, and the actual actions taken along with the emergency response process, then identify discrepant and deficiency and inform ERTL and/or DERTL; • Take note of all observations; • Support and liaise with event logger to ensure all necessary information and correct timeline are logged; • Ensure personnel accountability including those deployed to the emergency scene; • Provide technical advice on equipment, resources, and method to control, contain, and prevent the emergency situation, escalation & impact; • Communicate with and seek advice from corporate SSHE division as necessary; • Call in other members of S1 SSHE staff to support as necessary; • After the emergency is over, collect all information, papers, photographs, other evidence of the emergency and response process. Compile a summary report for Vice president of S1 production operations department; and • Log own actions, messages on communication, involved party, and time on the log sheet and pass it to event logger.

Telecom Officer	
Responsible Person	Telecommunication Operator
Responsibilities	<ul style="list-style-type: none"> Be available, at all times, to receive an emergency call; Make accurate communication with internal and external parties as specified in ERP and instructed by ERTL; and Record details of all calls made in and out with the timeline.
Key Actions	<ul style="list-style-type: none"> Maintain up-to-date emergency contact numbers for all internal and external parties; Make weekly call tests with S1 duty roster numbers; Ensure all telecommunication equipment in telecommunication room is readily available at all times; Upon receiving the emergency information, immediately report to ERT duty officer, ERTL, OSC, SSHE duty respectively; Upon confirmation from ERTL or ERT duty officer, report to EMT duty person; Upon request from ERTL or ERT duty officer, call in ERT members to report to ECC room; Support ERT in making calls to internal and external parties; and Log details of calls received and made on the log sheet.

Event Logger	
Responsible Person	S1 Production Engineer
Responsibilities	<ul style="list-style-type: none"> Log details of the situations and actions on the event log boards/sheets; and Ensure the logged information logged are accurate and adequate with what, when, where, who, whom & how questions principle.
Key Actions	<ul style="list-style-type: none"> Liaise with all ERT members to obtain significant and accurate information; Observe and listen to the communication made in ECC and take necessary information; Avoid interrupting ERT members when they are occupied with work; Log the received information in the chronological order on the event log boards/sheets in an accurate and clear manner; Update the status board e.g. mustering, mobilization of firetrucks & other resources, etc.; Maintain the trailing records and update the current information of the situation; and Assist ERTL or ERT duty officer to feed necessary information in "time out".

Muster Logger / Deputy Muster Checker	
Responsible Person	S1 SSHE Officer (Operational Safety)
Responsibilities	<ul style="list-style-type: none"> Obtain and consolidate the personnel counts from each muster point (muster checkers); Communicate with muster points; Monitor and record the movements of personnel when called for duty;
Key Actions	<ul style="list-style-type: none"> Communicate with all muster checkers to obtain personnel counts; Together with muster checkers, identify the missing person; Update status of personnel counts to event logger; Coordinate with muster checkers for evacuations; Log own actions, messages on communication, involved party, and time on the log sheet and pass it to event logger; and Assist event logger for event logs.

Muster Checker	
Responsible Person	Persons appointed to responsible muster points
Responsibilities	<ul style="list-style-type: none"> Personnel counts at the designated muster point; Identifying missing person; Ensure safety and order of personnel at the muster point to be in order; Control and lead the evacuation of the designated muster point; and Communicate with a muster logger.
Key Actions	<ul style="list-style-type: none"> Ensure the mustered personnel are safe and remain in order; If the designated muster point is not safe, coordinate with muster logger for alternative muster point; Take a headcount of personnel at the designated muster point and report the result to muster logger; Identify the missing person with muster logger; Observe the mustered personnel for illness or injury and provide necessary supports; Coordinate with muster logger for personnel called from muster point for duty during an emergency; Encourage mustered personnel to calm down and be positive; Release persons for specific duty as requested by ER Team Leader and Muster Logger informed of this update/change; and

Muster Checker	
	<ul style="list-style-type: none"> Ensure all personnel remains at muster point during an emergency, it is not safe or receives instruction from ERTL, ERT duty officer or DERTL.

Fire Warden (Building)	
Responsible Person	Persons working in building assigned to take the role of fire warden.
Responsibilities	In evacuation, ensure all personnel leaves area in a safe manner to muster points
Key Actions	<ul style="list-style-type: none"> Direct all personnel in the designated area to leave the area for musters in a safe manner using appropriate routes and exits; Assist handicaps e.g. elderlies, children, injured, pregnant, disable, etc. Check all accessible spaces in their area, including the bathroom, store, pantry, etc, to make sure everyone has evacuated – this should be done on the way out of the building so that the fire warden does not put himself/herself at risk by re-entering the evacuated area; Close doors to help suppress or hinder the fire; Guide personnel to the muster points and assist in checking personnel having arrived safely at muster points; and Update with the list of staff stationed in the building given by PS1/S (emergency team).

On-Call Support Team	
Responsible Person	The persons selected are the representatives of each discipline to support ERT when needed.
Responsibilities	<p>The On-Call Support Team comprises of representatives from a number of various disciplines. They are specialized and act as advisors and communication links.</p> <p>The On-Call Support Team consists but not limited to the following members:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Logistic Support; <input type="checkbox"/> Well Service; <input type="checkbox"/> Maintenance; <input type="checkbox"/> Security Supervisor; <input type="checkbox"/> Community & Media Response Team; <input type="checkbox"/> Relative Response Team. <input type="checkbox"/> Drilling; <input type="checkbox"/> Construction; <input type="checkbox"/> IT/ Telecom Supervisor; <input type="checkbox"/> Spill Response Team;
Key Actions	<ul style="list-style-type: none"> • Be ready on call, able to report to ECC within 2 hours when called by ERTL or ERT duty officer; • Be the link of communication between ERT and their assigned sections, departments, contractors; • Advise ERT on their specialized matters; • Collaborate with the assigned discipline on request; • Execute the task to support emergency response requested by ERT; • Receive briefing from ERTL or delegation; • Advise ERT members on matters relating to their discipline matters; • Call in or consult with other staff in their disciplines as required; • Provide support to ERT members as required; and • Log own actions, messages on communication, involved party and time on the log sheet and pass it to event logger.

Community & Media Response Team (CMRT)	
Responsible Person	Manager, Public Affairs Section and Team
Responsibilities	<p>Act as a point of contact and advise on all press related issues in supporting ERTL for appropriate communication with media and community.</p> <p>Note: Mobilize the team to Communication & Media Response Room (CMRR) at LKU Building #1 Room #2 when Tier 2 and 3 emergency level is activated.</p>
Key Actions	<ul style="list-style-type: none"> • Establish a proactive media liaison and public affairs strategy; • Seek advice, work closely and maintain communication with PTTEP Crisis Communication Team (CCT) for information review prior to delivering a response to local media and community; • Brief ERTL on local media interest, issues developing and requests from the media for information; • Assist in developing/delivering a response to the local media and community as directed by ERTL; • Maintain a log of media activity identifying the line of questioning being adopted by the media and issues developing and pass this information to ERTL; • Maintain a personal log of events undertaken during the incident life cycle and pass completed log sheets to Event Logger; • Ensure that Event Logger has a record of all contact with authorities; • Establish contact numbers where the media can call for information; • Pass any press releases to ERTL for approval process; • Update ERTL on all media and external affairs issues; • Monitor media related to an emergency; and • Liaise with ERTL if there is a requirement to confront any press interviews/conference.

Relative Response Team (RRT)	
Responsible Person	Manager, Operations Training Center Section and Team
Responsibilities	<p>Act as a point of contact and advise on all human resources related issues.</p> <p>Provide support for human resource issues handling.</p> <p>Note: Mobilize the team to Relative Response Room (RRR) at LKU Building #2 Meeting Room when Tier 2 and 3 emergency level is activated.</p>
Key Actions	<ul style="list-style-type: none"> • Have information on staff's selected relative's contact number for emergency; • Seek advice, work closely and maintain communication with PTTEP HR department for the information on the status of staff injuries, company welfare, legal concerns, and additional support required; • Advise ERTL on personnel and welfare issues relating to staff. • Hold the information on the status of ERT members, staff and contractors affected by the incident and emergency e.g. injured, deceased, locations, etc. • Coordinate with PTTEP HHR (Human resources) division; • Coordinate with hospitals for treatment of injured persons and provide the additional support required; • Consider mobilising RRT to interface with family or relatives of the impacted staff; • Make a note and maintain a personal log of all relevant information received and the consequential activity performed and pass each note to Event Logger; • Assist the Event Logger in tracking personnel on the status boards and ensure accuracy of information; and • Establish the requirement for counselling services for those affected by the emergency (open to all employees and contractors).

Each ERT member shall record the details of message/events upon receiving in to the emergency log sheet form (**Appendix C**).

3.4 EMERGENCY RESPONSE ACTION

The response action of an emergency situation occurring at S1 operating sites can be summarized in flowing details.

1. When an emergency occurs, OSC with the site operation team and intervention team responds to the emergency situation as soon as possible.
2. OSC will evaluate the tier of emergency in consultation with the ERT duty officer.
 - a. Even though the emergency situation is within tier 1, localized and can be handled by site staff (OSC, site operation, intervention, and medical team), yet OSC shall immediately report to ERT duty officer for further justification;
 - b. If the emergency falls into tier 2,
 - i. Upon receiving the emergency information, ERTL or ERT duty officer shall activate ERT and ECC room. LKU telecom officer shall immediately call the duty persons of S1 ERT (see Section 3.2) to meet together at the S1 ECC room.
 - ii. ERTL or ERT duty officer shall lead ERT, in responding to the emergency situation.
 - iii. ERTL or ERT duty officer shall immediately contact BKK S1 asset duty and/or EMT Leader (SVP.). EMT will be established to manage and provide relevant supports to the asset in the tier 2 emergency situation.
 - iv. ERTL or ERT duty officer reported the emergency situation to the local governmental authority of the affected area.
 - v. DERTL or OSC may establish direct contacts for supports with external parties in the area e.g. SAO, police, hospital, medical service centers, provincial electricity authority, etc.
 - vi. The affected local government authority takeovers the emergency management by acting as Emergency Director (ED) if the emergency significantly affects the community or environment according to the Disaster Prevention and Mitigation Act.
 - vii. Even though OSC takes the command from ED, OSC yet carries on with emergency response on the scene in an effective way. The ED could be the executive chief of affected SAO or higher.
 - viii. OSC, while taking command from ED, collaborates with ERT for supports and information updates.
 - c. If the emergency escalates to tier 3, the situation goes beyond the capability of EMT, ERT & OSC to handle, the CMT shall be established in BKK. Emergency response and management shall be conducted according to PTTEP Emergency and Crisis Management Standard (SSHE-106-STD-500) and Crisis Management Plan (SSHE-106-PDR-501).

In case of emergency with S1 external organization in S1, but not directly under responsibility of S1 production operations department (PS1), e.g. new drilling site, new construction site, seismic survey, etc., the Company Site Representative (CSR) shall act as OSC for their responsible location and report directly to S1 DERTL.

Apart from the normal function line reporting procedure, CSR as OSC shall report all incidents to S1 telecom officer and ERT duty officer.

The Emergency Tier Evaluation & Response Flowchart is shown in **Figure 3**.

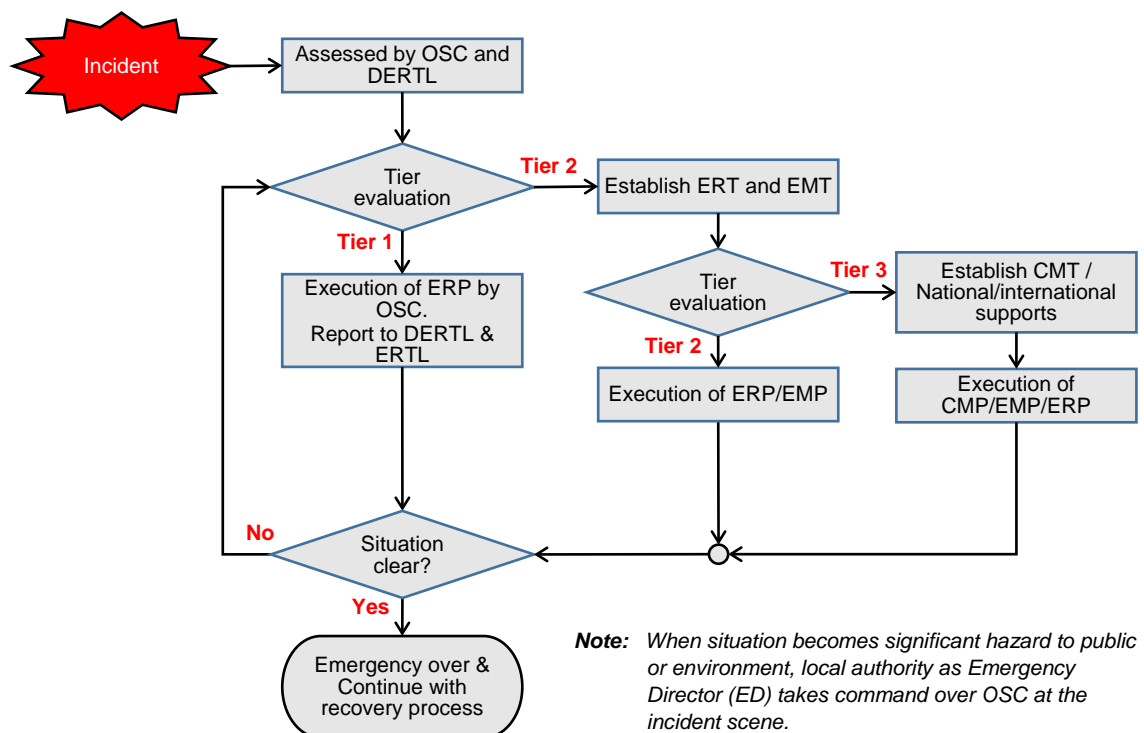


Figure 3: Emergency Tier Evaluation & Response Flowchart

3.5 COMMUNICATION DURING EMERGENCY

During an emergency, communications can be executed by the following methods.

- Radio;
- Landline Telephone;
- Mobile Phone;
- E-mail; or
- Fax

Portable radios (VHF) are provided to S1 operational staff and assigned as the primary option for emergency communication. In normal situations, all handheld radio users are on channel 15. In emergency situations, telecom operator broadcasts to all stations involving an emergency e.g. ERT, OSC, affected site operation, intervention & medical teams to switch to channel 16 for emergency communication. Others not related to emergency may remain on channel 15 for their normal operational communication.

Besides, the external and internal telephone numbers are provided to support both normal and emergency communication. The S1 emergency numbers (external: 055 731 150, internal: 33) are provided at the telecom room which is manned 24 hours every day for all emergency calls from S1 internal and from external parties e.g. community, governmental bodies, etc. Telecom operator is responsible to respond to all calls, take & log precise messages on the given log sheet and relay it to responsible persons (see roles and responsibilities of telecom operator in section 3.3).

The formal emergency call messages that need to be informed to Emergency Response Team, on-call support team and involved parties by LKU Telecom. Operator are shown in **Appendix A**. The emergency report form which will be logged by LKU Telecom. Operator on receiving notification of emergency is illustrated in **Appendix B**.

Email; LKU^{TelexRoom@pttep.com} and fax; 02 537 6212 are available to support informative communication e.g. text, photographs, etc.

Most of the emergency cases, they begin with the incidents then escalate into an emergency. Therefore, the appropriate and timely notification of incidents can improve the responsive actions to the incident and attenuate the situation not to become an emergency. The initial emergency communication flow is illustrated in **Figure 4**.

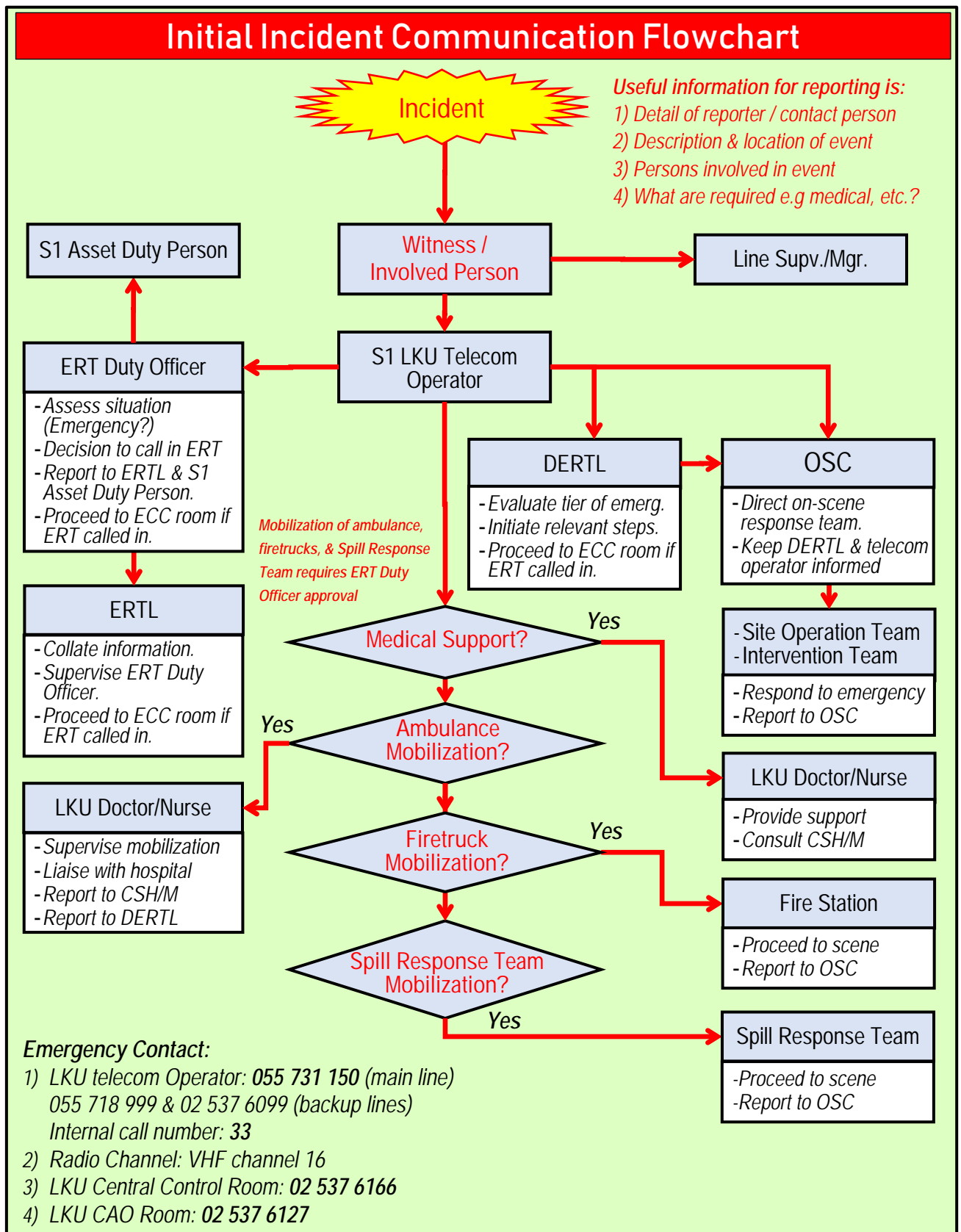


Figure 4: S1 Initial Incident Communication Flowchart

3.6 MUSTER POINT

The muster point is the predetermined place where is at a safe distance from the potential hazards and with adequate space for gathering and counting personnel in an emergency situation.

3.6.1 Type of Muster Point

a) Primary Muster Point

The primary muster points are for personnel to take an initial assembly when the emergency situation requests to muster e.g. LKU CCR is a primary muster point for flow station operation & intervention teams, ECC room is a primary muster point for ERT, area behind fire station is a primary point for all personnel not involving the emergency response actions. The assigned muster checker (and backup muster checker) shall be present to keep muster in order, for personnel movement control, for personnel counts, and for communication with muster logger.

b) Backup Muster Point

The backup muster point is the secondary muster point where personnel gathers in case they cannot safely proceed to the primary muster points. The backup muster point is not always necessary for all locations if alternative escape routes to primary muster point can be assured.

Depending on emergency situation, the predetermined muster points of all S1 locations are displayed in **Appendix D**.

3.6.2 Mustering Action

All personnel at S1 shall be briefed on their designated muster point and action to take at muster point that shall include, but not limited to:

For all personnel:

- On hearing/knowning mustering alarm or notification, make worksite safe proceed to the designated muster point. Walk fast and do not run;
- Observe the safety of the passage. Take the fastest route to proceed to the designated primary muster point. If it is not safe, take an alternative route;
- If there is no safe alternative route, proceed to the predetermined backup muster point, call S1 emergency number 055 731 150 or radio VHF channel 15, and standby for instruction; and
- At the primary muster point, stay calm and keep noise low. Respond to the muster checker and report any information necessary to emergency handling.

Note: Security guards on duty at all gates remain at gates and support access control during emergency otherwise it is not safe to do so.

For muster checker:

- At the muster point, stay calm and take control of the muster;
- Initiate the predetermined personnel count procedure;
- Observe and provide support to the mustered persons e.g. injury, fear, panic, etc.;
- Report the number of mustered persons, missing persons, injury, etc. to the muster logger when requested;
- Maintain muster in order and ensure the comfort of mustered persons as practical. No person should leave the muster point without instruction from ERT. Take record of mustered person movement when called out by ERT;
- When the muster point is deemed unsafe, consult the muster logger to move the muster point to the safe place as practical; and
- Only when the muster logger instructs, release the mustering.

The locations of predetermined muster points, positions of Muster Checker and Muster logger of each S1 operating location are summarized in **Appendix D**.

3.7 FACILITIES

The facilities shall be provided to support activities by the OSC team, ERT, CMRT, and RRT. These facilities shall be adequately equipped for the effective performance of the designed team, especially for communication and information management. All ICT equipment in those rooms shall be well maintained and checked by PS1/M (ICT) to ensure all ICT equipment is always readily available and fully functioning. All materials and documents in those rooms are prepared and made ready for prompt use by the PS1/S section.

At LKU office, 4 separate rooms are provided for:-

1. Emergency Coordination Centre (ECC) room for ERT to occupy for their duties;
2. Relative Response Room (RRR) for RRT to occupy for their duties;
3. Communication and Media Response Room (MRR) for CMRT to occupy for their duties;
and
4. Press Release Room (PRR) for the press release and media interfaces.

Other than the aforementioned rooms, the LKU CCR and CAO rooms are to be ready with ICT, materials, and documents ready for emergency response as well. PS1/P section is in charge of ensuring they are readily available.

3.7.1 Emergency Coordination Centre (ECC)

ECC is located at LKU building #1 meeting room #1. The ECC is arranged for S1 ERT and on-call support team to gather and use for their emergency duties.

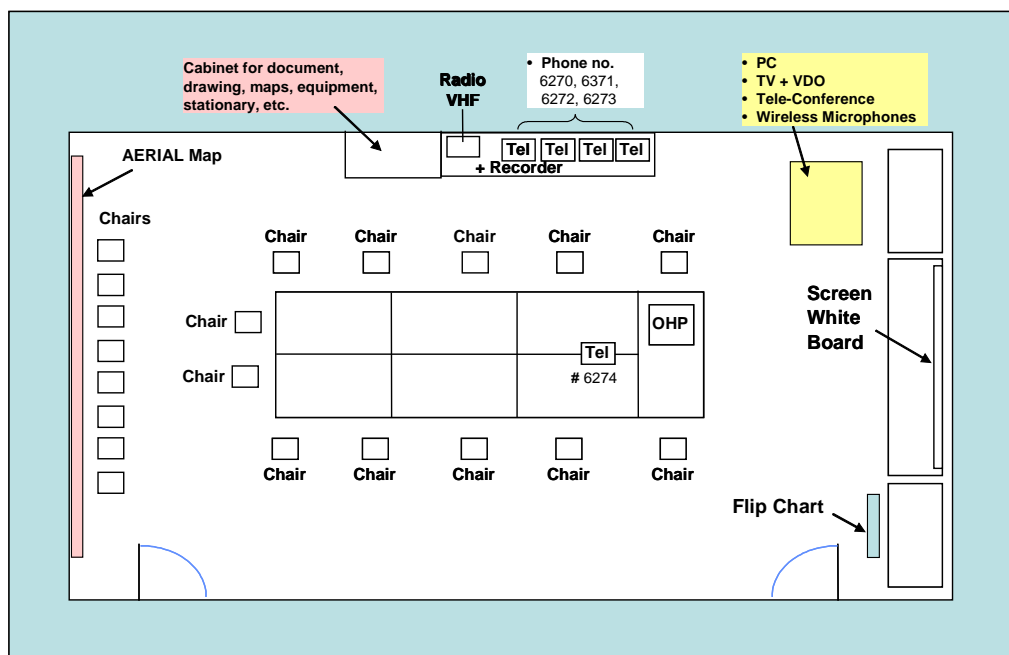


Figure 5: Simplified Layout of Emergency Control Room

Emergency Coordination Centre (ECC) – First In Actions

- Shift the magnet bar for register/muster;
- Switch on and ensure that the PC is working correctly;
- Lower the projection screen and turn on the digital projector;
- Log on the main PC using appropriate user name & password (kept in the cupboard);
- Check that all telephones are working correctly;
- Checks all required documents are available and updated (tel. directory, duty roster list, drawings, etc.);
- Take the briefing from ERTL or ERT duty officer and refer to individual role checklists.

ECC Equipment List

Telephones:	5 PABX telephone extensions {810-6270, 6272, 6273, 6274, 6371}
Display boards:	Casualties' status, the sequence of events, POB status, weather condition, and status of emergency resources.
Information Board:	1 board showing POB information, authorised delegates, Duty Rosters, stationery and forms
Documentation:	<ol style="list-style-type: none"> 1. Corporate Emergency Management Plan 2. Corporate Crisis Management Plan 3. S1 Emergency Response Plan 4. Key Site Drawings of Facilities and Installations 5. Emergency Log Sheets 6. Telephone directory 7. S1 Emergency Reporting Flowchart 8. S1 Duty Roster List

In case the ECC room at LKU building #1 meeting room #1 cannot be utilized when an emergency occurs such as fire or bomb threat at the office building, flooding, road blockage, the predetermined alternative venues are:

1. The meeting room at well services workshop; and
2. PHS housing.

Upon such a situation, ERTL or ERT duty officer announces to all ERT members to report to an alternative ECC room.

3.7.2 Community and Media Response Room (CMRR)

CMRR is located at LKU Building #1 Room #2 for CMRT to utilize for their emergency duties e.g. information preparation, press compilation, communication, etc. S1 Public Affairs (PTN/A) staff take roles and responsibilities as CMRT.

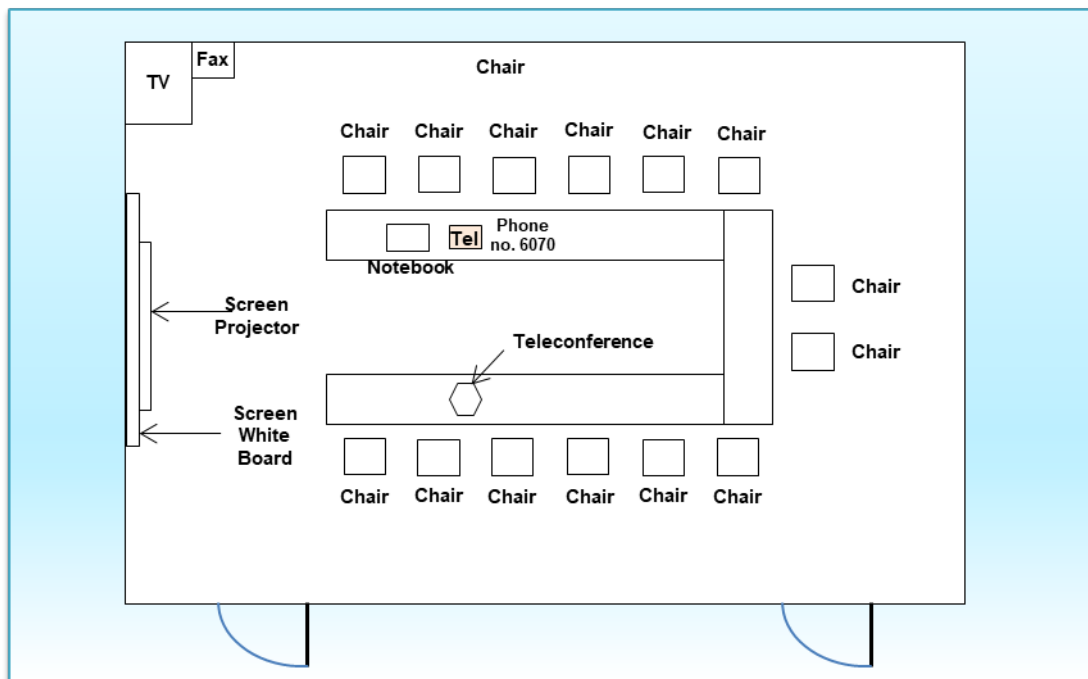


Figure 6: Simplified Layout of Media Response Room (MRR)

Community and Media Response Room (CMRR) – First In Actions

- Ensure that the PC is working correctly;
- Log on the main PC using appropriate user name & password (kept in the cupboard);
- Ensure all required document e.g. emergency contact list, community contact list, etc. are available;
- Check that all telephones are working correctly;
- Await the briefing from Manager, Public Affairs Section.

CMRR Equipment List

- Telephones:** 1 PABX telephone extensions No. 810-6070
- Information Board:** 1 board for preparation on the media press release
- Documentation:**
1. S1 Emergency Response Plan
 2. List of local media with telephone directory
 3. List of Corporate Community & Media Response Team with telephone directory
 4. S1 Emergency Reporting Flowchart
 5. S1 Duty Roster List

3.7.3 Relative Response Room (RRR)

Relative Response Room (RRR) is located at LKU Building #2 Meeting Room. RRR is arranged for the Relative Response Team (RRT) for preparation on information and coordination with relatives of staff and contractors who are injured or deceased. Operations Training Center (HRC/O) staff take roles and responsibilities as RRT.

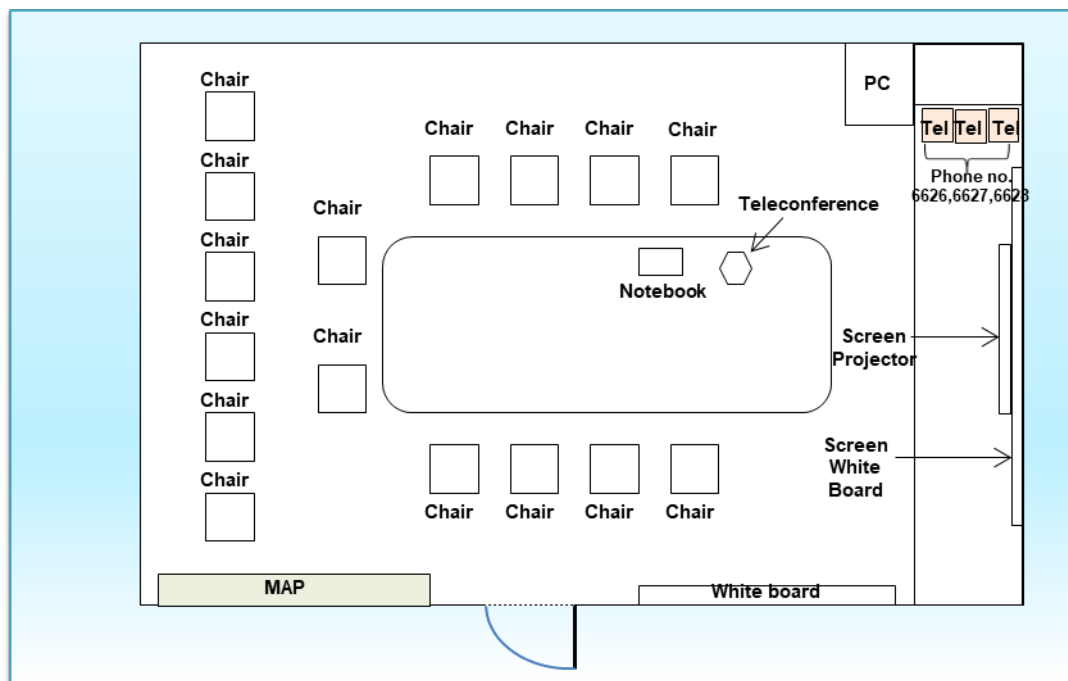


Figure 7: Simplified Layout of Relative Response Room (RRR)

Relative Response Room (RRR) – First In Actions

- Ensure that the PC is working correctly;
- Ensure accessibility to staff database and contract holder list;
- Log on the main PC using appropriate user name & password (kept in cupboard);
- Check that all telephones are working correctly;
- Await the briefing from manager, Operations Training Center Section

RRR Equipment List

- Telephones:** 3 PABX telephone extensions {810-6626, 6627, 6628}
- Information Board:** Staff and contractor status board
- Documentation:**
1. S1 Emergency Response Plan
 2. List of focal point of S1 department staff and contractors with telephone directory
 3. List of Corporate Relative Response Team with telephone directory
 4. S1 Emergency Reporting Flowchart
 5. S1 Emergency Duty Roster List

3.7.4 Press Release Room (PRR)

Press Release Room (PRR) is located at a room of 1st floor, 30th Year Building. The room is used for information disclosure and issuing public statements to local media or communities in case of emergency.



Figure 8: Photo of Press Release Room (PRR)

3.8 PRESS RELEASE

In the event of an emergency and/or a crisis, a special communication task force is to be set up. The team comprises, at least, a media spokesperson and the Crisis Communications Team (CCT). Their responsibilities include communication with external audiences that are media, authorities, and local communities.

According to PTTEP Delegation of Authority & Signature (DAS), only the President and Chief Executive Officer (CEO) and/or designated representatives of the organization are authorized to disclose information and issue public statements in case of an emergency. The level of spokesperson shall be as the following chart.



In case of an emergency at S1 asset, VP of S1 Production Operations Department (ERTL) or designated representative has the authority as a media spokesperson for disclosure of information and public statement to local media or communities, according to Crisis Communication Guideline (12145-GDL-004-R04) and PTTEP DAS. The information and/or public statement is prepared by S1 CMRT and reviewed & approved by PTTEP Crisis Communication Team (CCT) and EMT Leader prior to the press release. ERTL will provide the press release to local media or communities at Press Release Room (PRR) located at S1 SSHE Induction Room.

Examples of communication tools (as follows) are illustrated in **Appendix E**.

- Key Messages
- Media Release Template
- 1st Telephone Message to Answer Media and Investor Enquiries
- Holding Statement

3.9 DEACTIVATION AND POST EMERGENCY ACTIONS

3.9.1 Deactivation

The EMT Leader, in consultation with S1 ERTL, is the sole authority for deactivating an emergency declaration. Deactivation should only be called when S1 ERTL and EMT Leader agree that the emergency has been contained, and satisfactorily safe in all respects.

The activities and procedures which must be undertaken to recover from an emergency, the EMT Leader shall ensure the conducting of the following activities include, but are not limited to:

- The cleanup, maintenance, and testing of equipment;
- The re-commissioning of facilities, plant, and equipment;
- The replenishment of stocks (such as firefighting foam, spill clean-up materials, replacement parts);
- The accounting for all expenses incurred as a result of the incident;
- The filing of insurance claims; and
- Preparation and dispatch of final reports to relevant Shareholders, Government, and Local Authorities.

3.9.2 Emergency End and Final Actions

Once a decision has been made that no further actions are outstanding and that an emergency is over, many issues need to be considered before standing down. There is a need to consider the following:

- If the severe impact taken place with the production continuity as a result of incident, the S1 Business Continuity Plan (BCP) shall be activated referring to Thai Onshore Asset (PTN) Business Continuity Plan (BCP) (Document Code: 63984.1/2017)
- Ascertain the current position of each team member as regards their role, responsibilities and any ongoing/ outstanding actions;
- Identify and assign any outstanding actions including debriefing of interested external parties, such as authorities, community, etc;
- Put in place an emergency situation review to ensure the completion of outstanding actions;
- Understand any outstanding human resource issues and ensure that the necessary information is provided and the appropriate steps are being taken;
- Ensure that all staff are aware of the emergency close out and update them regarding the short and long-term issues affecting the company (if known);
- Ensure that all information has been captured and recorded;

- Have a team debrief before staff leave or return to normal duties;
- Ensure the plan of a future debrief time when all actions can be analysed. This can usually be within 24 - 48 hours of emergency closeout. Consider including the participation of independent reviewers; and
- This review should also address the sensitivity of the report information and determine the most appropriate means of secure storage.

After the review, a closeout report should be prepared. The report should cover the following:

- Understand and document the cause(s) of the emergency;
- Document all involved parties and details of participating personnel;
- Analyse the response and identify any learning points to be incorporated into the appropriate procedures and/or to be shared with other parts of the Business;
- Incorporate a full picture of the costs incurred as a result of the incident; and
- Review the effectiveness of all actions taken.

3.9.3 Incident Investigation

Incident investigation shall be conducted in accordance with Incident Management Standard (SSHE-106-STD-600) as soon as possible and when safe to do so. It should be conducted right after the emergency situation has been cleared in order to collect all evidence & facts and capture actual causes of the incident for proper analysis to define the effective mitigations and improvements for recurrence prevention and emergency/crisis response strategy.

3.9.4 Post Emergency Review

A post-emergency review is required for conducting to examine the response to the emergency. The EMT Leader and/or S1 ERTL should convene an emergency review meeting. Those attending the review meeting shall include the EMT & ERT members, and all other support team members. Minutes of the review meeting shall be recorded and archived for future analysis. The review meeting shall determine (but not limited to) the following:

- Were employees properly informed of S1 ERP and relevant corporate standards/procedures?
- Did employees respond according to S1 ERP and relevant corporate standards/procedures?
- Were employee's responses timely?
- Were the procedures adequate?
- What were the problems encountered during the response activities?
- What can be improved?

- How can similar events be avoided in the future?

If public emergency services were involved, they shall be invited to participate in the critique.

3.10 TRAINING AND EXERCISE

All concerned personnel who are assigned as the emergency response team shall be trained and have competency for their emergency response roles and responsibilities. Training requirements for personnel involving emergency response are illustrated in S1 SSHE Training and Competency Procedure (13247-PDR-SSHE-305/01) and PTTEP SSHE Training and Competency Standard (SSHE-106-STD-340).

Emergency exercise shall be regularly performed by S1 emergency response team members according to the set plan agreed by S1 management. These emergency exercises and drills are to enhance the knowledge & skills of the members and to test the effectiveness of existing ERP for improvement.

3.11 S1 DUTY ROSTER GUIDELINE

The S1 duty roster is designed to provide effective support around the clock for resolving the emergency situation. The duty persons are appointed by the ERT members in each discipline to act on their behalf when they are not readily available to respond to emergency calls. They shall be trained and competent to respond to emergency in their given discipline's roles.

All duty persons are expected to be contactable at all times during their duty period. All duty persons shall respond to all emergency call and take their given roles to support the emergency. When called in, they shall proceed to their designated emergency station the soonest within 2 hours.

The ERT duty persons shall act in emergency response until released by the ERT member in the given discipline.

The duty roster consists of two groups as follows:

3.11.1 ERT Duty Roster

ERT Essential Duty Group:

The ERT essential duty group is the main group that will always be called in when emergency tier 2 & 3 is initiated. The ERT essential duty group comprises the following persons:

- Domestic Onshore Asset Duty (S1, PTTEP1 and SPH)
- Duty Officer
- Event Logger
- SSHE Officer
- SSHE Duty
- Logistics Duty

- Maintenance Duty
- IT/ Telecom Services
- Security Services
- Medical Team
- Community & Media Response Team (CMRT) Duty
- Relative Response Team (RRT) Duty

For the essential duty group, the duty officer (S1 Production Superintendent) is a key person for coordination with other duty persons including on-call support team on emergency supports.

On-Call Support Team Duty Persons:

The On-Call Support Team Duty Group will be assigned from various disciplines' representatives working within S1 operation premise. The selected persons will be called in when their related discipline has sustained an emergency or ER Team Leader / EMT requires assistance. The On-Call Support Team Duty Group is comprised of (but not limit to) the following groups:

- Drilling Duty – ETN SSHE
- Well Services Duty
- Construction Duty
- Material Yard Duty

In addition to above duty groups, the register of S1 duty roster shall include other support staffs of S1 operation department for fulfilling support on emergency situation as required.

Depending on the different roles and responsibilities of duty staff, mobilization time to LKU office for support emergency are varied as follows:

- Available immediately (restricted to shift staff working on facilities including duty officer, event logger, SSHE officer, security services, medical team, well services duty);
- Within 2 hours (key support staff e.g. SSHE duty, logistic duty, maintenance duty, CMRT duty, RRT duty, drilling duty, construction duty, material yard duty, IT/Telecom).

The example of S1 duty roster for emergency response as per duty group classification and mobilization period is illustrated in **Appendix F**.

Back-up Duty Roster Team:

If an emergency takes long time to last, ER Team Leader and/or Duty Officer shall consider having a relieve team. The Duty Roster Team in a later week will be called for backup.

In the event of two emergencies happen at the same time, the Back-up Team will be called.

3.11.2 Duty Roster Nomination

Staff are nominated by their line managers/supervisors for duty roster for a period 7 consecutive calendar days, starting on Monday at 12:00 hrs. The duty roster will be updated to all duty staff and Corporate SSHE division by S1 SSHE department as per weekly basis. The roster will be distributed every Thursday to the following week's duty holders, and the personnel who will be on duty during the following weeks. This will include key personnel such as Telecom Officer. The assigned Department Focal Points are responsible for providing the Corporate SSHE Division with information regarding the forward planning of the Duty Roster. Changes during a Duty Roster Week are allowed, but it shall be the responsibility of the person scheduled for duty. The change must be amicably agreed by the nominated recipient and shall be communicated, by the person requesting the change, to S1 SSHE Department focal point (Officer, Data Management (SSHE) or assigned person). The requested change shall only be to another qualified duty person in the group.

3.11.3 Communication for Duty Roster Personnel

Staff on Duty Roster will receive an Emergency Duty Book which consists of a log book and contact list. Details of all calls, received and transmitted, should be entered into the log book. The Emergency Duty Book must be handed over to the next person of duty.

1. DUTY ROSTER MOBILE PHONE TEST

The Duty Roster mobile phone will be tested by LKU Telecom Officer every Monday at 13:00 hrs. The message will be;

- "Duty Telephone Test, please confirm it is working ... over".

(ทดสอบการติดต่อโทรศัพท์ ครับ ไม่ทราบชัดเจนหรือไม่ ครับ)

This is to ensure that the mobile phones are workable and also to remind duty persons that they are on duty.

If by 16.00 hrs. the Duty Person has not been phoned, he/ she must ring LKU Telecom Officer and report that they did not receive the test call.

The Operator, Telecom Services will then test that number again.

2. GENERIC DUTY ROSTER RESPONSIBILITIES

- Be available and be within the mobilization time radius of LKU Office at all times;
- Carry the duty mobile phone at all times;
- Ensure that the mobile telephones are always working;
- Be aware of specific responsibilities during an emergency;
- When receiving an emergency call, respond as directed by the call message;
- Immediately report any problems with duty communications equipment to Operator, Telecom Services;

- Inform S1 SSHE Department focal point (Officer, Data Management (SSHE)) of any changes to the published duty roster;
- Must not have a blood alcohol level above the National legal limit;
- Notify S1 SSHE Department focal point (Officer, Data Management (SSHE)) of any changes in mobile telephone numbers.

3. DUTY ROSTER PERSONNEL QUALIFICATION REQUIREMENT

The Duty Roster personnel shall be qualified and be approved by SVP, Thai Onshore Asset (EMT Leader). Each discipline is required to have the following qualifications;

- Duty Roster Team members shall be assigned from experience and competence personnel of each discipline;
- Expertise in their areas of responsibility, including knowledge and experience;
- Understand the PTTEP EMP and S1 Emergency Response Plan and know the response process under his/her responsibilities;
- Bilingual – Fluent in both written & spoken Thai & English;
- Has no record of disabilities that may impair his/her ability to perform the functions assigned to them;

All Duty Roster Personnel shall receive training and participate in the emergency response exercise as indicated **Table 6**.

Table 6: Training Requirement and Exercises of S1 Duty Roster

Training Course	Recommended for	Frequency	Responsible Parties
PTTEP Emergency Management Plan (EMP) Introduction and Incident Command Introduction	All new Duty Roster personnel	Yearly	Corporate Security Section
S1 Emergency Response Plan Introduction	All new Duty Roster personnel	Yearly	S1 SSHE Department
Exercise	Recommended for	Frequency	Responsible Parties
Table Top	Selected from Weekly Duty Roster personnel	As appropriated or at least yearly	S1 SSHE Department
Tier 2	Selected from Weekly Duty Roster Team	Yearly	Corporate Security Section and S1 SSHE Department
Tier 3	Duty Roster Team and Crisis Management Team	Yearly	Corporate Security Section and S1 SSHE Department
Note: For table top exercises, to ensure that all duty persons understand and confidence to deal with the real emergency, the frequency of table top exercises shall be more frequency. The exercises can be both informing in advance and surprising without advance informed.			

APPENDICES

APPENDIX A: EMERGENCY CALL MESSAGE FROM LKU TELECOM OFFICER

The emergency call messages that need to be informed to Emergency Response Team, on-call support team and involved parties by LKU Telecom Officer are as follows:

- Tier 1 Emergency at.....For information and standby.
(ขณะนี้เหตุการณ์ฉุกเฉิน ระดับ 1 ที่.....แจ้งเพื่อทราบ และเตรียมความพร้อม)
- Tier 2 Emergency at.....Go to S1 Emergency Coordination Centre (ECC) immediately.
(ขณะนี้เหตุการณ์ฉุกเฉิน ระดับ 2 ที่..... กรุณามาที่ศูนย์ประสานงานเหตุฉุกเฉินทันที)
- Tier 3 Emergency at.....Go to S1 Emergency Coordination Centre (ECC) immediately.
(ขณะนี้เหตุการณ์ฉุกเฉิน ระดับ 3 ที่..... กรุณามาที่ศูนย์ประสานงานเหตุฉุกเฉินทันที)
- Emergency is over. (ขณะนี้เหตุการณ์เข้าสู่ภาวะปกติ)

APPENDIX B: INITIAL EMERGENCY REPORT FORM

This form will be completed by LKU Telecom. Operator on receiving notification of an emergency.

แบบฟอร์มการแจ้งเหตุการฉุกเฉินเบื้องต้น				
รายละเอียดผู้แจ้งเหตุฉุกเฉิน				
ชื่อผู้แจ้งเหตุ:		เบอร์โทรศัพท์ผู้แจ้งเหตุ:		
วันและเวลาที่แจ้งเหตุ:				
รายละเอียดเหตุฉุกเฉิน				
วันและเวลาที่เกิดเหตุ:				
สถานที่เกิดเหตุ:				
ประเภทของเหตุฉุกเฉิน	<input type="checkbox"/> ไฟไหม้ <input type="checkbox"/> ระเบิด <input type="checkbox"/> ก๊าซรั่วไหล <input type="checkbox"/> สารเคมี/น้ำมันรั่วไหล <input type="checkbox"/> อุบัติเหตุทางถนน <input type="checkbox"/> การก่อการร้าย <input type="checkbox"/> อื่นๆ โปรดระบุ			
รายละเอียดของเหตุฉุกเฉิน:				
ผู้แจ้งเหตุต้องการความช่วยเหลือหรือไม่	<input type="checkbox"/> ใช่ <input type="checkbox"/> ไม่ใช่			
ความช่วยเหลือที่ต้องการ	<input type="checkbox"/> การช่วยทางการแพทย์ <input type="checkbox"/> การค้นหาผู้สูญหาย/การช่วยชีวิต <input type="checkbox"/> การตอบสนองต่อการรั่วไหล <input type="checkbox"/> การช่วยเหลือด้านเทคนิค <input type="checkbox"/> อื่นๆ โปรดระบุ			
รายละเอียดด้านบุคคล				
รายละเอียด	พนักงาน ปตท.สม.	ผู้รับเหมา	บุคคลที่สาม	ไม่ทราบ/ไม่สามารถระบุได้
จำนวนผู้เสียชีวิต				
จำนวนผู้บาดเจ็บ				
จำนวนผู้สูญหาย				
รายละเอียดด้านสิ่งแวดล้อม				
ระบุชื่อวัสดุที่รั่วไหล				
ปริมาณการรั่วไหล (ถ้ามี)				
รายละเอียด ณ จุดเกิดเหตุ				
มีตัวแทนของบริษัทฯ อยู่ ณ จุดเกิดเหตุหรือไม่	<input type="checkbox"/> มี <input type="checkbox"/> ไม่มี ถ้ามี โปรดระบุ ชื่อ เบอร์ติดต่อกลับ			
การดำเนินการ ณ จุดเกิดเหตุ				
ชื่อผู้บันทึกเหตุ	วันและเวลาที่บันทึกเหตุ:			



APPENDIX C: EMERGENCY LOG SHEET




See next page.



รายละเอียดเหตุการณ์			ชื่อผู้บันทึก: ตำแหน่งผู้บันทึก: วันที่:	
เวลา	ข้อความ		รายละเอียดของเหตุการณ์	หมายเหตุ
	จาก	ถึง		




APPENDIX D: LOCATION OF PREDETERMINED MUSTER POINTS




The locations of predetermined muster points, positions of Muster Checker and Muster logger of each S1 operating location are shown in below table.


Table 1: The muster points, positions of Muster Checker and Muster logger of each S1 operating location

No.	S1 Operating Location	Location of Muster Point	Mustered Person	Position of Muster Checker	Position of Muster Logger	Photo of Muster Point
1	LKU Flow Station, accommodation, maintenance workshop, officer	Behind Fire Station Building	Emergency Response Team, personnel working in LKU Flow Station, personnel working in the office area, maintenance workshop, visitors	Well Site Supervisor #2	S1 SSHE Officer (Shift)	
		In front of CCR	Emergency Response Team within LKU Flow Station	LKU Plant Foreman	S1 SSHE Officer (Shift)	
		In front of Piyachat Nithat (PNEC) Building	Persons working at PNEC building and their visitors Persons working at OJT center building and their visitors	Public Affair Staff	S1 SSHE Officer (Shift)	

No.	S1 Operating Location	Location of Muster Point	Mustered Person	Position of Muster Checker	Position of Muster Logger	Photo of Muster Point
2	NTM-A	By the security guardhouse at the main gate.	Persons working at NTM-A, contractors, visitors	NTM-A Security Guard	NTM-A Production Lead Operator	
		In front of NTM-A control room	Site Operation Team/ Emergency Response Team	NTM-A Production Operator	NTM-A Production Lead Operator	-
3	STN-A	Beside security guardhouse by the main gate.	Persons working in STN-A, contractors, visitors	STN-A Security Guard	STN-A Production Operator	
		In front of STN-A control room	Site Operation Team/ Emergency Response Team	STN-A Production Operator	STN-A Production Operator	-

No.	S1 Operating Location	Location of Muster Point	Mustered Person	Position of Muster Checker	Position of Muster Logger	Photo of Muster Point
4	Well Sites	Outside by the main gate	Persons working within well sites, contractors, visitors	Security Guard	Area Operator	
5	BPR Depot	In front of T-904 (Road tanker area)	Emergency Response Team, persons working at road tanker area within BPR Depot, visitors	Security Guard (Road tanker area)	BPR Depot Operator	
		In front of the security guardhouse (Rail tanker area)	Emergency Response Team, persons working at rail side area within BPR Depot, visitors	Security Guard (Rail tanker area)	BPR Depot Operator	

No.	S1 Operating Location	Location of Muster Point	Mustered Person	Position of Muster Checker	Position of Muster Logger	Photo of Muster Point
6	Well Service Workshop	In front of the main gate	Persons working within well service workshop, visitors	Senior Technician (workshop)	Well Service Supervisor	
7	Material Yard	In front of the main gate	Persons working within the material yard, visitors	Senior Store Keeper	Team Leader, Warehouse and Material Yard	
8	PHS Housing Compounds	Car park area	Persons living in PHS housing compounds, persons working (gardeners, housekeepers), visitors	Security Guard	Security Guard	

No.	S1 Operating Location	Location of Muster Point	Mustered Person	Position of Muster Checker	Position of Muster Logger	Photo of Muster Point
9	CNS Rail Tanker Maintenance Workshop	In front of the security guardhouse	Persons working CNS rail tanker maintenance workshop, visitors	CNS Contractor (JS TECH) SSHE Officer	CNS Contractor (JS TECH) Site Manager	

APPENDIX E: EXAMPLES OF COMMUNICATION TOOLS

1. Key Messages

These key messages should be conveyed in all communications to all stakeholders of PTTEP.

- In conducting exploration and production of petroleum and other activities in accordance with its mission, PTTEP, strives at all times to achieve a manner ensures that incidents affecting the health and safety of its employees, contractors and member of the public, the environment and the integrity of its assets shall not occur.
- PTTEP's primary concern in all incidents of this nature is for the people involved. PTTEP staff have been trained to strictly follow the emergency plan to ensure maximum safety for themselves, partners and rescue workers.
- The nature of PTTEP's business demands the most stringent Safety, Security, Health, and Environmental standards and the company remains committed to maintaining the highest possible standards in this vital area in all its activities.


ข้อความการสื่อสารหลัก

ข้อความการสื่อสารหลักสำหรับผู้มีส่วนได้ส่วนเสียของ ปตท.สผ. กลุ่มต่างๆ

- ในการดำเนินการสำรวจและผลิตปิโตรเลียมรวมทั้งกิจกรรมอื่นๆ ปตท.สผ. มีแนวทางปฏิบัติเพื่อป้องกันมิให้เกิดเหตุการณ์ที่จะส่งผลกระทบต่อสุขภาพและความปลอดภัยของพนักงานบริษัทฯ ผู้รับเหมาและบุคคลทั่วไป รวมทั้งสภาพแวดล้อมและทรัพย์สินของบริษัทฯ
- ในสถานการณ์ดังกล่าว ปตท.สผ. ห่วงใยในสวัสดิภาพของพนักงานที่เกี่ยวข้อง อย่างไรก็ตาม พนักงานของ ปตท.สผ. ทุกคนได้ผ่านการฝึกฝนให้ปฏิบัติตามแผนการในภาวะฉุกเฉินโดยเคร่งครัด เพื่อให้เกิดความมั่นใจ
- ในความปลอดภัยสูงสุดของพนักงาน พันธมิตรธุรกิจ และเจ้าหน้าที่กู้ภัย ด้วยลักษณะของธุรกิจของ ปตท.สผ. บริษัทฯ ยึดถือหลักเกณฑ์และมาตรฐานที่เข้มงวดที่สุดด้านสุขภาพ ความปลอดภัย และสิ่งแวดล้อม บริษัทฯ มุ่งมั่นปฏิบัติตามหลักการดังกล่าวมาโดยตลอด เพื่อรักษามาตรฐาน สูงสุดในการปฏิบัติงานด้านดังกล่าว

2. Media Release Template

The Media Release Template gives an overview of the structure and content of a press release or a statement, in line with the common way press releases are written. Using this template helps the Writer develop a press release or a statement quickly and in a consistent way. The Writer and Media Relations Team work closely together to ensure they receive all information as per the template.



News Release

ข่าวประชาสัมพันธ์

Date : _____
Time : _____

Headline (subject matter)

What happened : _____
Where it happened : _____
When did it happen (date, time) : _____
Services involved : _____
Current situation as verified by facts : _____
Effect on stakeholders (JVs, partners, government, suppliers, public) : _____
Status of investigation/recovery : _____
Which government agencies are involved : _____
Any additional information : _____

For further information, please contact : _____
Contact details
Name and designation _____
Tel : _____
Fax : _____
Email : _____

Disclaimer
The information, statements, forecasts and projections contained herein reflect the Company's current views with respect to future events and financial performance. These views are based on assumptions subject to various risks. No assurance is given that these future events will occur, or that the Company's future assumption are correct. Actual results may differ materially from those projected.

บริษัท ปตท.สำรวจและผลิตปิโตรเลียม จำกัด (มหาชน)
PTT Exploration and Production Public Company Limited

www.pttep.com

ปตท.สำรวจและผลิตปิโตรเลียม จำกัด (มหาชน) | Passion to Explore for a Sustainable Future

3. 1st Telephone Message to Answer Media and Investor Enquiries

Based on the latest report on _____(date) at _____(time 24 hours) we obtained, there was a/an _____ at _____. The cause of the incident is still unclear. However, the company is doing its best (to evacuate all staff) (and extinguish then fire/control the spill). Please tell me your name, the publication you represent, the telephone number and email address. For any further update on this situation, please visit www.pttep.com. Thank you.

ข้อความแรกในการตอบโทรศัพท์สื่อมวลชน

จากรายงานที่บริษัท ปตท.สำรวจและผลิตปิโตรเลียม จำกัด (มหาชน) ได้รับเมื่อเวลา_____วันที่_____ได้เกิดเหตุ _____ ขึ้นที่ _____ สาเหตุของอุบัติเหตุยังไม่ทราบแน่ชัด อย่างไรก็ตาม บริษัทฯ กำลังดำเนินการอย่างเต็มที่เพื่อ _____ (อพยพพนักงาน และดับเพลิง หรือกำจัดคราบน้ำมัน) ขอทราบชื่อของคุณ ชื่อสื่อที่สังกัด หมายเลขโทรศัพท์ และ e-mail ทั้งนี้ คุณสามารถติดตามรายละเอียดความคืบหน้าของเหตุการณ์ได้ที่เว็บไซต์ www.pttep.comค่ะ/ครับ

4. Holding Statement

Tips on Writing a Holding Statement

- Three paragraphs
 - Keeps to facts
 - What is being done
 - Some context about the company
- Keep it short and factually accurate
- Avoid emotive language
- Don't prompt further questions
- Avoid digging holes which you can fall into later
- Don't commit to anything - unless it is your intention to do so
- State date (time) and contact details

Note:

Never make statements like "There was no loss of life or injury to staff members resulting from the incident." unless this is confirmed.

Such statements made prematurely will reflect badly on the company if ultimately deaths and/or injuries have occurred.

If not yet confirmed, say something like: "Up till now, we have not received reports of any loss of life or injuries." Then you may add: "Information is still coming in and we will update you as and when we get it."

หมายเหตุ:

ไม่ควรระบุว่า "ไม่มีการบาดเจ็บหรือเสียชีวิตจากเหตุการณ์ที่เกิดขึ้น" จนกว่าจะมีการยืนยันแน่นอน มิฉะนั้นจะส่งผลเสียอย่างมากต่อบริษัท หากยังไม่ได้รับการยืนยันที่แน่นอนว่า มีผู้เสียชีวิต และ/หรือ ผู้บาดเจ็บจริง ควรชี้แจงว่า "จนถึงขณะนี้ เรายังไม่ได้รับรายงานเกี่ยวกับผู้เสียชีวิตหรือผู้บาดเจ็บ" และเสริมว่า "ข้อมูลเพิ่มเติมจะมาถึงในเร็วๆ นี้" และบริษัทฯ จะแจ้งความคืบหน้าให้ท่านทราบทันทีที่ได้รับข้อมูล"

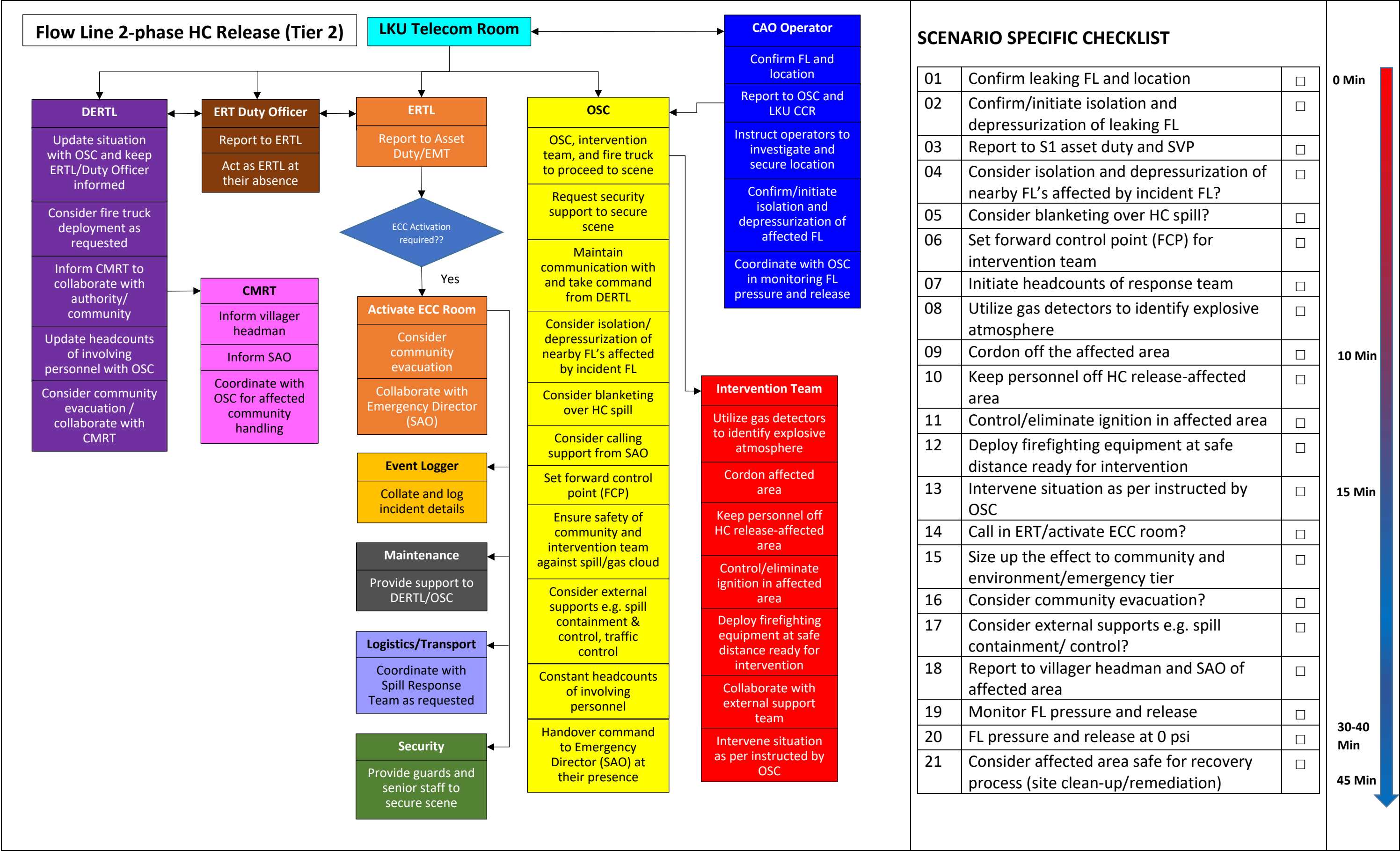
APPENDIX F: EXAMPLE OF S1 DUTY ROSTER

S1 Duty Roster for Emergency Response					
	24-Jun-2019		To	01-Jul-2019	
Operator, Telecom. Services (LKU)					
First point of call	LKU Office			055-731150, 055-718-999, 02-537-6099 Internal line 33 or 810-6099	
ERT Main Duty Group					
Pool Field (Available immediately in the Field)					
Role	From	To	Name	Office	Mobile
Duty Officer	24/06/19	1/7/2019	Nakrop P.	810-6238	081-7855476
Event Logger	24/06/19	1/7/2019	Tattanan P.	810-6187	-
SSHE Officer	24/06/19	1/7/2019	Charun C.	810-6100, 810-6163	084-387-9416
Security Services	-	-	-	810-6045, 810-6069	-
Medical Team (LKU Nurse/Ambulance)	-	-	-	810-6038	081-2817664
Contactable 24 hours, Mobilize in 2 hours					
Role	From	To	Name	Office	Mobile
Domestic Onshore Asset Duty	24/06/19	1/7/2019	Noppadol B.	800-4616	097-4964975
SSHE Duty	24/06/19	1/7/2019	Ronachai F.	810-6298	089-7711212
Logistics Duty	24/06/19	1/7/2019	Vuthichai K.	810-6190	081-9949340
Maintenance Duty	24/06/19	1/7/2019	-	810-6150 (Officer hour)	098-2710948 (After office hour)
IT/Telecom Services	24/06/19	1/7/2019	Jirasak T.	6304	081-7855485
Community & Media Response Team (CMRT) Duty	24/06/19	1/7/2019	Panlop L.	810-4507	089-9681219
Relative Response Team (RRT) Duty	24/06/19	1/7/2019	Jantana N.	810-6292	XXXXXXX
On-Call Support Team Duty Persons					
Pool Field (Available immediately in the Field)					
Role	From	To	Name	Office	Mobile
Well Services (Superintendent)	24/06/19	1/7/2019	Chalit D.	810-6082, 810-6006	081-7855487
ETN SSHE Duty	24/06/19	1/7/2019	Saralrasm T.	810-6118	098-8297650
Contactable 24 hours, Mobilize in 2 hours					
Construction Duty	24/06/19	1/7/2019	Teerayut I.	810-6168	089-9618611
Material Yard Duty	24/06/19	1/7/2019	-	810-6064	081-7519345



APPENDIX G: INCIDENT GUIDELINE FOR EMERGENCY SITUATIONS

<< File embedded in PDF >>



ROLES AND RESPONSIBILITIES

Roles	Responsibilities
Document Owner	<p>The owner of the S1 Emergency Response Plan is VP, S1 Production Operations Department, with responsibilities for:-</p> <ul style="list-style-type: none"> ■ Issuing the S1 Emergency Response Plan and its revisions; ■ Issuing the S1 Emergency Response Plan and its revisions; and ■ Ensuring effective implementation of the plan.
Document Custodian	<p>The custodian of the S1 Emergency Response Plan is Superintendent, SSHE, with responsibilities for:-</p> <ul style="list-style-type: none"> ■ Identify deficiencies or potential improvements; ■ Initiating periodic revision; and ■ Maintaining revision history and document status register.

DEFINITION AND ACRONYMS

Set out below are common specific terms presented in alphabetical order:

Term	Definition
Asset	Refers to an operating Asset, site, or location within a respective Function Group.
Corporate	Refers to the PTTEP business groups hierarchically above Asset level, and located in the PTTEP headquarters, Bangkok.
Division	A business group may have one or more distinct groups within its hierarchy. These are referred to as Divisions.
Department	A subgroup within a Function Group, Division or Asset.
Function Group	Refers to a corporate level business group. These may have associated Divisions, Departments, or operational Assets within their hierarchy.
Crisis	<p>is a major or catastrophic event (out of control emergency). A crisis could result in sustained national impacts over a prolonged period of time; almost immediately exceeds resources normally available to the company, local authorities, and country in the impacted area; and significantly interrupts governmental operations and emergency services to such an extent that national security could be threatened. The crisis may challenge the ability and capacity of the company, community, and country to achieve a timely recovery.</p> <p>Crisis situations include terrorism that results in extraordinary levels of mass casualties, damage, or disruption severely affecting the population, infrastructure, environment, economy, company reputation, national morale, and/ or government functions. In PTTEP, a crisis situation is treated by a tier 3 response level.</p>
Crisis Management Team (CMT) Leader	The Chief Executive Officer (CEO) of the company who has the top authority to the overall management of a group/ company impact related to any crisis situations. He has the authority to activate the Corporate Crisis Management Team and work closely with the Asset Emergency Management Team Leader.
Emergency	is an occurrence or event, natural or human-caused, that requires an emergency response under the determination of affected asset leader or acting person, to protect life, environment, property, and reputation or to lessen or avert the threat of a major or catastrophe in any part of the company premises. The external assistance may or may not be needed to supplement the company's efforts and

Term	Definition
	<p>capabilities to save lives, environmental, protect property, public health and safety.</p> <p>Emergency situations can, for example, include major disasters, emergencies, terrorist attacks, terrorist threats, fires, floods, oil, and hazardous material spills, marine vessels and aircraft accidents, earthquakes, tropical storms, typhoon, war-related disasters, an outbreak of diseases and medical emergencies, and etc.</p> <p>In PTTEP emergency situations can be evaluated and treated by using a tier 1 – 2 response level.</p>
S1 Emergency Management Team Leader (EMT Leader)	<p>S1 asset's SVP or the acting person who has overall authority and responsibility for supporting and providing tactical advice, activities, and action plans to the S1 ERT or On-Scene Commander (OSC), including the development of strategic objectives. EMT leader also sets priorities and defines the organization of the EMT and the overall action plans for a particular response. He/she has to work closely with asset EMT.</p>
S1 Emergency Response Team Leader (ERT Leader)	<p>S1 VP with responsibility for all onsite responses, especially providing directions and onsite tactical operations and always retaining the authority to determine the appropriate course of response actions. S1 ERT leader has the authority to activate the S1 ERT.</p>

Acronyms	Description
DERTL	S1 Deputy Emergency Response Team Leader
ECC	Emergency Coordination Centre
ERP	S1 Emergency Response Plan
ERT	S1 Emergency Response Team
ERTL	S1 Emergency Response Team Leader
CMRT	S1 Community & Media Response Team
OSC	S1 On-Scene Commander
RRT	S1 Relative Response Team
EMT	S1 Asset Emergency Management Team
CMT	PTTEP Crisis Management Team
SAO	Sub-district Administrative Office
OSRL	Oil Spill Response Limited Company
EARL	East Asia Response Limited Company
IESG	Oil Industry Environment Safety Group Association of Thailand
LKU	Area of Lan Krabue District, Kampanget Province
ITL	Intervention Team Leader
NTM	Nong Tum Sub-district, Kong Krai Lad District, Sukhothai Province
PHS	Phitsanulok Province
CNS	Chong Nonsi, Bangkok
CCT	PTTEP Crisis Communication Team
CMRR	Communication and Media Response Room
VP.	Vice President

Acronyms	Description
SVP.	Senior Vice President
CSR	Company Site Representative

REFERENCES

Document Code	Document Title
PTTEP SSHE Controlling Documents	
11038-STD-SSHE-000	PTTEP SSHE Management System
11038-STD-SSHE-401	PTTEP SSHE Risk Management Standard
SSHE-106-STD-500	PTTEP Emergency and Crisis Management Standard
12148-PDR-SSHE-501	PTTEP Crisis Management Plan
SSHE-106-PDR-502	PTTEP Emergency Management Plan
SSHE-106-STD-340	PTTEP SSHE Training and Competency Standard
11003-GDL-SSHE-501-003	PTTEP Medical Emergency Management Guideline
12145-GDL-004-R04	PTTEP Crisis Communications Guideline
13247-PDR-SSHE-305/01	S1 SSHE Training and Competency Procedure
63984.1/2017	Thai Onshore Asset (PTN) Business Continuity Plan (BCP)
Other Reference Documents	
-	Disaster Prevention and Mitigation Act B.E.2550 พ.ร.บ.ป้องกันและบรรเทาสาธารณภัย พ.ศ. 2550

REVISION HISTORY

Rev.	Description of Revision
0	<p>Authorized by: -, Date: -</p> <p>New issue.</p>
1	<p>Authorized by: DSA, Date: August 2010</p> <p>Key changes from the previous version are as follows:-</p> <ul style="list-style-type: none"> ■ Re-formatted from SSHE-ER-01, S1 Emergency and Crisis Response Plan; ■ Aligned with new PTTEP SSHE MS, ISO14001:2004 and OHSAS18001:2007 requirements; ■ Current ERC (PS1/P) is changed to OSC (On-Scene-Commander) as per corporate guideline; ■ Current OSC is changed to Intervention Team Leader(s); ■ Added emergency plan for Protesting/Demonstration & Terrorist; and ■ Updated Organizational Indicators.
2	<p>Authorized by: DSA, Date: November 2013</p> <p>Key changes from the previous version are as follows:-</p> <ul style="list-style-type: none"> ■ Assigned new document code; ■ Aligned with Corporate Emergency and Crisis Management Standard and Plan; ■ Changed back OSC to be at the incident scene; ■ S1 IC is to be at ECC; ■ Revised role & responsibilities; and ■ Updated emergency contact numbers.
3	<p>Authorized by: PS1, Date: November 2019</p> <p>Major amendment of the whole procedure. Key changes from the previous version are as follows:-</p> <ul style="list-style-type: none"> ■ Aligned with the Corporate Emergency Management Plan and Crisis Management Plan; ■ Revised S1 Emergency Response Team Organization with their roles and responsibilities; ■ Revised emergency response action; and ■ Included sections of S1 duty roster guideline, must points and press release.



บริษัท ปตท.สผ. สยาม จำกัด

รายงานผลการปฏิบัติตามมาตรการป้องกันและแก้ไขผลกระทบสิ่งแวดล้อม และมาตรการติดตามตรวจสอบผลกระทบสิ่งแวดล้อม
โครงการขุดเจาะน้ำมันบนฝั่งที่บ้านหนองจิกและบ้านโนนพลวง และโครงการพัฒนาปิโตรเลียมแหล่งสารบบ ยางเมือง และไทรงาม
พื้นที่แปลงเอส 1 จังหวัดกำแพงเพชร พิชณุโลก และสุโขทัย
ฉบับเดือนมกราคม – ธันวาคม พ.ศ.2565

ภาคผนวกที่ 11

S1 General SSHE Rules and Requirements Procedure



PTTEP

PTT Exploration and Production Public Company Limited

S1 General SSHE Rules and Requirements Procedure

Document Code: 13247-PDR-SSHE-505/08-R04

September 2021

Approval Register

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THIS DOCUMENT WILL BE REVIEWED EVERY **5 YEARS** FROM DATE OF APPROVAL OR
REVISED EARLIER IF NECESSARY.

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INTRODUCTION

1. PURPOSE

This S1 General SSHE Rules and Requirements demonstrate minimum SSHE requirements that all staff and contractors shall comply with to ensure that the activities are executed safely and cause no harm to personnel, asset environment and reputation.

2. SCOPE

The S1 general SSHE rules and requirements is applicable for all staff and contractors working in S1 operation areas.

REQUIREMENTS

3. S1 GENERAL SSHE RULES AND REQUIREMENTS

3.1 SSHE TARGET ZERO INCIDENT

Arise from SSHE management system set the specific number in strategic objective called “**SSHE Target Zero Incident**” which means;

- No personal injury
- No security concern
- No environmental impact such as spill
- No major accident
- No public complaint impact to reputation/image

3.2 ADOPTING THE LIFE-SAVING AND PROCESS SAFETY RULES

The Life-Saving and Process Safety Rules aim at preventing fatalities and process safety incidents. The rules' primary objective is to achieve the Company's aspiration of “Target Zero” and “Nobody gets hurt in our operations”.

Each rule consists of an icon and simple actions that individuals can take to prevent fatalities and loss. The rules are separated into two sets as listed in Figure 1 and Figure 2 below.

Personnel working under S1 operations facilities shall be trained or received appropriate briefing of Life-Saving and Process Safety Rules and shall follow and comply with Life-Saving and Process Safety Rules and other SSHE requirements. Violation of Life-Saving and Process Safety shall be reported to a supervisor or other provided channels such as SOC, HRC, Incident Management System (IMS) etc.

Life-Saving and Process Safety Rules shall be applied in risk assessment activities such as the JSA and Permit to Work meetings.

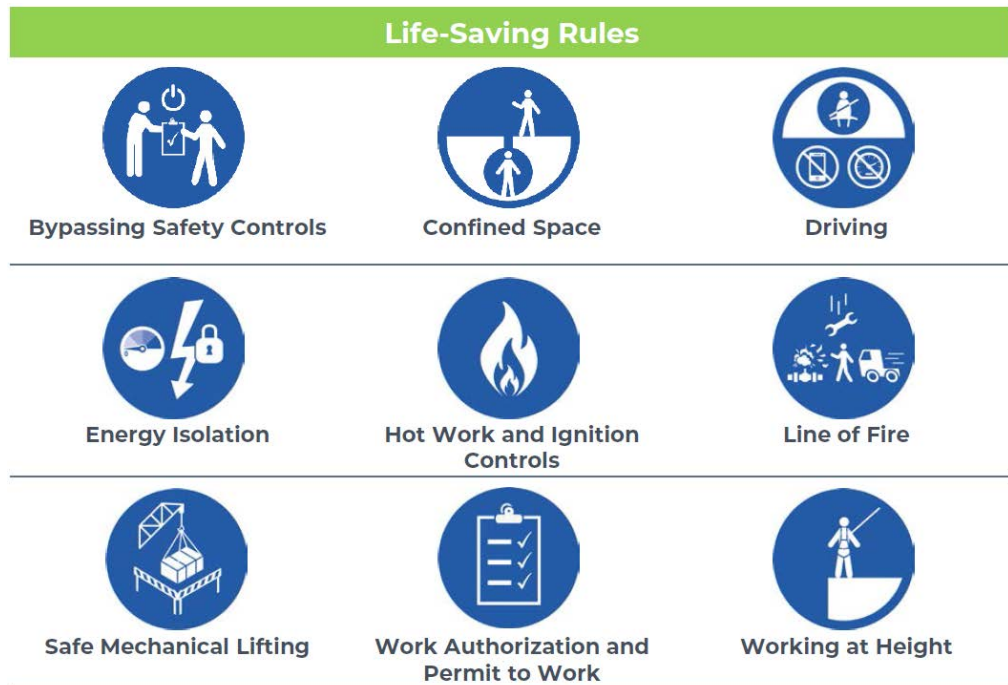


Figure 1: PTTEP Live Saving Rules



Figure 2: PTTEP Process Safety Rules

3.3 ACCESS CONTROL AND PERSONAL IDENTIFICATION

Security is a part of SSHE management system that maintain the integrity of people and assets away from crime, robbery and sabotages among social situation. PTTEP staffs, contractors, visitors and concerned person shall follow access control instruction and coordinate with security guard at all entrance gates. Citizen ID card and passport are the primary evident to express themselves and change to the specific ID cards as below pictures.



Figure 3: Type of Identification Card (Staff & Contractor)

3.4 SSHE INDUCTION

S1 has established an induction program to welcome every new, newly transferred, and promoted employee to the S1 Asset. SSHE induction program is intended to familiarize these employees with the S1 Organization and to introduce them to the PTTEP Vision and Missions, SSHE Policy and strategic objectives for the development of safe, secured, healthy, and environmentally responsible workforces.

SSHE induction is mandatory for all personnel as describe below and shall take place as soon as is practicably possible after arrival.

- New staffs/contractors who is first time and/or transferring to work at S1 Asset;
- The person who has not been in S1 asset more than 6 months;
- Visitors or business partner who is working within one day.

Once employees have gone through the induction program, they shall receive more in-depth job-related training to prepare them for the work that they will be expected to do. This training shall depend on the duties assigned and the prior education and experience background of each individual.

Apart from the SSHE Induction program, all PTTEP newcomer and contractor personnel who working as organic staff in S1 operations are required to attend the S1 SSHE familiarization Program as specified in S1 SSHE Familiarization Program Procedure.

3.5 DRUGS, ALCOHOL AND KRATOM LEAF

It is the employee's responsibility to be fit for work. Employees shall be prohibited from being on company business or locations while impaired by drugs, alcohol or Kratom leaf. Using illegal drugs, alcohol or Kratom leaf, or misusing legal drugs or other substances, will be influenced and reduce their ability to perform their job safely.

Department of Mineral Fuels (DMF) defines drugs, Kratom leaf and alcohol regulation to ensure the person who is performing at concession area must have 0.00 % BAC. If the second test is positive, do not enter to the company's premise for 72 hours and consequentially report to DMF. Disciplinary action in accordance with HR Policy. Such action is also subject to the related local laws.

There are various kinds of alcohol testing are as follows;

- **Pre-employment Testing.**
- **Testing before placement in sensitive position and sensitive areas.**
- **Random and periodic (screening) testing** which is without cause.
- **Testing with cause** after incident taken place if positive result, employee is recommend to leave without pay and may be requested by police authority or under the court-of-law.

3.6 INCIDENT REPORTING

PTTEP support and admires the staffs, contractors and involved person to inform near miss, accident and public or environmental complain to the LKU telecommunication room for further notifying to concerned parties and relevant person. All incidents shall be recorded in computerized PTTEP Incident Management System (IMS).

Incident reporting and investigation process shall be followed and compliance with PTTEP Incident Management Standard.

3.7 GREEN OFFICE & 5S PROGRAM

S1 receives 'Gold Level' Green Office Award 2020 from the Department of Environmental Quality Promotion. Green Office Award is given to leading organizations that have made efforts to reduce energy consumption, minimize carbon footprint and implement green practices in their offices/operations and sustain a healthy workplace.

5S (Sorting, Setting in Order, Systematic Cleaning, Standardizing, Sustaining) Program is a structured program to systematically achieve well organization, cleanliness and standardization which result in a safer, more efficient and more productive operation. 5S Program is considered as a component of the green office. It is recommended that all personnel adopt the concept of 5S program and integrate it as part of their daily work routine.



Figure 4: 5S during cleaning & completed cleaning

3.8 STOP WORK AUTHORITY (SWA)

Stop Work Authority (SWA) is the prevention campaign when unsafe act and unsafe condition are found in workplace.

Stop Work Authority exercise is a tool to monitor SSHE awareness and leadership of staffs and contractor for proactive cultures and dare to stop any non-conformances of safe practice. Example of Stop Work Authority Exercise is illustrated in Appendix A. Stop Work Authority (SWA) Forms, both in Thai & English, are available on S1 Document Database [> SSHE > 10: SSHE Forms](#).

Four factors that can be stopped in personal, tools, equipment and undesirable SSHE practices are as the following diagram.



Figure 5: Stop for Safety (4-STOP)

3.9 ROAD SAFETY

Most numbers of S1 asset activities concern to road, traffic hazards which causes the high severity to drivers and passengers. Defensive driving, the foreseen awareness to identify and rapid assess the front sight and decide to control the vehicle safely. Drivers shall adhere as the followings:

- Evaluate yourself and ensure fit to drive in any traffic condition.
- Use BEWAGON technic to check readiness of vehicles.
- Fasten seat belt and do not sit on the undersigned seat from manufacturers.
- Keep baggage in place at provided area to obstruct another vehicles on traffic lane.
- Do not use mobile phone or simultaneous act while driving.
- Keep velocity under that traffic condition and also being compliance to laws, rules and regulations.
- Journey management plan (JMP) shall be done in case the long journey, night driving and heavy load transportation.



Figure 6: PTTEP S1 Asset Vehicles Speed Limit

3.10 WASTE MANAGEMENT

Waste management system which is aligned with Corporate Waste Management Procedure and Notification of Department of Mineral Fuel on Waste Management Standard for Petroleum Facility B.E. 2556.

The hierarchy of waste management is expressed in terms of reduction, reuse, recycling, recovery and finally residue treatment and disposal.



Figure 7: Waste Management Hierarchy

The waste generator shall classify waste into two main categories which are HAZARDOUS WASTE and NON-HAZARDOUS WASTE. Classification of waste process shall begin with identification of waste characteristic and its original source.

Waste management life cycle starts from waste identification from operations, segregation, packaging, labeling, transportation, disposal providers and reporting the inventories.

S1 asset provides containers (bin) of specific type of waste at every part of workplace to meet the proper cleanliness and hygiene.



Figure 8: Examples of Garbage containers (bin) in S1 operations

3.11 SMOKING AREA PROVISION

Passive smoking, also known as second-hand smoke or environmental tobacco smoke, is when a person breathes in toxic fumes. The person who never smoked, shall aware the health effects when nearby smoker(s).

Smoking is only allowed in designated smoking areas where is provided for fulltime (24 hours) and specific office hours (07:30 - 16:30 hrs.) as Appendix B. Smoker shall be responsible for cleanliness by throwing away cigarette butts into provided sand bin and also correct type of garbage containers.

In addition, they are not allowed while in Company/Contractor vehicle.

3.12 PERSONAL HEALTH AND HYGIENE

Staffs, contractors and concerned parties usually use company's provision of facilities which has personal distancing less than 1 - 2 meters. There may be enormous contamination and epidemiology of virus to harm human's health in workplaces.

S1 SSHE Asset and Corporate Doctors recommend to all facility users shall protect themselves by wearing specific protective equipment, i.e., natural rubber gloves, surgical mask (if preferable) whenever sharing these common facilities.

Safety boots and safety shoes are not allowed to inside the office, canteen and accommodation this may be contamination to common facilities or personal illness.




Figure 9: Personal Health Hygiene





Figure 10: Safety boots and shoes prohibited to inside building

APPENDIX A: STOP WORK AUTHORITY (SWA) EXERCISE

Page 1 of 2

	STOP WORK AUTHORITY (SWA) EXERCISE REPORT FORM	Form No.: 10015-SUP-SSHE-FRM-002-R00
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Summary of Exercise (บทสรุปของการซ้อม): Does the exercise meet the objective? (การซ้อมทบทวนบรรลุตามวัตถุประสงค์ที่วางไว้หรือไม่?) <input checked="" type="checkbox"/> Yes (ใช่) <input type="checkbox"/> No (ไม่ใช่)			
Part 3: Review and Approve (ทบทวนและอนุมัติ)			
Any additional comments and recommendations (ข้อเสนอแนะและข้อแนะนำอื่น ๆ):			
SWA Role Player (บทบาทสมมติ)  (VP,S1 Production Operation) Date: 11 Feb 21	Prepared and reviewed by: (เตรียมและทบทวนโดย) 1) Nattapong V. 2) Suthorn D. 3) Terawat H. Date: 11 Feb 21	Approved by: (อนุมัติโดย)  (VP,S1 Production Operation) Date: 11 Feb 21	Distributed to (ส่งข้อมูลถึง): PS1 Staff, PTN SSHE

Note: SWA Role Player/Supervisor or SSHE personnel shall assess and ensure of safety during the SWA exercise.

APPENDIX B: S1 DESIGNATED SMOKING AREAS

พื้นที่สูบบุหรี่นอกพื้นที่การผลิตและนอก อาคาร (24 ชั่วโมง)



ด้านข้างตึก 30 ปี



ด้านข้างอาคารที่พักลานกระบือ



ด้านหน้าประตู 2

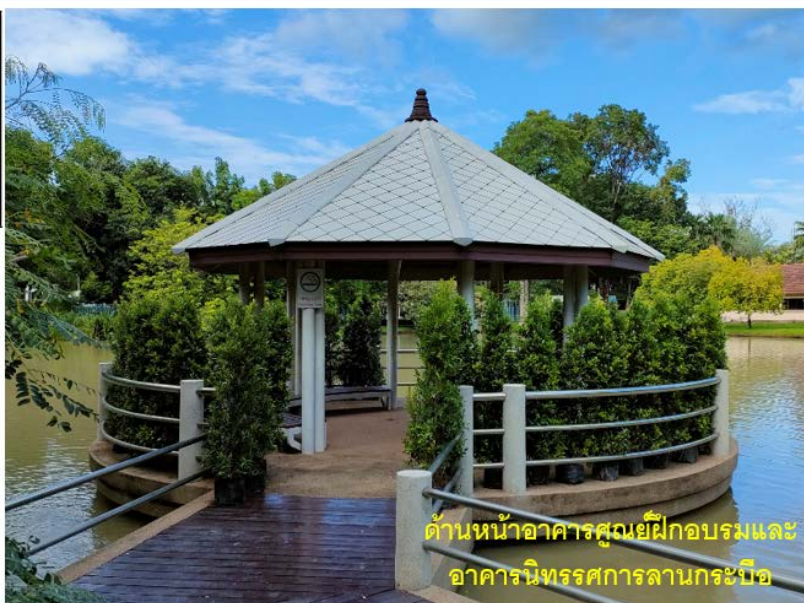


ด้านข้างอาคารแผนกซ่อมบำรุงลานกระบือ



ด้านข้างอาคารจอดรถดับเพลิงลานกระบือ

พื้นที่สูบบุหรี่นอกพื้นที่การผลิตและนอก อาคาร (เฉพาะเวลาทำการ 07:30-16:30 น.)



ด้านหน้าอาคารศูนย์ฝึกอบรมและ
อาคารนิทรรศการลานกระบือ

ROLES AND RESPONSIBILITIES

Roles	Responsibilities
Document Owner	<p>The owner of the VP, Superintendent, SSHE section with responsibilities for:</p> <ul style="list-style-type: none"> ■ Issuing S1 SSHE Rules and Regulations and its revisions. ■ Ensuring effective implementation of S1 SSHE Rules and Regulations.
Document Custodian	<p>The custodian of the Standard is the VP, Superintendent, SSHE section, with responsibilities for:</p> <ul style="list-style-type: none"> ■ Identifying deficiencies and opportunities for improvements; ■ Administrating & analyzing the implementation of S1 SSHE Rules and Regulations Procedure for continual improvements; ■ Initiating periodic revisions; ■ Maintaining revision history and document status register; and ■ Collecting and publishing all approved S1 SSHE Rules and Regulations;
Document Reviewers	<ul style="list-style-type: none"> ■ Document Reviewers shall be relevant Subject Matter Experts (SMEs) or Technical Authorities (TAs), who are nominated by the document owner, based on qualifications, suitability of expertise and work experience. ■ Nominated document reviewers shall scrutinize and comment on documents issued during the comment round. ■ If there are a number of Departments or Divisions within the Company whereby the same disciplines apply, then reviewers shall be selected from those Departments or Divisions, so that there will be a cross-section of input.
Document Controller	<ul style="list-style-type: none"> ■ Maintains document records, monitors/ reports on document development progress, and manages the approval development process. This will include issuance of document coding when proposals for new documents are issued by Document Custodians. ■ Provides the Document Custodian with a unique document code, after a document request has been received, and registered by the administrator. ■ Collaborates with the Document Custodian, document author during document development, and with concerned Management to provide document review and update

Roles	Responsibilities
	<p>information regarding the documentation activities on the Function Group / Division / Department yearly plan</p> <ul style="list-style-type: none">■ Notifies the Document Custodian at least 30 days prior to the scheduled document review date.■ Ensures that the currency of SSHE documentation is maintained and accessible on the SSHE Intranet

DEFINITIONS AND ACRONYMS

Set out below are common specific terms presented in alphabetical order:

Term	Definition
Accident	Accident is an incident which has caused in actual injury or harm to people, damage to property, environmental impact, or negative impact to company reputation. Accidents involving injury to personnel may be further classified into: First Aid Cases (FAC), Medical Treatment Cases (MTC), Restricted Work Day Cases (RWDC), Lost time injury (LTI), Fatalities (FAT).
Asset	Refers to an operating Asset, site, or location within a respective Function Group.
Company	PTT Exploration and Production (Public) Co., Ltd. and PTTEP Siam Ltd.
Contractor	Contractor is a person employed by a Contractor or Contractor's Sub-Contractor(s) who is directly involved in execution of prescribed work under a contract with the reporting company.
Corporate	Refers to the PTTEP business groups hierarchically above Asset level, and located in the PTTEP headquarters, Bangkok.
Department	A subgroup within a Function Group, Division or Asset.
Division	A business group may have one or more distinct groups within its hierarchy. These are referred to as Divisions.
Function Group	Refers to a corporate level business group. These may have associated Divisions, Departments, or operational Assets within their hierarchy.
Guidelines	Refers to a corporate level business group. These may have associated Divisions, Departments, or operational Assets within their hierarchy.
Incident	An unplanned event or chain of events, which has resulted in injury or illness, damage to property, environmental impact, or negative impact on company reputation.
Legal professional privilege	A privilege that applies to communications, oral or in writing, made or brought into existence for the dominant purpose of obtaining or giving legal advice or assistance, or for use in existing or anticipated legal proceedings.

Term	Definition
Loss of Primary Containment	<p>An unplanned or uncontrollable release of any material from containment, including non-toxic and non-flammable materials (e.g. steam, hot condensate, nitrogen, compressed CO2 or compressed air).</p> <p>Primary containment refers to pipes, vessels, tanks etc) see 7.3 for details of Tier 1 and Tier 2 in SSHE-106-STD-600 SSHE Incident Management Standard(.</p>
Near Miss	<p>Near Miss is an Incident which potentially could have resulted in actual injury or illness, damage to property, environmental impact or negative impact to company reputation.</p> <p>Note: As a professional judgment and general rule of thumb when determining if an incident is a Near Miss or Property damage, the criteria that Near Miss is an incident where no loss has occurred, should be used.</p>
Non- Conformance	A failure to comply with a requirement of company SSHE Management System (SSHE MS) and/or national and international laws and regulations.
Occupational Illness	<p>Any abnormal condition or disorder, other than one resulting from an occupational injury, caused by exposure to environmental factors associated with employment. Occupational illness may be caused by inhalation, absorption, ingestion of, or direct contact with the hazard, as well as exposure to physical and psychological hazards. It will generally result from prolonged or repeated exposure. Examples: back problems/ lower limb disorders, cancer and malignant blood disease, infectious disease (food poisoning, malaria etc.) , mental ill health; noise induced hearing loss, silicosis, asbestosis, allergic bronchitis, asthma, synovitis, tenosynovitis, heat exhaustion, radiation exposure.</p>
Occupational Injury	Any injury such as a cut, fracture, sprain, amputation etc. which results from a work-related activity or from an exposure involving a single incident in the work environment, such as deafness from explosion, one- time chemical exposure, back disorder from a slip/trip, insect or snake bite.
Performing Authority (PA)	The person who applies for a Work Permit, usually the foreman or supervisor responsible for the planning and execution of the work. The Applicant may be the person who will carry out the work.
Permit to Work System (PTW)	The Company's formal documented system by which safe working limits are set for authorized work.

Term	Definition
Procedures	Procedures define steps in identifying SSHE practices within PTTEP. They are specific, actions- orientated and describe processes, in compliance with SSHE Standards. Implementation of Procedure is mandatory.
Road Traffic Accident	An Incident which has involved a vehicle and which has resulted in Injury, illness and/ or damage (loss) to people, assets, the environment or the Company's reputation.
SHE MS Standards	Mandatory requirements to ensure SSHE Policy compliance. Implementation of SSHE MS/Standards is mandatory throughout PTTEP.
Specifications	Specifications refer to PTTEP Internal Engineering Standards, which are incorporated into the PTTEP Engineering and General Specification (PEGS) System.
Spill	<p>Spill is any loss of containment that reaches the environment, irrespective volume of quantity recovered. Examples include but not limited to condensate spill, diesel fuel or oil spill; aviation fuel spill, process chemical spill, and etc. Spill of produced water are excluded.</p> <p>Intentional discharges of drilling cutting and fluids during drilling activities are not considered as pollution/ spill but an accidental release of drilling fluids to the sea must be reported as a spill.</p>
SSHE Policy	The highest level document containing a formal statement of principles that identifies expectations of PTTEP in managing SSHE.
Staff	Staff is a person employed by and on the payroll of the reporting company, including corporate and management personnel specifically involved in E&P industry. Persons employed under short-service contracts are included as Company employees provided they are paid directly by the company.
Supporting documents	Associated documents supporting the implementation of SSHE MS. These documents shall be consistent with SSHE Policy, Standards and Procedures. Example of Supporting Documents includes: SSHE plans, regulations, International and national technical references, minutes of meetings, SSHE risk assessment and monitoring records, etc.
Unsafe Act	An act by personnel or an unsafe condition which violates either written or unwritten common sense safety rules or procedures.
Work Related Activity	A work-related activity is an activity in a work environment, which is or ought to be subject to management controls.
Work Site	Any Company managed construction, maintenance or operating site outside the boundaries of a Production Site. (Includes road tanker operations and Contractors' yards, where such yards have been established specifically to serve the Company.)

Acronyms	Description
5S	Sorting, Setting in Order, Systematic Cleaning, Standardizing, Sustaining
ALARP	As Low As Reasonably Practicable
ECM/N	Engineering
IMS	Incident Management System
JSA	Job Safety Analysis
OLG/M	Material Yard
OTN/W	Well Services
PS1	VP, S1 Production Operations
PS1/L	Manager, Land Acquisition, Permits, and Operations Services Section
PS1/M	Superintendent, Maintenance
PS1/O	Manager, Oil Movement and Transportation
PS1/P	Superintendent, Production
PS1/S	Superintendent, SSHE
PS1/T	Manager, Production Operations Support
PTW	Permit To Work
SSHE	Safety, Security, Health and Environment
SSHE MS	Safety, Security, Health and Environment Management System

REFERENCES

Document Code	Document Title
PTTEP SSHE Controlling Documents	
1038-STD-SSHE-000-R05	SSHE Management System
11038-STD-SSHE-301-R02	Corporate Oversight of SSHE MS Standard
11038-STD-SSHE-401-R06	SSHE Risk Management Standard
11038-STD-SSHE-601-R07	Incident Management Standard
11038-STD-SSHE-501-R05	Emergency and Crisis Management Standard
SSHE-106-PDR-521	Waste Management Procedure
2148-GDL-SSHE-603/00/01-R01	5S (Sorting, Setting in Order, Systematic Cleaning, Standardizing, Sustaining) Guideline
11038-GDL-SSHE-507/00/06-R01	Drugs and Alcohol Guideline
11038-STD-SSHE-508-R06	Management of Change Standard
11038-STD-SSHE-510-R02	Life-Saving and Process Safety Rules Standard
12148-PDR-SSHE-505/42-R00	Permit to Work Procedure
10015-SUP-SSHE-FRM-002-R00	Stop Work Authority (SWA) Exercise
Other Reference Documents	
https://europeanlung.org/	Passive Smoking

REVISION HISTORY

Rev.	Description of Revision
0	Authorized by: DSO, Date: September 2010 ■ New document
1	Authorized by: DSO, Date: May 2014 ■ Revised document
2	Authorized by: DSO, Date: September 2014 ■ Revised document
3	Authorized by: PNO, Date: December 2016 ■ Revised document
4	Authorized by: PS1, Date: September 2021 ■ Revised the current S1 Quality and SSHE Standards. ■ Added the meaning of “SSHE Zero Target Incident”. ■ Canceled SSHE work category such as PTW, JSA, Working in Confined Space, Working at High, Security Management which can be easily seen in Corporate and Site SSHE OP, Standard and Guideline. ■ Updated the new SSHE Campaigns and Practices for users such as Life-Saving Rules, Process Safety Rules, Green Office, 5S, SWA Exercise. ■ Added the new topic of Personal Health and Hygiene to prevent the enormous contamination and dangerous virus epidemiology. ■ Added S1 House’s Rule such as safety shoes prohibited inside buildings and smoking at company’s designated areas. ■ Updated Roles, Responsibilities, Definitions, Acronyms, Abbreviated Departments/Sections and References which are appropriated to current status.



บริษัท ปตท.สผ. สยาม จำกัด

รายงานผลการปฏิบัติตามมาตรการป้องกันและแก้ไขผลกระทบสิ่งแวดล้อม และมาตรการติดตามตรวจสอบผลกระทบสิ่งแวดล้อม
โครงการขุดเจาะน้ำมันบนฝั่งที่บ้านหนองจิกและบ้านโนนพลวง และโครงการพัฒนาระบบบำบัดน้ำเสียแหล่งสารบบ ยางเมือง และไทรงาม
พื้นที่แปลงเอส 1 จังหวัดกำแพงเพชร พิชณุโลก และสุโขทัย
ฉบับเดือนมกราคม - ธันวาคม พ.ศ.2565

ภาคผนวกที่ 12

เอกสารบันทึกการตรวจสอบคุณภาพประจำปี

สรุปผลการตรวจสุขภาพประจำปี 2565 ของพนักงานผู้ปฏิบัติงานโครงการ S1

มีข้อมูลและรายละเอียดของผลการตรวจสุขภาพดังนี้

1. จำนวนพนักงาน S1 ที่ปฏิบัติงานที่ฐานปฏิบัติการ S1 ทั้งหมด 356 คน เข้ารับการตรวจร่างกายทั้งหมด 100 %

2. โดยเข้ารับบริการการตรวจร่างกายแยกตามสถานพยาบาลที่บริษัทได้ดำเนินการประสานงานไว้แล้ว ดังนี้

- เครือโรงพยาบาลกรุงเทพฯ จำนวน 348 คน คิดเป็น 97.75 %
- โรงพยาบาลวิภาวดี จำนวน 7 คน คิดเป็น 1.97 %
- โรงพยาบาลอื่นๆ จำนวน 1 คน คิดเป็น 0.28 %

3. จากจำนวนผู้เข้ารับการตรวจร่างกายจำนวน 356 คน แบ่งตามช่วงอายุ ตามแผนการตรวจร่างกายของบริษัทได้ ดังนี้

- ช่วงอายุน้อยกว่า 35 ปี มีจำนวน 71 คน คิดเป็น 19.94 %
- ช่วงอายุตั้งแต่ 35 ปี ถึง 44 ปี มีจำนวน 172 คน คิดเป็น 48.31 %
- ช่วงอายุตั้งแต่ 45 ปีขึ้นไป มีจำนวน 113 คน คิดเป็น 31.74 %

4. ผลการตรวจสุขภาพ

4.1 ผลการตรวจสุขภาพทั่วไป

- มีภาวะความดันโลหิตสูง จำนวน 51 คน คิดเป็น 14.33 % โดยความรุนแรงของระดับความดันโลหิตที่พบอยู่ในระดับต่ำทั้งหมด โดยจากการติดตาม พนักงานได้เข้ารับคำแนะนำในการปฏิบัติตัวและติดตามโรคเรียบร้อยแล้ว
- มีภาวะระดับน้ำตาลในเลือดสูงเกินเกณฑ์มาตรฐานโรคเบาหวาน จำนวน 14 คน คิดเป็น 3.93 % โดยจากการติดตามพนักงานได้เข้ารับคำแนะนำในการปฏิบัติตัวและติดตามการรักษาอย่างต่อเนื่องแล้ว
- มีภาวะไขมันในเส้นเลือดสูง จำนวน 229 คน คิดเป็น 64.33 % โดยมีความรุนแรงของระดับไขมันในเลือดสูง เป็น ดังนี้
 - ไขมันในเลือดสูง ความรุนแรงระดับต่ำ จำนวน 112 คน คิดเป็น 31.5 % (ของผู้เข้ารับการตรวจร่างกาย) โดยจากการติดตาม พนักงานได้เข้ารับคำแนะนำในการปฏิบัติตัวและติดตามโรคแล้ว
 - ไขมันในเลือดสูง ความรุนแรงระดับกลาง จำนวน 74 คน คิดเป็น 20.8 % (ของผู้เข้ารับการตรวจร่างกาย) โดยจากการติดตาม พนักงานได้เข้ารับคำแนะนำในการปฏิบัติตัวและติดตามโรคแล้ว และมีพนักงานบางส่วนแพทย์ประจำโรงพยาบาลได้พิจารณาให้รับประทานยาเพื่อรักษาโรค
 - ไขมันในเลือดสูง ความรุนแรงระดับสูง จำนวน 43 คน คิดเป็น 12.1 % (ของผู้เข้ารับการตรวจร่างกาย) แพทย์ประจำโรงพยาบาลได้พิจารณาให้รับประทานยาเพื่อรักษาโรคและติดตามรักษาต่อเนื่อง

- การตรวจคัดกรองภาวะวัณโรคปอดจากการเอกซเรย์ปอดประจำปี พบลักษณะเอกซเรย์ผิดปกติที่เข้าได้กับการวินิจฉัยวัณโรคปอด จำนวน 1 ท่าน โดยได้มีการส่งปรึกษาอายุรแพทย์โรคทางเดินหายใจและรักษาตามมาตรฐานการรักษาวัณโรคปอดเรียบร้อยแล้ว ขณะนี้พนักงานสามารถกลับมาปฏิบัติงานได้ตามปกติ และได้มีการสืบสวนข้อมูลการระบาด ไม่พบว่ามีกรณีเจ็บป่วยไปยังเพื่อนร่วมงานและคนใกล้ชิดในครอบครัว

4.2 ด้านอาชีวอนามัย

- การตรวจหาสารเบนซีนในปัสสาวะ (ยึดฐานข้อมูลจาก S1 Health risk assessment) พนักงานเข้ารับการตรวจ 217 คน คิดเป็น 100% โดยผลพบค่าเบนซีนผิดปกติเกินเกณฑ์มาตรฐาน 1 คน ซึ่งพนักงานได้เข้ารับการสืบค้นไม่พบว่าเกิดจากการทำงานและเก็บปัสสาวะซ้ำพบว่าค่ากลับมาอยู่ในเกณฑ์ปกติ
- การตรวจหาสารไซลีนในปัสสาวะ (ยึดฐานข้อมูลจาก S1 Health risk assessment) พนักงานเข้ารับการตรวจ 4 คน คิดเป็น 100% โดยพบว่าผลปกติทุกคน
- การตรวจหาสารเฮกเซนในปัสสาวะ (ยึดฐานข้อมูลจาก S1 Health risk assessment) พนักงานเข้ารับการตรวจ 4 คน คิดเป็น 100% โดยพบว่าผลปกติทุกคน
- การตรวจหาสารโทลูอีนในปัสสาวะ (ยึดฐานข้อมูลจาก S1 Health risk assessment) พนักงานเข้ารับการตรวจ 66 คน คิดเป็น 100% โดยพบว่าผลปกติทุกคน
- การตรวจสมรรถภาพการไต่ยีน (ยึดฐานข้อมูลจาก S1 Health risk assessment) มีผลการตรวจ 196 คน คิดเป็น 100 % พบผลผิดปกติและทำการตรวจซ้ำทั้งหมด 70 คน โดยผลการตรวจซ้ำพบว่าผลสมรรถภาพการไต่ยีนกลับมาปกติ/คงเดิมจากปีก่อนหน้า 14 คน โดยยังคงผิดปกติ 56 คน ซึ่งจากการสืบค้นและติดตามความผิดปกติพบว่า ไม่เกี่ยวข้องกับการทำงานอย่างชัดเจน แต่ทางทีมแพทย์ยังคงติดตาม พนักงานอย่างใกล้ชิดต่อไป



บริษัท ปตท.สผ. สยาม จำกัด

รายงานผลการปฏิบัติตามมาตรการป้องกันและแก้ไขผลกระทบสิ่งแวดล้อม และมาตรการติดตามตรวจสอบผลกระทบสิ่งแวดล้อม
โครงการขุดเจาะน้ำมันบนฝั่งที่บ้านหนองจิกและบ้านโนนพลวง และโครงการพัฒนาระบบท่อส่งน้ำมันจากแหล่งผลิต ยางเมือง และไทรงาม
พื้นที่แปลงเอส 1 จังหวัดกำแพงเพชร พิชณุโลก และสุโขทัย
ฉบับเดือนมกราคม - ธันวาคม พ.ศ.2565

ภาคผนวกที่ 13

Maintenance and Inspection Management



PTT Exploration and Production Public Company Limited

S1 Production Operations

Maintenance Guideline

Maintenance and Inspection Management

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This document shall be reviewed every 5 years from the date of approval or revised earlier if necessary.

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Date	Revision	Description of Change
	0	New issue
26-Apr-04	1	Issued after company ownership change
26-Sep-06	1.1	2 Yearly review
30-Jul-09	1.2	Change document no. from A72 to SMNT
28-Mar-13	2	<ul style="list-style-type: none"> Reformatted document Aligned with new PTTEP SSHE MS, ISO14001:2022 and OHSAS18001:2007 requirement Updated organizational indicators from JGO to DSO
30-Sep-16	3	<ul style="list-style-type: none"> Reformatted to corporate template Updated organizational indicators
02-Oct-22	4	<ul style="list-style-type: none"> Renamed from "Maintain Wells and Facilities" to "Maintenance and Inspection Execution Management" Renumbering per new S1 document numbering Combine contents from SMNT-PN-01, 02, 03 and 04 into one document per 2021 OTR-RAI audit findings

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1.0 INTRODUCTION

This document describes more what and how process of maintenance and inspection manage at Sirikit Oil Field (S1) asset. This document cascades down from Maintenance and inspection guideline 13245-GDL-1-S1M-ALL-MMS-001.

2.0 SCOPE

This guideline covers the followings:

- Several sources and formations of the maintenance and inspection strategy by selecting the most appropriate approach for the asset
- Concept of the maintenance and inspection approaches with appropriate options plans and definition of the resources required and the impact on production targets.
- Planning layer cascaded and rolled over to scheduling into execution step.
- Recommended key performance indicators for maintenance and inspections after execution.

3.0 KEY REQUIREMENTS

3.1 WOK FLOW DESCRIPTION

Maintenance and Inspection Management can be described in 4 major stages: Strategy and Approach, Planning & Scheduling, Execution, and Review & Improvement.

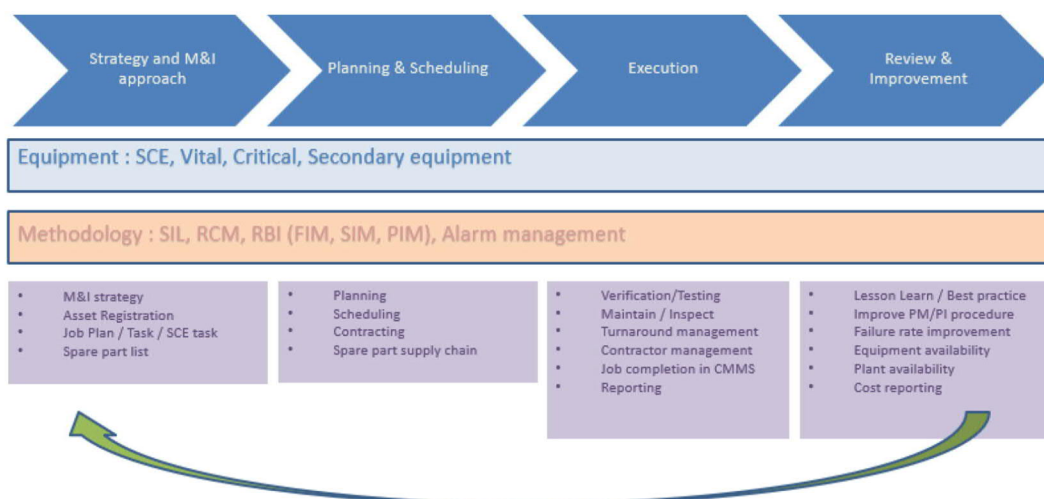


Figure 1 – Maintenance and Inspection Management

4.0 STRATEGY AND APPROACH

Maintenance Approach involves formulating maintenance and inspection strategies that conform to PTTEP objectives, reviewing, confirming, or updating requirements or assumptions.

Refer to high level maintenance and inspection direction well and facilities, the maintenance and inspection requirements are established the following approaches

4.1.1 The 5-Year Key-Activities roadmap

The 5-year key activities roadmap identifies key M&I activities that interrelated among other stakeholders to achieve mutual goals. MRP has been already incorporated.

Having been Integrated with RAI expectations, OMI co-KPI target, Production target, M&I cost, and manning strategy of S1 contributed by M&I, the 5-year key activities roadmap is purposefully used as reference to confirm whether approved budget is still adequate.

The 1st year is considered firm while the following years are changeable to suit business needs. However, maintenance and inspection activities that cause significant facility outage will require more detailed planning and integration into PTTEP Business Plans. The roadmap can be revised in yearly basis by default to ensure key M&I activities are addressed and well reconciled among stakeholders' needs.



Figure 2 – 5-Years key activities roadmap

4.1.2 Maintenance Reference Plan

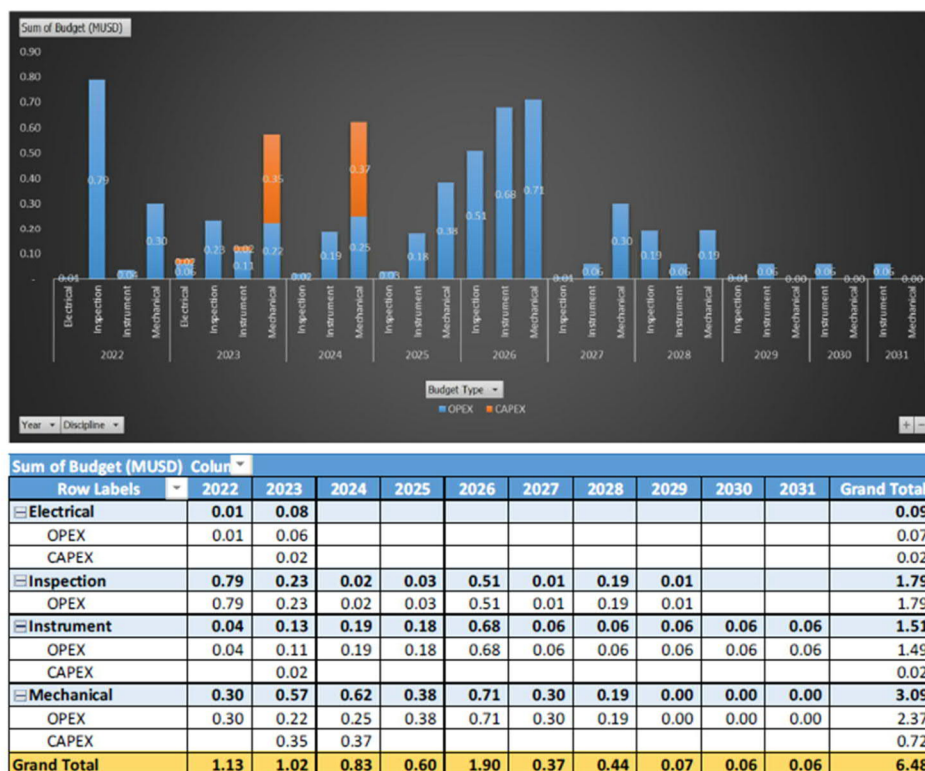
Maintenance Reference Plan (MRP) is another set of maintenance and inspection tasks look ahead in high level for 5-10 years magnitude of time scale, associated OPEX/CAPEX, implications for the plant and equipment. MRP incorporates all constraints and business requirements underlying with equipment current condition is another main portion of maintenance.

MRP often split apart from typical approach for non-routine M&I activities such as upgrade, obsolescence management, and MOC related with debottlenecking or plant major change.

MRP is based on “Operation Philosophy” and “Maintenance and Inspection Philosophy” and sets the way things will be done according to business direction (FDP), current equipment reliability, integrity, performance, and statutory requirements as key drivers underlying with OEMS framework. MRP provides information needed to implement of Cost, Time, and Resources requirement over a long-term period in budgetary scale; i.e. accuracy could be slipped in certain extent up to 20-30%; the closest to current year will be more precise.

MRP determines what needs to be achieved in the years ahead, typically 10-years ahead with a one-year firmed element, a four-year rolling element, and significant elements over the remaining life cycle. MRP can be updated either yearly, or any change based on field development and/or business plan catered for the original MRP.

S1 has recently reviewed its MRP in 2019 due to concession renewal via **12153-GDL-5-MMS-001**, and in 2022 LPG plant operating direction change via **13245-GDL-1-S1M-LKU-MMS-002**. **Figure 3** gives one example of MRP deliverables in cost perspective along the life of LPG plant.



Unit: Million USD

Figure 3 – MRP example: case of LPG review in 2022 till EOC.

4.1.3 Risk and Reliability Approach

Proactive approach drives via Criticality of Asset during Register. It is a list of the equipment on which maintenance and inspection activities are required and are maintained in CMMS. The high-level asset hierarchy is also represented in the Chart of Accounts (COA) structure. The asset register forms the common database for Maintenance Management Module, Inspection Management Module, Materials and Procurement Module, and is fully integrated with the Finance Package. Hierarchical structure of Asset is registered in compliance with ISO14224 and is in line with OEMS RAI requirements.

Refer to Reliability and Integrity Framework, a short summary of RAI guides how each group of equipment is managed based on its criticality ranking result.

Different criticality of equipment is treated and managed by different strategies and approaches. Therefore, assessment of asset criticality is the risk-based assessment and is the key process to determine how critical equipment is. The criticality will bring all what and how S1 manage its equipment.

For High criticality rank of asset register i.e. SCE 4 and some selective VITAL 3, Risk and Reliability Maintenance (RRM) tools are recommended approach. These tools are Reliability Centered Maintenance (RCM), Risk Based Inspection (RBI) and Safety Integrity Level Classification and Verification Review (SIL class, SIL ver; also called Instrumented Protective Function or IPF review).

- RCM: Typically well applied to rotating equipment
- RBI: Typically well applied to static equipment
- SIL: Typically well applied to instrumentation, control and safeguarding systems

The intermediate rank of criticality (remaining VITAL 3, and CRITICAL 2); unless otherwise specially required, the framework recommends to approach by Failure Modes and Effect Analysis (FMEA), OEM manual of M&I recommendations, experienced based maintenance strategy from similar kind of equipment specification/functionality.

The lowest rank of criticality; SECONDARY 1, run-to-fail approach is preferred as long as the consequence of failure is less than repair cost.

The selection of the maintenance and inspection strategies is also approached by Quantitative Risk Assessment (QRA) and any Statutory requirements e.g. Gas sale agreement, EIA, local authorities regulations, etc.

RRM which includes but not limited to RCM, RBI, IPF or SIL can be read its methodology in more detail: 10012-GDL-5-MMS-002 for RCM, 10015-PDR-4-PRS-056 RBI, and 10008-GDL-5-INS-005 SIL Verification Guideline

4.1.4 Strategy Implementation and Job Card Development

The right maintenance and inspection options are presented in Maintenance and Inspection Strategy documents. Include appropriate interval or frequency to carry out tasks, it will be M&I strategy: WHAT/WHEN; which could be run-hour or calendar basis.

Applicable options deployed into strategy and approaches:

Applicable M&I Options	Failure behavior	Common Examples
Time-Based Replacement	Wear & Tear with known lifetime or confident MTBF.	Rotating equipment: Gearbox, Belt, bearing, impeller, engine, compressor valves,
Condition-based Maintenance	Random	Complicated system, DCS, control system, Instrument,
Risk-Base Inspection	Wear or Corrosion rate dominated failure or LOPC	Stationary, Vessel, Flowlines, Pipelines
Failure Finding Function Test	Hidden failures	Safeguarding
Precision Based Maintenance	Infant failure Craftmanship and competency related failure	relocation, recommission, conversion, startup, major turnaround

Table 1 – Correlation between M&I Options, Failure Behavior, and common Equipment

From strategy, detailed procedures (Job Cards and/or Task Lists) are developed to provide steps or HOW to execute the maintenance and inspection task with respect to anticipated criteria (QA/QC) Specifications or standards (of pass or fail) required to be revised should be included. Total set of maintenance and inspection strategies and tasks are implemented in CMMS for further deployment and implementation.

5.0 PLANNING AND SCHEDULING

MRP consolidates with M&I strategy embedded in CMMS form the basis of the overall planned maintenance schedule and is used for making strategic decisions on Maintenance Management; and in most cases incorporated with impact of production and business direction.

Maintenance Reference Plan can give indirect view of downtime to project to production deferment which varies over period of time and the consumption of resources due to foreseen M&I activities. It determines what needs to be achieved in years ahead

With a one-year firmed element, a four-year rolling element, and significant elements over the remaining life cycle. MRP together with 52-week plan will be settled.

The medium-term plan contains a firm element of 3-months and a rolling element up to 1-year to proposed to 3-months IOP (integrated operation plan) look-ahead across stakeholders including drilling, well services, engineering etc. Normally when plan comes to the shorter and closer time in the period of 3-to-1 month usually confirmed upon IOP (integrated operation plan)

Scheduling will be rolling in magnitude of 1-month or 4-weeks lookahead with frontline production and maintenance team to simultaneously optimize and prioritize among various crew and resources to fit for actual daily production against situations at site.

Note that interval (5-yearly, 1-yearly, 3 monthly, 4-weekly, weekly, etc.) within hierarchical concept of planning could be timely adjusted based on dynamic of the asset production behavior.

The hierarchy of maintenance and inspection plans are conceptualized from upper level cascaded down to daily scheduling of work is depicted as below.

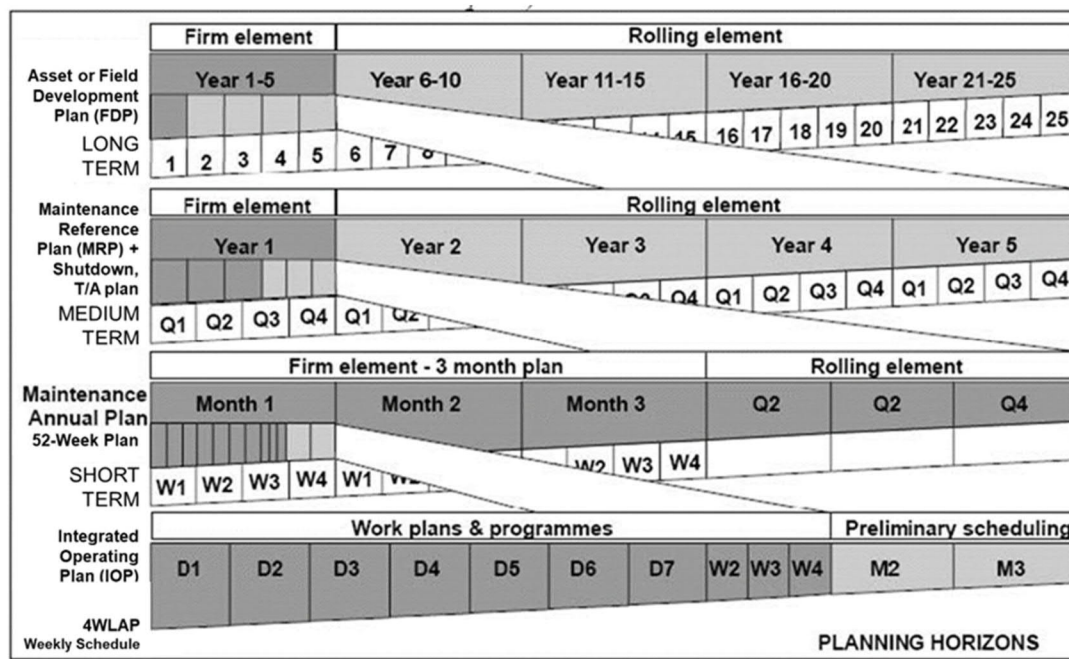


Figure 4 – Hierarchy of Maintenance and Inspection Plans

Scheduling is a time related process whereby the resources from pre-agreed plans are synchronized, sequenced, and converted into a detailed set of tasks to carry out within a discrete period. It essentially evolves around the development of the longer-term plans into weekly and daily work schedules.

The schedule should be continuously rolled forward with a time horizon of typically one-month firm and two-month rolling. **Figure 5** below illustrates correlation between maintenance and inspection planning types (refer to 10012-GDL-5-INT-008-R00, Maintenance and Inspection Planning Guideline).



Figure 5 – Correlation between Plan Types (from 10012-GDL-5-INT-008-R00)

5.1 RESPONSIBILITY FOR PLANING AND SCHEDULING

Responsibility of the preparation and approval of the various plans and schedules is shown in Table 2 below.

Plan and Schedule Type	Prepared by:	Approved by:	Notes
Field Development Plan	PTN/P	PTN	
Maintenance Reference Plan (MRP)	PS1/M and OMI	PS1	1
52-Week Look Ahead	PS1/M Supervisor PS1/M Scheduler	PS1/M and PS1/P	2, 3
3-Month Activity Plan (Integrated Operation Plan, IOP)	PS1/M Supervisor PS1/M Scheduler	PTN/P, PS1, PS1/T, PS1/P and PS1/M	4
2-Week Work Schedule	PS1/M Supervisor PS1/M Scheduler	PS1/P and PS1/M	5
Daily Work Schedule	PS1/M Team Leader PS1/M Scheduler	PS1/P and PS1/M	6

Notes:

1. PS1 approves MRP for further planning, deployment, and budget preparation.
2. To be per 52-week plan based on set strategy in CMMS. PS1/M Scheduler develops weekly look ahead, and PS1/M supervisor to review the plan.
3. Plan to incorporate maintenance, inspection and re-certification activities.
4. To be incorporated into IOP facilitated by PS1/T and presented in IOP monthly for review and approval.
5. PS1/M Supervisor and PS1/P to endorse 1-to-2 weekly work schedule.
6. PS1/P to endorse and revalidate via Permit-to-Work (PTW) to proceed M&I tasks.

Table 2 – Planning and Scheduling Responsibility Matrix

5.2 MAINTENANCE AND INSPECTION PLAN

5.2.1 52-Week Look-Ahead Plan

Regarding the 1st year of 5-Year Plan and MRP, they provides list of activities to be implemented within the year. It will be incorporated with routine 52-week maintenance and inspection plan. The 52-Week Look-Ahead Plan will form the high level plan. Performance will be judged against and form the basis for the more detailed 3-Month activity plans. The 52-Week Look-Ahead will also form the basis for the ordering of materials with long lead items, i.e., more than 3-Month Plan.

5.2.2 3-Month Activity Plan

This schedule is for the maintenance and inspection activities within 3-month period and are revised monthly on a rolling basis; they contain preventive and condition monitoring routines as well as approved corrective routines. Therefore, 1st month of the plan is considered firm, with the following 2 months tentatively agreed to enable the preliminary establishment and securing of manpower and materials. The 3-Month Activity Plan shall incorporate key equipment availability and resource utilization reports. The activities require partial or full facilities shutdown and/or having deferment potential included into the Integrated Operations Plan (IOP).

PS1/M IOP						
Departme	Period	Location	Activities	Start Date	Finish Date	Duration
PS1/M	Aug-22	F/STN	PM ME (ENGINE + COMPRESSOR 1Y) K-3200 - Plan 08 - 11 August 2022 total 4 days.	8-Aug-22	11-Aug-22	4 Days
PS1/M	Aug-22	F/STN	PM ME GAS COMP K-3550 2M	2-Aug-22	2-Aug-22	4 hrs.
PS1/M	Aug-22	F/STN	PM ME GAS COMP K-3950 2M	28-Aug-22	28-Aug-22	4 hrs.
PS1/M	Aug-22	F/STN	PM ME (ENGINE 6Y + COMPRESSOR 1Y) K-3750 - Plan 15-26 August 2022 total 12 days.	15-Aug-22	26-Aug-22	12 Days
PS1/M	Aug-22	F/STN	PM ME (ENGINE + COMPRESSOR 1Y) K-3400 - Plan 29 August - 02 September 2022 total 5 days.	29-Aug-22	2-Sep-22	5 Days
PS1/M	Aug-22	F/STN	P-2401-A, THREE MONTHLY, PREVENTIVE MAINTENANCE	3-Aug-22	3-Aug-22	4 hrs.
PS1/M	Aug-22	F/STN	P-2402-A, THREE MONTHLY, PREVENTIVE MAINTENANCE	4-Aug-22	4-Aug-22	4 hrs.
PS1/M	Aug-22	LKU-B	P-117A, THREE MONTHLY, PREVENTIVE MAINTENANCE (WS-B)	4-Aug-22	4-Aug-22	4 hrs.
PS1/M	Aug-22	LKU-B	P-117B, THREE MONTHLY, PREVENTIVE MAINTENANCE (WS-B)	4-Aug-22	4-Aug-22	4 hrs.
PS1/M	Aug-22	LKU-B	P-115A, THREE MONTHLY, PREVENTIVE MAINTENANCE (WS-B)	3-Aug-22	3-Aug-22	4 hrs.
PS1/M	Aug-22	LKU-B	P-115B, THREE MONTHLY, PREVENTIVE MAINTENANCE (WS-B)	3-Aug-22	3-Aug-22	4 hrs.
PS1/M	Aug-22	LKU-E	P-145-A, THREE MONTHLY, PM (WS-E)	4-Aug-22	4-Aug-22	4 hrs.
PS1/M	Aug-22	LKU-E	P-145-B, THREE MONTHLY, PM (WS-E)	4-Aug-22	4-Aug-22	4 hrs.
PS1/M	Aug-22	LKU-E	P-142-A, PREVENTIVE MAINTENANCE (WS-E)	4-Aug-22	4-Aug-22	4 hrs.
PS1/M	Aug-22	LKU-E	P-143-A, PREVENTIVE MAINTENANCE (WS-E)	4-Aug-22	4-Aug-22	4 hrs.
PS1/M	Aug-22	PTT-NGV	A-8000, YEARLY, PREVENTIVE MAINTENANCE	3-Aug-22	5-Aug-22	3 Days
PS1/M	Aug-22	PTO-A	PTO-A GAS METERING 80-FPTR-652 YEARLY CALIBRATION	7-Aug-22	7-Aug-22	8 hrs.
PS1/M	Aug-22	STN-A	STN-A GAS METERING 68-FPTR-657A/B and 68-FPTR-658A/B YEARLY CALIBRATION	8-Aug-22	8-Aug-22	8 hrs.
PS1/M	Aug-22	NTM-A	NTM-A GAS METERING MONTHLY CALIBRATION	6-Aug-22	6-Aug-22	8 hrs.
PS1/M	Aug-22	F/STN	CRUDE METERING MONTHLY PM	9-Aug-22	10-Aug-22	2 Days
PS1/M	Aug-22	F/STN	T-306 CALIBRATION AND PREVENTIVE MAINTENANCE	11-Aug-22	11-Aug-22	8 hrs.
PS1/M	Aug-22	NGV	OMA_NGV Online Moisture Analyser	3-Aug-22	3-Aug-22	8 hrs.
PS1/M	Aug-22	BPR	BPR T-902 Tank calibration	12-Aug-22	12-Aug-22	8 hrs.
PS1/M	Aug-22	NSG-A	PM IN NSG-A, ESD/OSD function test 1Y	4-Aug-22	4-Aug-22	2 hrs.
PS1/M	Aug-22	NPG-A	PM IN NPG-A, ESD/OSD function test 1Y	11-Aug-22	11-Aug-22	2 hrs.
PS1/M	Aug-22	NPG-E	PM IN NPG-E, ESD/OSD function test 1Y	18-Aug-22	18-Aug-22	2 hrs.
PS1/M	Aug-22	LKU-M	PM IN LKU-M, ESD/OSD function test 1Y	25-Aug-22	25-Aug-22	2 hrs.
PS1/M	Aug-22	F/STN	PM ME+EL+IN K-5801A 1YPM + Engine Change out + RGB	10-Aug-22	14-Aug-22	5 Days
PS1/M	Aug-22	F/STN	PM ME+EL+IN K-5801B 1YPM	5-Aug-22	7-Aug-22	3 Days
PS1/M	Aug-22	F/STN	PM EL K-5804C 2500 HRS PM	8-Aug-22	8-Aug-22	8 hrs.

Figure 6 – 3-Month Activity Plan



5.2.3 2 Week Work Schedule

Derived from the firm plan for 1st month of 3-Month Activity Plan and updated on a weekly cycle. Concerns the maintenance and inspection activities for 14-days ahead, based on the activities on the monthly activity plan supplemented by work orders raised on an ad-hoc basis and required to be executed within 14-day timeframe. The 2-Week Work Schedule typically covers a period Monday-Sunday, with first 7 days firm and last 7 days tentative.

The following basic requirements applied to the 2-Week Work Schedule:

- Schedule is issued in MS Project or MS Excel
- Activities are grouped by location, i.e., Crude, LPG, well sites, outstations (essentially grouping by asset cost center)
- Activities are resourced in MS Project or MS Excel, including required trades, number of trade staffs and special resources (where required).
- Activities are assigned estimated duration, represented as grant chart.
- Activities are scheduled with due account given to operational constraints, i.e., LPG coolers to be starting in early morning, crude transfer pumps after morning production surge, etc.
- Planned resource usage is provided with schedule.

Maintenance Highlight Activity 15 - 28 August 2022

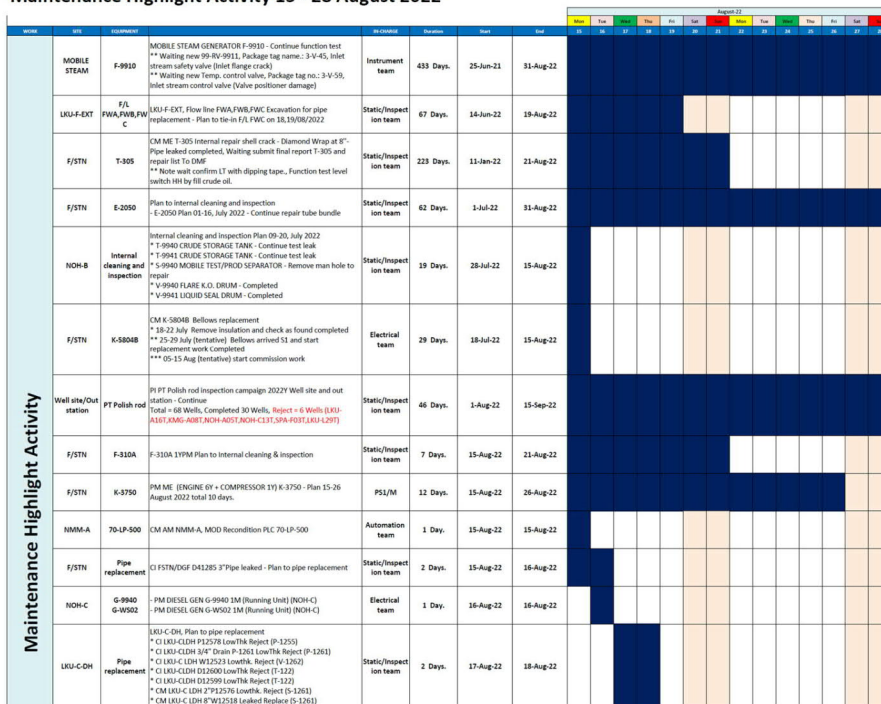


Figure 7 – 2-Week Work Schedule

5.2.4 DAILY-TO-WEEKLY WORK SCHEDULING

The Daily Work Schedule is a list of activities to be carried out the next day. It is not subjected to a separated approval; however, a review may be required at the morning of the workday itself for high priority work that may have been occurred overnight.



Item	Notification No.	Work Order No.	Location	Equipment	Job description	Type	Start date	Completed Date	Status	In-Charge
1	100419325	500397412	Crude plant	SI-40-DC-01.ASY	PM EL 40-DC-01 Battery Room 2M	PM	4/Aug/22	4/Aug/22	Plan	Electrical team
2	100419315	500397402	Crude plant	SI-PWD-LSWG	PM EL 40-HV-02 & 40-LV-01 Cabin SWGR 2M	PM	4/Aug/22	4/Aug/22	Plan	Electrical team
3	100419317	500397404	Crude plant	SI-PWD-LSWG	PM EL 50-HV-01 Green Building SWGR 2M	PM	4/Aug/22	4/Aug/22	Plan	Electrical team
4	100419318	500397405	Crude plant	SI-PWD-LSWG	PM EL 50-HV-02 Green Building SWGR 2M	PM	4/Aug/22	4/Aug/22	Plan	Electrical team
5	100380412	500362162	Well site	SI-LKU-C067.PK	CL LKU-C M/F C067 / Elbow Drain Reject - Plan to M/F replacement	CI	4/Aug/22	4/Aug/22	Plan	Inspection team
6	100410502	500389375	Well site	Flow line	Flow line inspection at 8"-BL-XWA by TFM and take photo. (RTJ No.SI-RTJ-Maint-00021)	PI	4/Aug/22	6/Aug/22	Plan	Inspection team
7	100406084	500388687	Well site	Flow line	Flow line inspection at 3"-BL-GGA by TFM and take photo. (RTJ No.SI-RTJ-Maint-00021)	PI	4/Aug/22	6/Aug/22	Plan	Inspection team
8	100376469	500353384	Well site	Flow line	Flow line inspection at 3"-TRT-AGA by UTM / MFL and take photo. (RTJ No.SI-RTJ-Maint-00021)	PI	2/Aug/22	6/Aug/22	In progress	Inspection team
9	100376196	500358111	Well site	Flow line	Flow line inspection at 6"-BL-FXA by UTM / MFL and take photo. (RTJ No.SI-RTJ-Maint-00021)	PI	30/Jul/22	5/Aug/22	In progress	Inspection team
10	100377059	500358974	Well site	Flow line	Flow line inspection at 8"-BL-DWE by UTM / MFL and take photo. (RTJ No.SI-RTJ-Maint-00021)	PI	3/Aug/22	5/Aug/22	In progress	Inspection team
11	100366997	500449112	Well site	Flow arm & Manifold	Flow arm / Manifold 3 Month at NMM-F by VT,UTM and take photo. (RTJ No.SI-RTJ-Maint-00020)	PI	4/Aug/22	5/Aug/22	Plan	Inspection team
12	100365711	500348235	Well site	Flow arm & Manifold	Flow arm / Manifold 3 Month at TY-A by VT,UTM and take photo. (RTJ No.SI-RTJ-Maint-00020)	PI	4/Aug/22	5/Aug/22	Plan	Inspection team
13	100375726	500357641	Well site	Flow arm & Manifold	Flow arm / Manifold 3 Month at NMM-H by VT,UTM and take photo. (RTJ No.SI-RTJ-Maint-00020)	PI	2/Aug/22	5/Aug/22	In progress	Inspection team
14	100419272	500397359	Well site	NGV	PM IN GAS METERING A-8000 1M - Continue meter run#1	PM	3/Aug/22	5/Aug/22	In progress	Instrument Team
15	100423061	500401058	Well site	NSG-A	PM IN NSG-A, ESD/OSD function test 1Y	PM	4/Aug/22	4/Aug/22	Plan	Instrument Team
16	100419349	500397436	Well site	SI-LKU-M06.PK	P-4406, 4M, BEAM PUMP PM (WS-M06T)	PM	4/Aug/22	4/Aug/22	Plan	Artificial Lift Team
17	100419510	500397597	Well site	SI-LKU-M09.PK	PM EL BEAM PUMP P-4409 (LKU-M09) 4M	PM	4/Aug/22	4/Aug/22	Plan	Artificial Lift Team
18	100419511	500397598	Well site	SI-LKU-M12.PK	PM EL BEAM PUMP P-4412 (LKU-M12) 4M	PM	4/Aug/22	4/Aug/22	Plan	Artificial Lift Team
19	100419512	500397599	Well site	SI-LKU-M14.PK	PM EL BEAM PUMP P-4414 (LKU-M14) 4M	PM	4/Aug/22	4/Aug/22	Plan	Artificial Lift Team
20	100428871	500406272	Well site	SI-LKU-Z08.PK	PM EL ESP VSD PANEL LKU-Z08 6M	PM	4/Aug/22	4/Aug/22	Plan	Artificial Lift Team
21	100428872	500406273	Well site	SI-LKU-Z18.PK	PM EL ESP VSD PANEL LKU-Z18 6M	PM	4/Aug/22	4/Aug/22	Plan	Artificial Lift Team
22	100428873	500406274	Well site	SI-LKU-Z39.PK	PM EL ESP VSD PANEL LKU-Z39 6M	PM	4/Aug/22	4/Aug/22	Plan	Artificial Lift Team
23	100423084	500401081	Well site	LKU-E	PM ME PCP P-145A 3M	PM	4/Aug/22	4/Aug/22	Plan	Mechanical team
24	100423027	500401024	Well site	LKU-E	PM ME+EL+IN HSP P-142 1Y	PM	4/Aug/22	4/Aug/22	Plan	Mechanical team
25	100423039	500401036	Well site	LKU-E	PM ME+EL+IN HSP P-143 1Y	PM	4/Aug/22	4/Aug/22	Plan	Mechanical team
26	100423086	500401083	Well site	LKU-E	PM ME+EL+IN PCP P-145B 1Y	PM	4/Aug/22	4/Aug/22	Plan	Mechanical team
27	100423070	500401067	Well site	SI-P-5501A.PK	PM ME+EL+IN Vertical Inline Pump P-5501A 1Y - Repair mechanical seal leak	PM	4/Aug/22	4/Aug/22	Plan	Mechanical team
28	100423064	500401061	Well site	SI-P-5501B.PK	PM ME+EL+IN Vertical Inline Pump P-5501B 1Y	PM	4/Aug/22	4/Aug/22	Plan	Mechanical team
29	100423022	500401019	Well site	LKU-B	PM ME PCP P-115A 3M	PM	4/Aug/22	4/Aug/22	Plan	Mechanical team
30	100423012	500401009	Well site	LKU-B	PM ME PCP P-115B 3M	PM	4/Aug/22	4/Aug/22	Plan	Mechanical team
31	100423013	500401010	Well site	LKU-B	PM ME PCP P-117A 3M	PM	4/Aug/22	4/Aug/22	Plan	Mechanical team
32	100423041	500401038	Well site	LKU-B	PM ME PCP P-117B 3M	PM	4/Aug/22	4/Aug/22	Plan	Mechanical team
33	100419332	500397419	Well site	SI-W-TRTC-AUT	PM TRT-C AUTOMATION - RTU AND LOCAL CONT	PM	3/Aug/22	4/Aug/22	In progress	Automation team
34	100415041	500393377	Well site	LKU-D-DH	PM EL WS-D Duty GROUND RESISTANCE 1Y	PM	4/Aug/22	4/Aug/22	Plan	Electrical team
35	100415038	500393374	Well site	LKU-D-DH	PM EL WS-D Duty TRANSFORMER 1Y	PM	4/Aug/22	4/Aug/22	Plan	Electrical team
36	100420799	500398860	Well site	LKU-D-DH	PM EL WS-D Duty OUTDOOR LIGHTING 12M	PM	4/Aug/22	4/Aug/22	Plan	Electrical team
37	100320424	500305619	Well site	LKU-D-DH	PM EL INSPECTION EX-PROOF EQ. LKU-D-DH 1Y	PM	3/Aug/22	4/Aug/22	In progress	Electrical team

Item	Notification No.	Work Order No.	Location	Equipment	Job description	Type	Start date	Completed Date	Status	In-Charge
1	100419330	500397417	Crude plant	SI-20-DC-01.ASY	PM EL 20-DC-01A/B Battery Room 2M	PM	3/Aug/22	3/Aug/22	Completed	Electrical team
2	100419333	500397410	Crude plant	SI-50-DCU-01.ASY	PM EL 50-DCU-01 Battery Room 2M	PM	3/Aug/22	3/Aug/22	Completed	Electrical team
3	100419324	500397411	Crude plant	SI-60-DCU-01.ASY	PM EL 60-DCU-01 Battery Room 2M	PM	3/Aug/22	3/Aug/22	Completed	Electrical team
4	100419329	500397416	Crude plant	SI-70-DCU-01.ASY	PM EL 70-DCU-01/02 Battery Room 2M	PM	3/Aug/22	3/Aug/22	Completed	Electrical team
5	100419331	500397418	Crude plant	SI-L-COM-UTL	PM EL 55-UPS-02 Battery Room 2M	PM	3/Aug/22	3/Aug/22	Completed	Electrical team
6	-	-	Crude plant	Glycol	CM IN New glycol 43-LT-4304 reading error - Flushing column level transmitter, Change parameter level offset from 8 cm. to 4 cm., Change parameter threshold from 40 to 60, Change parameter damping value from 10 s. to 2 s., Confirm reading 43-LT-4304 compare 43-LT-4303 normal	CM	3/Aug/22	3/Aug/22	Completed	Instrument Team
7	-	-	Crude plant	A-2500	CM IN A-2500, 03-LT-2524 and 03-LT-2520 Reading different - Continue check and investigation	CM	3/Aug/22	3/Aug/22	Completed	Instrument Team
8	100423075	500401072	Crude plant	SI-P-3801/2.PK	PM ME+EL+IN VS P-3801 1Y	PM	3/Aug/22	3/Aug/22	Completed	Mechanical team
9	100423078	500401075	Crude plant	SI-P-3801/2.PK	PM ME+EL+IN VS P-3802 1Y	PM	3/Aug/22	3/Aug/22	Completed	Mechanical team
10	100423081	500401078	Crude plant	SI-P-2401.PK	PM ME Twin Screw Pump P-2401 3M	PM	3/Aug/22	3/Aug/22	Completed	Mechanical team
11	100423082	500401079	Crude plant	SI-P-2402.PK	PM ME Twin Screw Pump P-2402 3M	PM	3/Aug/22	3/Aug/22	Completed	Mechanical team
12	100426030	500413669	Crude plant	SI-G-2350.PK	CM ME E-2350 Clean up sight glass - Clean up sight glass completed	CM	3/Aug/22	3/Aug/22	Completed	Mechanical team
13	-	-	Crude plant	DAF Unit	CM DAF Unit pipe PVC leaked - Remove PVC pipe for repair by welding at maintenance workshop and reinstall	CM	1/Aug/22	3/Aug/22	Completed	Mechanical team
14	-	-	Crude plant	Crude loading	CM ME Z-317 Handle valve seeping - Replace internal part and check leak completed	CM	3/Aug/22	3/Aug/22	Completed	Mechanical team
15	-	-	Crude plant	K-3600	CM ME K-3600 Cyl 1R,2R Abnormal noise - Replace hydraulic filter & valve rack adjustment.	CM	3/Aug/22	3/Aug/22	Completed	Mechanical team
16	100419480	500397567	Well site	SI-LKU-CB01.PK	PM EL BEAM PUMP P-3701 (LKU-CB01) 4M	PM	3/Aug/22	3/Aug/22	Completed	Artificial Lift Team
17	100419481	500397568	Well site	SI-LKU-CB08.PK	PM EL BEAM PUMP P-3708 (LKU-CB08) 4M	PM	3/Aug/22	3/Aug/22	Completed	Artificial Lift Team
18	100419479	500397566	Well site	SI-LKU-CB10.PK	PM EL BEAM PUMP P-3710 (LKU-CB10) 4M	PM	3/Aug/22	3/Aug/22	Completed	Artificial Lift Team
19	100419373	500397460	Well site	SI-LKU-DD03.PK	P-6303, 4M, BEAM PUMP PM (WSSD-03T)	PM	3/Aug/22	3/Aug/22	Completed	Artificial Lift Team
20	100419363	500397450	Well site	SI-LKU-DD06.PK	P-6306, 4M, BEAM PUMP PM (WSSD-06T)	PM	3/Aug/22	3/Aug/22	Completed	Artificial Lift Team
21	100419383	500397470	Well site	SI-LKU-DD07.PK	P-6307, 4M, BEAM PUMP PM (WSSD-07T)	PM	3/Aug/22	3/Aug/22	Completed	Artificial Lift Team
22	100428868	500406269	Well site	SI-LKU-Z03.PK	PM EL ESP VSD PANEL LKU-Z03 6M	PM	3/Aug/22	3/Aug/22	Completed	Artificial Lift Team
23	100428869	500406270	Well site	SI-LKU-Z11.PK	PM EL ESP VSD PANEL LKU-Z11 6M	PM	3/Aug/22	3/Aug/22	Completed	Artificial Lift Team
24	100428870	500406271	Well site	SI-LKU-Z15.PK	PM EL ESP VSD PANEL LKU-Z15 6M	PM	3/Aug/22	3/Aug/22	Completed	Artificial Lift Team
25	-	-	Well site	NGP-A09T	CM EL NGP-A09T, BP Trip VSD Failure - Replace VSD 1 set, Under observation	CM	3/Aug/22	3/Aug/22	Completed	Artificial Lift Team
26	100419439	500397526	Well site	SI-W-TRTC-AUT	PM IN TRC-2 AUTOMATION RTU & LOCAL CONTR	PM	3/Aug/22	3/Aug/22	Completed	Automation team
27	100419332	500397419	Well site	SI-W-TRTC-AUT	PM TRT-C AUTOMATION - RTU AND LOCAL CONTR	PM	3/Aug/22	3/Aug/22	In progress	Automation team
28	100415214	500393550	Well site	OHL	PM EL ALI OHL VISUAL INSPECTION 1M (Trim branches of tree and install snake guard OHL-1.6)	PM	1/Aug/22	31/Aug/22	In progress	Electrical team
29	100320424	500305619	Well site	LKU-D-DH	PM EL INSPECTION EX-PROOF EQ. LKU-D-DH 1Y	PM	3/Aug/22	3/Aug/22	In progress	Electrical team
30	100415042	500393378	Well site	LKU-D-DH	PM EL WSD Duty LIGHTNING PROTECT INSP 1Y	PM	3/Aug/22	3/Aug/22	Completed	Electrical team
31	-	-	Well site	LKU-L	* CL LKU-L P1922 LowThk. Reject - Pipe replacement completed * CL LKU-L P1926 LowThk. Reject - Pipe replacement completed	CI	3/Aug/22	3/Aug/22	Completed	Inspection team
32	100365729	500348253	Well site	Flow arm & Manifold	Flow arm / Manifold 3 Month at NMM-F by VT,UTM and take photo. (RTJ No.SI-RTJ-Maint-00020)	PI	2/Aug/22	3/Aug/22	Completed	Inspection team
33	100377111	500359027	Well site	Flow arm & Manifold	Flow arm / Manifold 3 Month at NMM-A by VT,UTM and take photo. (RTJ No.SI-RTJ-Maint-00020)	PI	2/Aug/22	3/Aug/22	Completed	Inspection team
34	100410553	500389420	Well site	Flow line	Flow line inspection at 8"-FSTN-WA by TFM and take photo. (RTJ No.SI-RTJ-Maint-00021)	PI	3/Aug/22	3/Aug/22	Completed	Inspection team
35	100419272	500397359	Well site	NGV	PM IN GAS METERING A-8000 1M - Meter run#2 completed	PM	3/Aug/22	5/Aug/22	In progress	Instrument Team

Figure 8 – Daily Work Schedule

5.2.5 Shutdown Plan

Shutdown or Turnaround Plan is specifically developed for maintenance and inspection activities requiring partial or full plant shutdown. These activities are typically grouped to take place in the same concurrent period; e.g. vessel internal inspection, and relief valve recertification, that cannot be carried out during plant normal operation which may cause high production deferment, mainly on process safeguarding and/or major vital equipment. Plant Turnaround approaches like project non routine works. S1 manages its shutdown activities in alignment with L3 Shutdown management 10012-PDR-5-MMS-003.

Year	2019	2020	2021	2022		2023	2024	2025	2026		2027	2028	2029	2030		2031
Plan				SD	OSD				SD	OSD				SD	OSD	
CUI	0	0	0	7	0	0	5	0	9	1	0	0	0	7	15	0
EXT	0	0	0	0	70	0	0	0	0	70	0	0	0	0	69	0
INT	0	0	0	5	0	0	0	0	63	0	0	0	0	5	0	0

Figure 9 – Shutdown Plan (driven by RBI)

5.3 PLAN AND SCHEDULE PROCESS

5.3.1 Plan and Review Cycles

Plans and schedules will have to be prepared and reviewed in a timely manner, consistent with PTTEP Sirikit Oil Field (S1) asset' other processes. The process is illustrated in Figure 10 below.

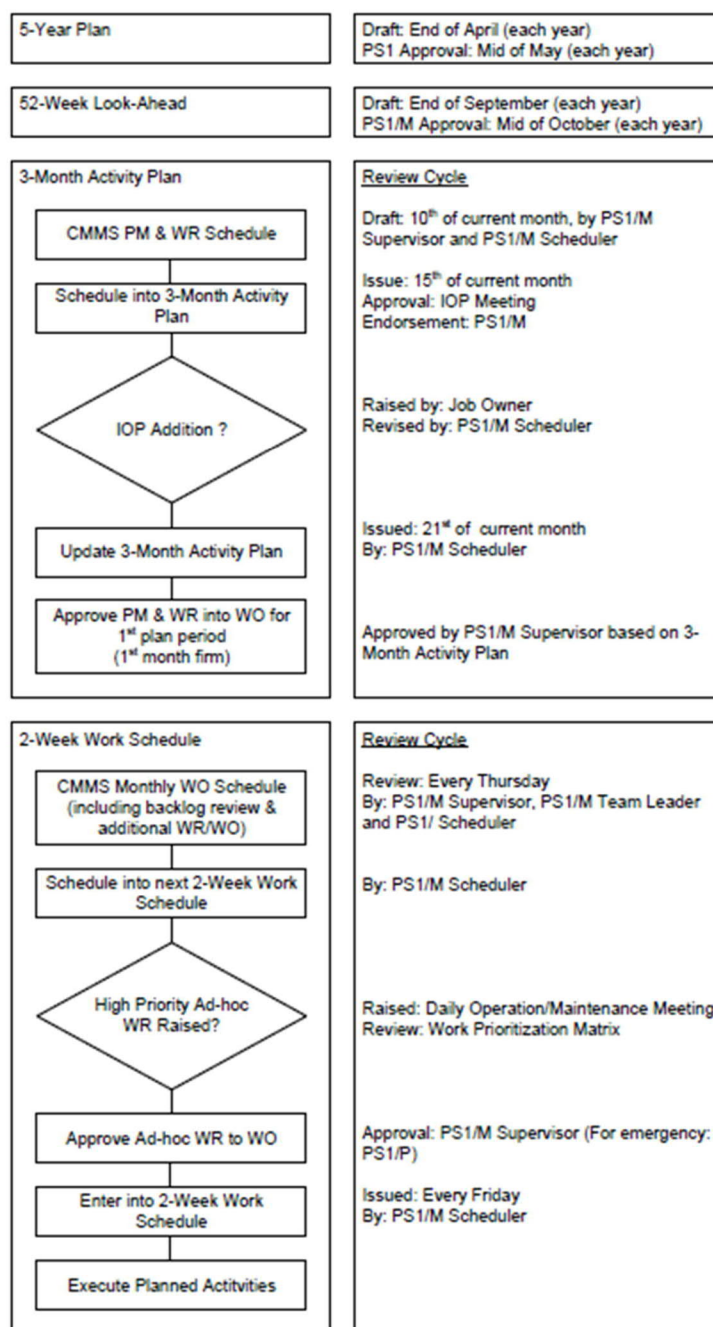


Figure 10 – Planning and Scheduling Process

5.3.2 Plan Review Meetings

Plans will be reviewed and updated on a regular basis to ensure plans reflect the latest work progress and changes to work scope.

- 1) **3-Month Activity Plan:** The 3-Month Activity Plan will be established in two (2) phases, to link the maintenance and inspection activities into S1 Integrated Operations Plan (IOP).

Phase 1 - Prior to IOP meeting, PS1/M, PS1/M Supervisor and PS1/M Scheduler will meet to:

- Obtain overview of maintenance activities in next 3-month period;
- Review priority setting of maintenance activities;
- Agree tentative plan (priorities, dates and resources) for next 3-month period;
- Prepare draft plan, clearly identifying deferment related activities and technical integrity related activities;
- Review work preparation plans and agree the list of actions.
- Proposed released date: Every 10th of the month

Phase 2 – The draft maintenance and inspection plan will be presented to IOP meeting for review and approval. The IOP meeting will be attended by delegates from Asset Planning, Reservoir, Production Planning, Maintenance and related sections. Proposed review date is Every 15th of the month.

- 2) **2-Week Work Schedule:** The 2-Week Work Schedule will be derived from the approved 3-Month Activity Plan, supplemented by approved work order's not featuring on the plan. The 2-Week Work Schedule will be reviewed on a weekly basis in order to:
- Review next week's planned activities against approved (monthly) plan;
 - Review progress against approved (monthly) plan;
 - Review maintenance backlog;
 - Review additional, non-planned activities;
 - Confirm maintenance activity prioritization;
 - Confirm next week's schedule.

The weekly review meeting will take place every Thursday afternoon and be attended by PS1/M, PS1/M Supervisors, PS1/M Team Leaders and PS1/M Scheduler with the final plan as established during the meeting issued on the same day. Although the 2-Week Work Schedule is considered firm, the opportunity exists for items to be added to the schedule later as requirements and/or opportunities arise. In order to ascertain the requirement for late changes to the agreed schedule, all requests for additional items to be added shall be reviewed as to its priority as further described in this document.

- 3) **Daily Work Schedule:** The Daily Work Schedule is for use by the maintenance executor in order to direct maintenance staffs. The Daily Work Schedule is produced in every afternoon before and issued to relevant persons; a copy of daily work list is provided. Daily Work Schedule is reviewed the operation/maintenance morning meeting, where further work requests may be identified. Depending on the priority of additional work requests, changes to the daily work list may be required.

5.3.3 Prioritization of Maintenance Activities

To ensure the timely execution of maintenance activities, it is essential that priorities are assigned to the various maintenance and inspection activities and these priorities are used to schedule the activities. The priorities are recognized by S1 which considered in CMMS. The general meaning of priority based on risk assessed is well applicable to CM or CI that recommends completion date of work order.

Unlike CM/CI WO, Recommended completion date defined for Priority will not be applicable to the other plannable WO types (PM/PI or GSM/GSI, or MD) because some are carried out as campaign whose the completion interval can be longer than 3 months e.g. flowline UT inspection campaign.

Due to this constraint, Priority definition in CMMS is however more effective work around via Planning because PM/PI or GSM/GSI is the prevention and validation approach; i.e., nature of the work is to prevent, validate, or assure rather than to recover or reinstate the functionality or integrity of equipment back to normal like CM/CI's working nature.

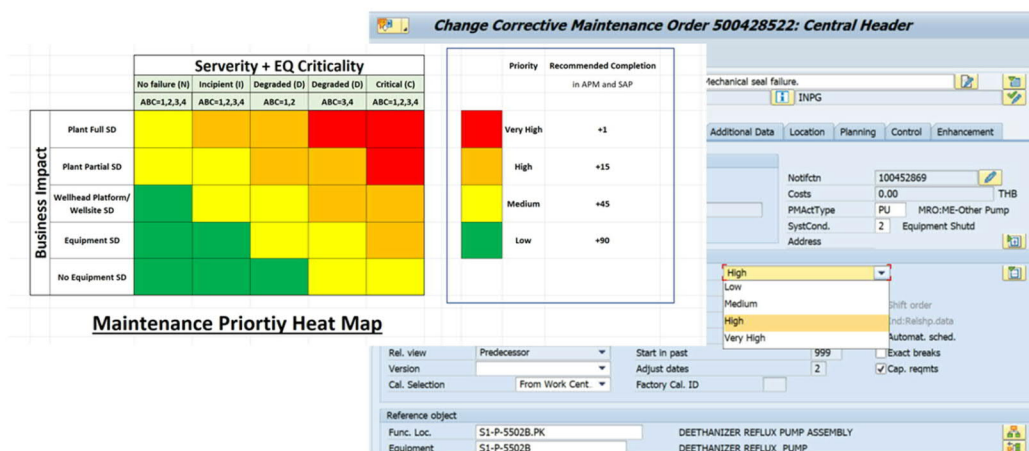


Figure 11 – Risk Based Priority corresponded to recommended completion date

6.0 EXECUTION

This is the only stage when field activities take place that is those directed at anything other than the acquisition and the processing of information. It is the part of the process which yields the return in the form of hydrocarbons and in which the physical implementation of planned activities takes place. Once the execution phase has been initiated, the activity management role changes from “Planning the work” to “Working the plan”. The ability to significantly influence the reduction of costs or schedule has passed and the focus shifts to keeping to the plan in order to avoid time and cost overruns. Work Order generated by CMMS at scheduling phase is how the on-site supervision gets its instructions and how it controls and feedbacks information to the schedulers.

Maintenance and Inspection Management of S1 Asset recognizes four (4) steps for the execution workflow in daily work which to be described in the following Clauses.

6.1 SITE PREPARATION AND INTEGRITY ASSURANCE

Upon identification of the activity to be executed, as detailed in the relevant Work Order), the activity is further detailed in separate steps inclusive of the preparation required before the actual work taking place. Typically, preparation of the site will be considered as part of the actual activity to be undertaken; however in some circumstances the site preparation scope will form a separate activity itself, then follow the general structure outlined in Figure 10. The below outline is controlled by PTTEP S1 Asset Permit-to-Work (PTW) system as described in 13247- PDR-SSHE-505/08, SSHE Rules and Requirement Procedure.

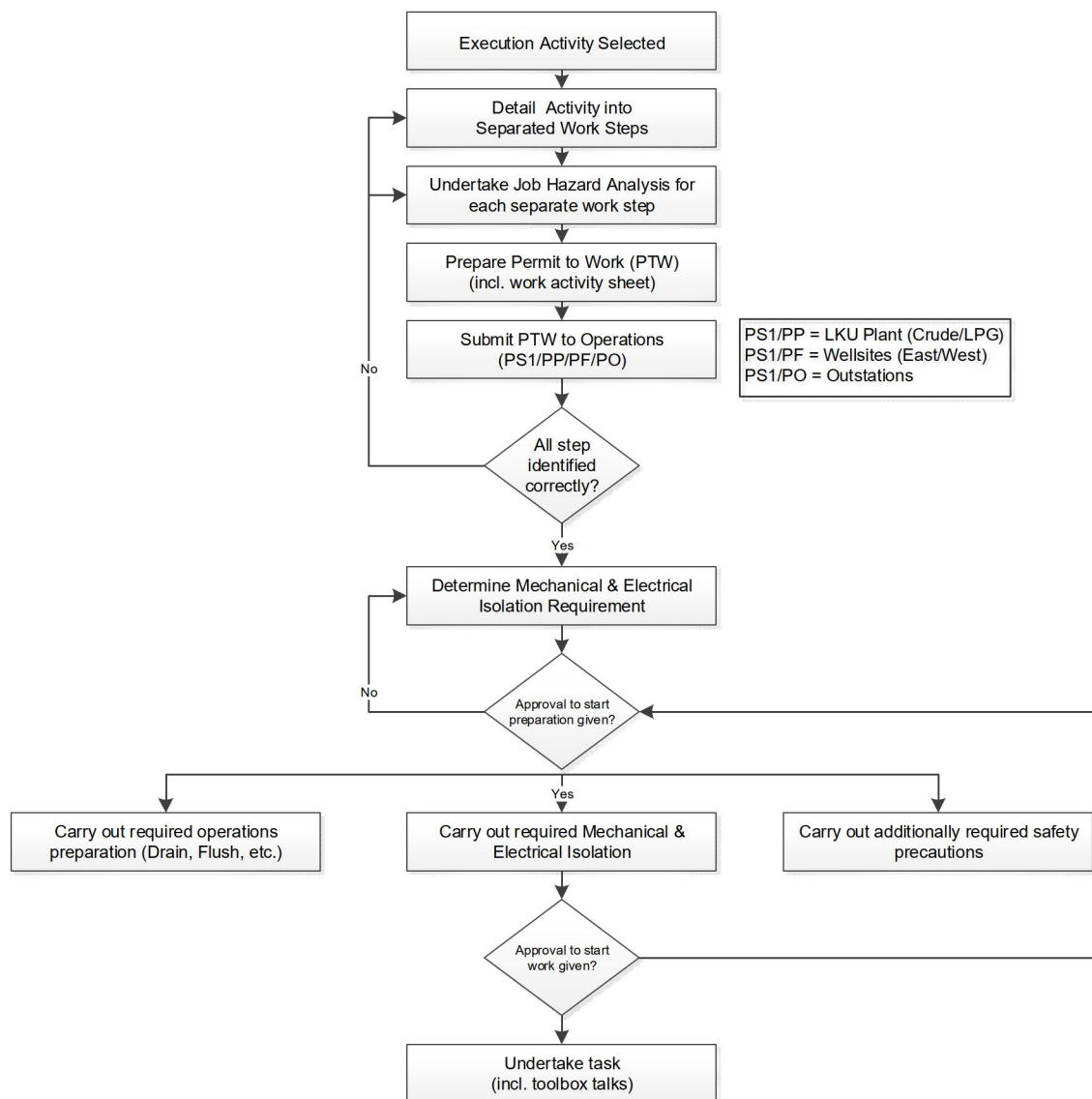


Figure 12 – Site Preparation and Integrity Assurance

Work Description	By	Notes
Detailed activity into separated work steps	Job executor, PS1/M Team Leader	1
Undertake job safety analysis for each separate work step	Job executor, PS1/M Team Leader (supported by Safety Officer)	1
Prepare permit to work (including work analysis sheet)	Job executor, PS1/M Team Leader	1
Submit permit to work to Production section for review	PS1/M Team Leader	
Determine mechanical and electrical isolation requirements	PS1/M Electrical, PS1/PP/PF/PO	2, 3
Carry out required operational preparation activities (drain, flush, etc.)	PS1/PP/PF/PO	
Carry out mechanical and electrical isolation	PS1/M Electrical, PS1/PP/PF/PO	3, 4
Carry out additionally required safety precautions	Job executor	
Undertake task (including toolbox talks)	Job executor	5
Notes: <ol style="list-style-type: none"> Maintenance jobs are normally executed by Maintenance/Inspection crews (under PS1/M Team Leader's supervision) who will be responsible for correctly identifying the separate work steps and permit requirements. For non-routine activities, the activity may be assisted by PS1/M Supervisor and/or Maintenance Discipline Engineers. Isolation requirements and additional safety precautions are established as per the requirements of PTW system and operation procedures. Electrical Isolation is carried out per Electrical Safety Rules procedures. Upon request, isolations may be brought in place by competent persons (typically PS1/M staffs) under the supervision of Production section. For electrical isolations, special requirement applied, as detailed in Electrical Safety Rules. Additionally required precautions (barriers, gas testers, etc.) are normally brought in place jointly by Maintenance/Inspection crews and Production section (PS1/PP/PF/PO), with ultimate approval of adequacy of these provided by Production section. Standard forms for toolbox talks to be used. 		

Table 3 – Responsibility for Site Preparation and Integrity Assurance

6.2 TASK UNDERTAKING

Once site preparation and integrity assurance are completed and approval to proceed work has been obtained as per the requirements of PTW system, actual task can be executed in accordance with the task description shown on the job cards and permit. A task is considered complete when all described tasks have been executed, the site has been re-instated, and the equipment worked on has been returned to a status in which it can safely resume operation.

For various maintenance and inspection activities, detailed procedures are available to provide further clarification to the activity described on the job card and to ensure the consistent execution of maintenance and inspection tasks. Relevant procedures are included in vendor manuals or separate PTTEP maintenance work procedures available from PTTEP's intranet.

Where a task involves the investigation of a failure, the conduct of this investigation and associated reporting shall follow the process outlined in the relevant S1 procedures including PTTEP maintenance work procedures.

6.3 HAND-OVER PREPARATION

This clause covers the process required to administer the resources used during the undertaking of the task, as well as the process to administer any relevant findings obtained during the undertaking of the task. This process exists of various separate steps as outlined in Figure 13.

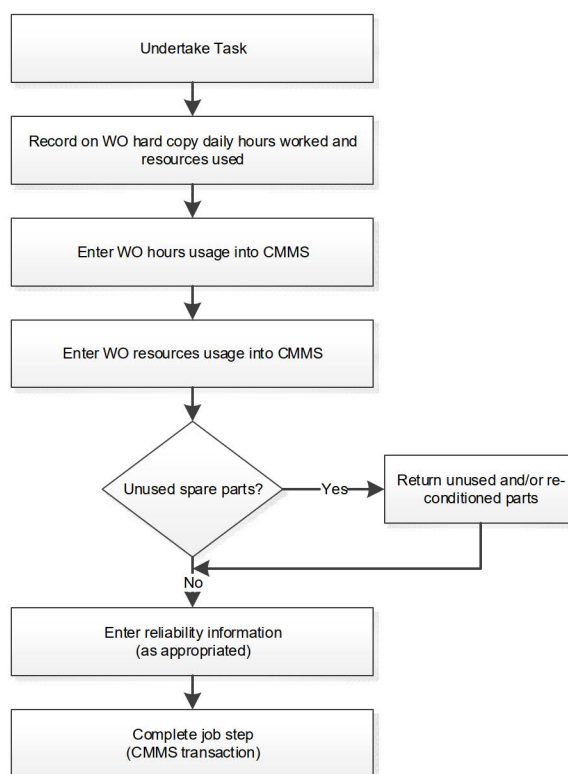


Figure 13 – Hand-over Preparation Process

6.3.1 Work Order Hardcopy Data Record

During the undertaking of tasks, usage of manpower resources (hour worked on WO per individually named person) and other resources are recorded on WO hardcopy on daily basis by the maintenance or inspection technicians. Upon completion of the work, the technicians return the WO hardcopy to their Foreman for entering the relevant data into CMMS.

6.3.2 WO Hours and Resource Usage Entering into CMMS

The information recorded on WO hardcopy is transferred to CMMS within two (2) working days of physical completion of the work, so called “posting of hours usage and resource usage”. It is important that timely entry of this data is strictly adhered to, as it forms the basis of an efficient and effective maintenance scheduling process. Furthermore, it provides the necessary input to the automatic accrual system and thus the link between work management and finance system.

6.3.3 Unused Part Return

All parts and/or consumables reserved or consumed during the undertaking of the task shall be properly balanced against the Work Order bill of materials.

Unused or excess material, spare parts, and/or consumables shall be returned to the material warehouse (5101 is warehouse designated for S1 Maintenance section).

Hint: Stuff replaced by new material but considered reusable if refurbished can also be returned to warehouse as long as they are stock registered and were drawn to use via the WO's bill of Material. Once they are refurbished/reconditioned, the process to return can be further proceeded to the same WO that has yet not technically completed (TECO) under "USED" code of stock – Seek advice from local warehouse personnel for returning "Used part" to Warehouse.

6.3.4 Reliability Information Recoding

In order to capture data on equipment failure modes and frequencies, performing activities and reliability data needs to be entered into CMMS for all corrective maintenance activities. The format adopted by PTTEP S1 asset complied with the requirement of ISO14224, standard for reporting of equipment reliability, and as such requires the following data to be entered:

- Symptom of problem (how did the problem manifest itself?)
- Equipment cause of failure
- Equipment downtime
- Equipment repair time
- Corrective action undertaken

Further details of the entry of reliability data is provided in the relevant PTTEP maintenance work procedure.

Signals completion of work and administrative effort as described in the earlier Clause of this guideline for the relevant job step, and as such a quality check to confirm work completion and correct entry of relevant manpower, resource and materials utilization data. With the approval of a job step to be complete, all transactions are deemed complete, and the WO is ready for close-out.

6.4 WORK ORDER CLOSE-OUT

This process covers the final process of execution process and serves to add deferment data and quality checking the job history data, including reliability data and close out the entire work order, i.e., confirms that all job steps on the subject work order have been completed. For all jobs related to deferment of production, the associated deferment shall be entered by Production Planning section (PS1/T). Deferment related jobs can be identified by the deferment code associated with the work order.

Notes:

1. Where the Work Order involves corrective maintenance, completion also signifies that reliability information has been entered into CMMS.
2. Where a certain job step has not been completed but cancelled, the job card can still be closed out. The relevant cancelled job step will; however, remain shown as cancelled instead of complete in CMMS.
3. WO final closure will be by relevant PS1/M supervisor, discipline engineer followed by PS1/M, dependent on WO scope of work, and its criticality.

7.0 REVIEW AND IMPROVEMENT

Review is the stage in which all the results obtained during execution are analyzed to determine asset status and its performance in various perspectives.

The main source of data for analysis stage is the completed fulfillment on Notifications and Work Orders (WO) via CMMS with relevant parameters and quality of data; both master data of asset and transaction data of execution in a single work order on such registered asset.

S1 adopts Corporate's framework of Maintenance and Inspection Management System underlying with OEMS RAI where every company within PTT Groups are mutually developed, revised, and agreed to conform to develop S1 asset master data structures while transactional fields are configured for user to input relevant parameters into CMMS.

S1 CMMS architecture is therefore built in common with other assets of PTTEP and using the same data catalogue in order that they can be benchmarkable when performing analysis.

Other sources of information including PDMS (Production Data Management System, PDMS), Process Indicator monitoring system (PI), etc.

The analysis results have 3 major categories of outputs. Asset performance, Asset integrity condition, and Work Performance and Effectiveness.

7.1.1 Asset Performance

This activity is concerned with the performance of the physical facilities including items of equipment of the asset. They all have purposes to deliver intended function in efficient and reliable performance within operating context.

Performance Indicators (PI's) used in this area are the equipment performance in term of

- Key equipment or plant availability
- Key equipment or plant efficiency
- Mean Time Between Failures (MTBF)
- Bad actor lists
- Trips of key equipment
- Plant unplanned shutdown
- Plant reliability Index (RI)

7.1.2 Asset Integrity Condition

This activity is concerned with the technical integrity and safety status. Most facilities usually have additional dedicated systems to safeguard, protect, prevent, terminate or retard escalation of undesired circumstances in case the facilities were failed or run out of safe operating envelop.

The dedicated systems: so called SCE or safety critical elements, which determine asset's technical integrity status:

- Structural integrity
- Process containment
- Ignition control
- Protection systems
- Detection systems
- Shutdown systems
- Emergency response systems
- Lifesaving systems

Asset technical integrity condition must also be analyzed in conjunction with performance and validity of the asset design intent under the current conditions. Technical Authorities and Performance standards substantially involves with this analysis.

Examples of asset integrity condition or status are exemplified below:

- Safety relief valve inspection and certification status
- Static equipment (vessel, heat exchanger, tanks, piping) inspection status
- Instrumented Protective Function testing (ESD test, F&G system test) status
- Known variations of Equipment (safeguards overrides, temporary repairs, run out of operating envelop)
- PM compliances
- SCE Backlogs
- Anomalies List
- Critical Alarm Rates
- Findings and corrective action management related to technical integrity
- Corrosion Rate and remaining useful life of process containment.

7.1.3 Work Performance and Effectiveness

This activity is concerned with execution efficiency and effectiveness of maintenance activities themselves. These will include cost, time, and resources consumption to achieve the various deliverables. This analysis of resource performance data is at the core of management information and will bear directly on all aspects of Maintenance and Inspection management.

The impact will range from plans, designs, practices, and procedures and the Cost Model in whole process of Maintenance and Inspection.

Typical Performance Indicators are exemplified below:

- Meantime to Repair (MTTR)
- Turnaround compliance
- PM:CM ratio
- Overdue or Ready Backlogs
- Manhour analysis (Actual and Planned Manhour)
- Cost Analysis (expenditure by asset, activity, WO type)
- Cost per asset replacement value

7.1.4 Feedback and Lesson Learned

Key performance indicators will highlight the improvements and gaps to be fulfilled for the planning, resources, execution tactic, crew competency.

The improvements can be started more upfront to M&I approach and strategy or even further to engineering and design. Enablers and Technologies should enrich to all stages of M&I work process. Life-Cycle-Cost and Risk-based Approach is always underlying of M&I work process as it is the heart and M&I continuous improvement process.

8.0 ROLES AND RESPONSIBILITIES

The following table outlines the roles and responsibilities associated with this document.

Roles	Responsibilities
Document Author	<p>The author of Maintenance and Inspection Execution Management is S1 Maintenance Superintendent or equivalent or person as assigned by Document Owner, with responsible for:</p> <ul style="list-style-type: none"> Investigate and plan of a document structure and its contents Create and/or update a document as planned Report to Document Owner on the progress of the work on a document Issue draft revision of a document for review, and embed all comments made by Document Reviewers to the document
Document Custodian	<p>The custodian of Maintenance and Inspection Execution Management is S1 Maintenance Superintendent or equivalent or higher level who assigned by Document Owner, with responsible for:</p> <ul style="list-style-type: none"> Identify deficiencies or potential improvements Initiate periodic revision Maintain revision history and document status register
Document Owner	<p>The owner of Maintenance and Inspection Execution Management is VP, S1 Production Operation Department, with responsible for:</p> <ul style="list-style-type: none"> Issue this document and its revisions
Document Reviewer	<p>The reviewer of Maintenance and Inspection Execution Management is Technical Authority in reliability and integrity engineering or equivalent or higher level, with responsible for:</p> <ul style="list-style-type: none"> Review the document contents to ensure adequate quality Provide comments and/or suggestions on document issued

9.0 DEFINITIONS

9.1 LANGUAGE

In this document, the following verbal forms are used.

May	Indicates a possible course of action or permission.
Must	Indicates a mandatory and regulatory course of action.
Shall	Indicates a mandatory course of action or requirement.
Should	Indicates a preferred/logical course of action or recommendation.

9.2 TERMINOLOGY

The following terms and definitions apply to this document.

Terminology	Description
Approval	The authority in writing given by COMPANY to Contractor on a procedure or to proceed with the performance of a specific part of the work without releasing in any way the Contractor from any of his obligations to conform with the technical specifications, requisitions, etc. The words "Approve", "Approved" and "Approval" shall be constructed accordingly.
Asset	Any physical facilities used in the exploration, production, processing or transportation of oil and gas, and any supporting facilities or equipment.
Asset Integrity (AI)	The ability of an asset to perform its required function efficiently and effectively whilst safeguarding life and the environment.
Availability	The ability of an item to performs its required function under given conditions at a given instant of time or during a given time interval. The availability of an item does no necessarily imply that it is performing, but it is a state to perform.
Barrier	Measure which reduces the probability of releasing a hazard's potential for harm or which reduces its consequences. The hierarchy of barriers is prevention, detection, control, mitigation and emergency response.
Company	PTT Exploration and Production Public Company Limited PTTEP Siam Limited
Contractor	Any company PTTEP has signed a contract with for the Engineering, Procurement, Construction, Installation, Maintenance and Inspection of a part of service work.
Major Accident Event (MAE)	Any incident that results in multiple fatalities or equivalent damage, production loss, environment impact as per the risk matrix.
Quantitative Risk Assessment (QRA)	QRA is the evaluation of the extend of risk arising, with incorporation of calculations based upon the frequency and magnitude of hazardous events.

Reliability	The ability of an item to perform a required function under give conditions for a given period of time. This is document it is used as "Reliability Performance" and refers to probability of failure.
S1 Asset	Sirikit Oil Field under PTTEP Siam Limited
Safety Critical Element (SCE)	Safety Critical Elements are any part of the installation, plant or computer programs whose failure will either cause or contribute to an MAE, or the purpose of which is to prevent or limit the effect of an MAE.
Technical Authority (TA)	PTTEP personnel responsible for technical standards, providing advice on issues relating to their discipline and Four Pillars of integrity as defined in CMS. There are two levels of TA as defined in CMS.
Technical Integrity	Technical soundness, within E&P context it is "The technical integrity of a facility is achieved when, under specified operating conditions, there is no foreseeable risk of failure endangering the safety of personnel, environment or asset value".

9.3 COMMON ACRONYMS

Set out below in alphabetical order are common acronyms as found within this document.

AI	Asset Integrity
CM	Corrective Maintenance
CMMS	Computerized Maintenance Management System
COA	Chart of Accounts
CPFT	Critical Proof Function Test
ESD	Emergency Shutdown
F&G	Fire and Gas System
FMEA	Fault Modes and Effect Analysis
IOP	Integrated Operations Plan
IPF	Instrument Protective Function
MRP	Maintenance Reference Plan
MS	Microsoft Software
MTBF	Mean Time Between Failure
OMI	Maintenance and Inspection Department
QRA	Quantitative Risk Assessment
PI	Performance Indicator
PM	Preventive Maintenance
PS1	S1 Production Operations Department
PS1/M	S1 Maintenance and Inspection Section

PS1/P	S1 Production Section
PS1/T	S1 Production Support Section
PTN/P	S1 Asset Planning Department
PTW	Permit to Work
RAM	Risk Assessment Matrix
RBI	Risk Based Inspection
RCM	Reliability Centered Maintenance
RRM	Risk and Reliability Maintenance
S1	Sirikit Oil Field
SCE	Safety Critical Element
SSHE	Safety, Security, Health and Environment
TA	Technical Authority
WO	Work Order
WR	Work Request

10.0 DOCUMENT REFERENCE LIST

PTTEP internal references, international codes and standards, provincial legislation, and other references pertinent to this document are indicated in the table below.

Document Code	Document Title
PTTEP internal references	
10012-GDL-5-INT-008-R00	Maintenance and Inspection Planning Guideline
10017-PDR-5-MMS-001-R00	Maintenance and Inspection Approach
13245-GDL-1-S1M-ALL-MMS-001-R04	S1 Maintenance and Inspection Guideline
10015-STD-4-PRS-006-R00	Reliability and Asset Integrity Management Standard
HQ.2020.01082.3	Reliability and Integrity MGT Framework
12153-GDL-5-MMS-001-R00	S1 MRP 2019-2031
13245-GDL05-MMS-002-R00	S1 MRP LPG 2022-2031
International codes and standards, provincial legislation, and other references	
ISO 14224	Petroleum, Petrochemical and Natural Gas Industries – Collection and Exchange of Reliability and Maintenance Data for Equipment



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