



บริษัท ปตท.สผ. สยาม จำกัด

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รายงานผลการปฏิบัติตามมาตรการป้องกันและแก้ไขผลกระทบสิ่งแวดล้อม และมาตรการติดตามตรวจสอบผลกระทบสิ่งแวดล้อม  
โครงการผลิตปิโตรเลียมแหล่งสิริกิติ์และแหล่งตอนกลางเอส 1 แพลงเอส 1 จังหวัดกำแพงเพชร พิชณุโลก และสุโขทัย  
ฉบับเดือนมกราคม-ธันวาคม พ.ศ.2565

## ภาคผนวกที่ 16

### S1 General SSHE Rules and Requirement Procedure



PTT Exploration and Production Public Company Limited

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## **S1 General SSHE Rules and Requirements Procedure**

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**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.

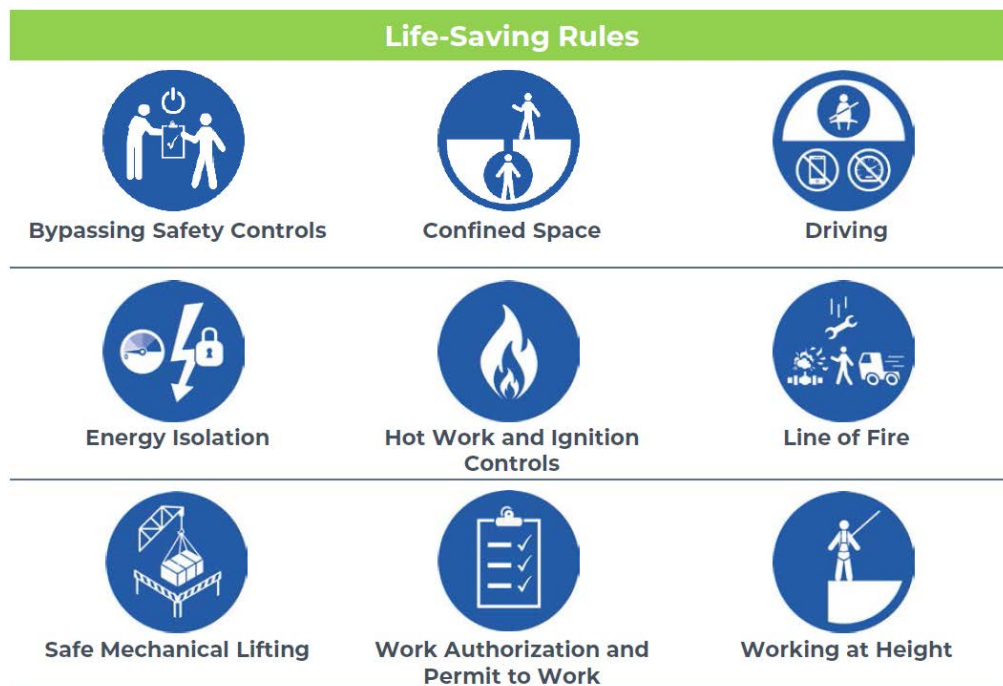


Figure 1: PTTEP Live Saving Rules



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


## APPENDICES



### APPENDIX A: STOP WORK AUTHORITY (SWA) EXERCISE

	<b>STOP WORK AUTHORITY (SWA) EXERCISE REPORT FORM</b>	Form No.: 10015-SUP-SSHE-FRM-002-R00
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S1				
Part 1: Exercise Planning (แผนการซ้อมการหยุดงาน)				
Subject (เรื่อง):	Pretend to use mobile phone in hazardous area	Location (สถานที่):	NPG-A	
Activity (กิจกรรม):	SSHE Committee Walkabout Audit at NPG-A	Date (วันที่):	11 Feb 2021	Issued by (รายงานโดย): Benjamaporn S.
<b>Scenario (สถานการณ์การฝึกซ้อม):</b> PS1 conducts the SSHE Committee Walkabout Audit at NPG-A with S1 SSHE Committee Members. He brings the mobile phone along to the process area and use it to take a photo while conducting the audit.				
<b>Objective (วัตถุประสงค์):</b> ➢ To observe that worker will apply the stop work authority. ➢ To encourage all worker to response the stop work authority for roles and regulations information stop work policy must be held when found any violation.				
<b>Observer (ผู้สังเกตการณ์):</b> <div style="display: flex; flex-wrap: wrap;"> <div style="width: 50%;">           1) K. Vuthichai Kositnun (PS1/O)            2) K. Nattapong Vattanajaroen (PS1/T)            3) K. Terawat Hensirisakul (PS1/M)            4) K. Teerachai Surahirun (PS1/P)            5) K. Tammanoon Chaipanyakul (OTN)            6) K. Suthorn Domhom (PS1/S)         </div> <div style="width: 50%;">           7) K. Aungkoon Suphaphot (OTN/W)            8) K. Bharkbhoom Sripaiboon (OTN)            9) K. Jittakorn Thongprom (PS1/P)            10) K. Surachai Jaipanya (PS1/P)            11) K. Phontakorn Yodchaipeeth (PS1/P)            12) K. Pairat Santiwong (ECM/N)         </div> </div>				
Part 2: Exercise Findings and Recommendations (ประเด็นการฝึกซ้อมและข้อเสนอแนะ)				
Item No. (ข้อ)	Finding Descriptions and Figures (รายละเอียดและรูปภาพ)	Recommendations (ข้อเสนอแนะ)	Action Party (ผู้ดำเนินการแก้ไข)	Target Date (วันที่กำหนดเสร็จ)
1.	Operator who was the area owner did not apply Stop Work Authority immediately while observing PS1 pretend to use the mobile phone in process area.	PS1 recommended all to stop work immediately when found any violation rule and regulation.	All	-
<b>Exercise pictorial (รูปภาพการซ้อม):</b> 				

	<b>STOP WORK AUTHORITY (SWA) EXERCISE REPORT FORM</b>	Form No.: 10015-SUP-SSHE-FRM-002-R00
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<b>Summary of Exercise (บทสรุปของการซ้อม):</b> Does the exercise meet the objective? (การซ้อมทบทวนบรรลุตามวัตถุประสงค์ที่วางไว้หรือไม่?) <input checked="" type="checkbox"/> Yes (ใช่) <input type="checkbox"/> No (ไม่ใช่)			
<b>Part 3: Review and Approve (ทบทวนและอนุมัติ)</b>			
Any additional comments and recommendations (ข้อเสนอแนะและข้อแนะนำอื่น ๆ):			
<b>SWA Role Player</b> (บทบาทสมมติ)   (VP,S1 Production Operation) Date: 11 Feb 21	<b>Prepared and reviewed by:</b> (เตรียมและทบทวนโดย) 1) Nattapong V. 2) Suthorn D. 3) Terawat H. Date: 11 Feb 21	<b>Approved by:</b> (อนุมัติโดย)  (VP,S1 Production Operation) Date: 11 Feb 21	<b>Distributed to (ส่งข้อมูลถึง):</b>  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"> <li>■ Issuing S1 SSHE Rules and Regulations and its revisions.</li> <li>■ Ensuring effective implementation of S1 SSHE Rules and Regulations.</li> </ul>
Document Custodian	<p>The custodian of the Standard is the VP, Superintendent, SSHE section, with responsibilities for:</p> <ul style="list-style-type: none"> <li>■ Identifying deficiencies and opportunities for improvements;</li> <li>■ Administrating &amp; analyzing the implementation of S1 SSHE Rules and Regulations Procedure for continual improvements;</li> <li>■ Initiating periodic revisions;</li> <li>■ Maintaining revision history and document status register; and</li> <li>■ Collecting and publishing all approved S1 SSHE Rules and Regulations;</li> </ul>
Document Reviewers	<ul style="list-style-type: none"> <li>■ 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.</li> <li>■ Nominated document reviewers shall scrutinize and comment on documents issued during the comment round.</li> <li>■ 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.</li> </ul>
Document Controller	<ul style="list-style-type: none"> <li>■ 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.</li> <li>■ Provides the Document Custodian with a unique document code, after a document request has been received, and registered by the administrator.</li> <li>■ Collaborates with the Document Custodian, document author during document development, and with concerned Management to provide document review and update</li> </ul>

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

## 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
<b>PTTEP SSHE Controlling Documents</b>	
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
<b>Other Reference Documents</b>	
<a href="https://europeanlung.org/">https://europeanlung.org/</a>	Passive Smoking

## REVISION HISTORY

Rev.	Description of Revision
<b>0</b>	<b>Authorized by: DSO, Date: September 2010</b> ■ New document
<b>1</b>	<b>Authorized by: DSO, Date: May 2014</b> ■ Revised document
<b>2</b>	<b>Authorized by: DSO, Date: September 2014</b> ■ Revised document
<b>3</b>	<b>Authorized by: PNO, Date: December 2016</b> ■ Revised document
<b>4</b>	<b>Authorized by: PS1, Date: September 2021</b> ■ 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

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รายงานผลการปฏิบัติตามมาตรการป้องกันและแก้ไขผลกระทบสิ่งแวดล้อม และมาตรการติดตามตรวจสอบผลกระทบสิ่งแวดล้อม  
โครงการผลิตปิโตรเลียมแหล่งสิริกิติ์และแหล่งตอนกลางเอส 1 แพลงเอส 1 จังหวัดกำแพงเพชร พิจนุโลก และสุโขทัย  
ฉบับเดือนมกราคม-ธันวาคม พ.ศ.2565

ภาคผนวกที่ 17  
Chemical Management Produce



**PTTEP**

PTT Exploration and Production Public Company Limited

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## **Chemical Management Procedure**

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**Document Code: 12148-PDR-SSHE-505/38-R00**


**November 2019**



### Approval Register

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## INTRODUCTION

### 1. PURPOSE

This Procedure specifies and guides the acceptable Safety management of chemicals from purchasing, storing, handling, transporting, spill responding to disposing of all chemicals which are used under PTTEP Assets, in order to comply with local law and regulations and International Standards.

The improper use, storage, handling and transport of chemicals may result in worker fatalities, chronic health disease, fire and explosions, environmental impact, and other community concerns. To prevent such events, it is necessary to put in place control measures. The controls of inherent hazards must be established to minimize the risks of incidents to As Low As Reasonably Practicable (ALARP) level.

### 2. SCOPE

This Procedure applies to all PTTEP Assets including onshore/offshore/support bases and overseas operations.

This Procedure considers chemicals that are used in PTTEP activities. Manufacture and delivery of raw chemicals directly to PTTEP working sites, storage sites, yards or warehouses by suppliers are not covered.

The following are exempted from this Procedure. However, the chemical owners/onsite supervisors are responsible for managing the risk of using chemicals to ALARP level by demonstration through risk assessment and following precautions of the Safety Data Sheet (SDS) strictly.

- Pesticides used by qualified Contractors and control by their Procedures.
- Household chemicals, fertilizers and weed killers.

**Remark:** In case there are conflicts implementing and managing chemicals to comply with this Procedure, either Thai Domestic Assets or overseas Assets shall fully manage chemicals to comply with the following documents, respectively:

- Local law and regulations.
- Memorandum of Understanding (MOU) and cross-country agreement/treaty of chemical management that each country signed and committed to.
- Acceptable International Standard and best practices.
- PTTEP Chemical Management Procedure.

## REQUIREMENTS

### 3. CHEMICAL MANAGEMENT PROCESS

The chemical management process can be classified into the following 2 main types:

- PTTEP is the chemical owner and PTTEP purchased chemicals from the manufacturer. Purchasing method can also be classified into 2 categories:
  - Stock purchases (via SAP); and
  - Direct purchases (via Purchase Requisition (PR) or Purchase Order (PO)).
- Contractor is the chemical owner and handling chemicals under a contract or work service order.

The chemical management process overview for PTTEP chemical owners and Contractor chemical owners is presented in Appendices A and B, respectively.

### 4. PRELIMINARY RISK ASSESSMENT FOR NEW CHEMICALS

#### 4.1 IN CASE PTTEP IS THE CHEMICAL OWNER

Before stock purchasing or direct purchasing of new chemicals, including free samples/trials from chemical suppliers, PTTEP chemical owners shall register for chemical pre-registration in order to proceed to the preliminary risk assessment for the new chemicals.

A verification team or committee shall be assigned and set up to verify chemicals during the preliminary risk assessment for new chemicals. The verification team members are to have expertise in multiple disciplines, but are not limited to:

- Safety Discipline;
- Health/Medic/Doctor Discipline;
- Environment Discipline; and
- Permit & License Discipline.

**For International Assets,** Assets shall have a specific system for preliminary risk assessment for new chemicals. The requirement shall cover, but is not limited to Safety, Health, Environment, and permit & license. Local law and regulations, cross-country agreements/treaties may be embedded in the preliminary risk assessment for new chemicals, as one of the requirements.

**For Thai Domestic Assets,** Chemical owners shall proceed to the existing system of preliminary risk assessment for new chemicals via either web-based chemical registration (Preferable) or hardcopy form. Details of the preliminary risk assessment process in each step is explained from Sections 4.3 to 4.6.

## **4.2 IN CASE CONTRACTOR IS THE CHEMICAL OWNER UNDER WORK CONTRACT/SERVICE ORDER**

Under a work contract or service order, the Contractor may import, possess, use, handle, store, and transport chemicals. For this case, the Contractor shall be considered as the chemical owner. Chemicals shall not be registered into the PTTEP chemical registration database.

### **Contractor Verification of Safe Chemicals**

In addition, during the pre-mobilization phase of Contractor management, the Contractor shall compile all chemical lists with an SDS which will be handled and used under a work contract/service order. Then, the Contractor shall submit the chemical lists with the SDS to the Contract Holder, Company site representative, site SSHE officer and site medic.

Similarly, the preliminary risk assessment process for new chemicals is applied to Thai Domestic Assets. Contractor shall verify and ensure that all chemicals used under the work contract/service order are safe to handle and manage before commencing work in PTTEP premises. For instance;

- Is the chemical banned based on local law and regulations;
- Is the chemical considered to be a hazardous or non-hazardous chemical based on local law and regulations;
- Etc.

After verification of safe chemicals, the Contractor shall sign the declaration letter of safe chemicals under the work contract/service order. This declaration letter shall be submitted to the Contract Holder, Company site representative, site SSHE officer and site medic before commencing work in PTTEP premises. Once the Contract Holder receives the letter he/she is to sign the letter for endorsement and acknowledgement. A guidance template for a declaration letter of conformity (safe chemicals) under work contract/service order is provided in Appendix C.

## **4.3 CHEMICAL DOCUMENT PREPARATION AND PRE-REGISTRATION**

Before purchasing chemicals, the chemical owner shall obtain the full details of the SDS from the chemical suppliers/manufacturers.

- The SDS for both a single substance and a mixing substance (mixture) must reveal 100% composition/ingredients of the chemical.
- The concentration of each composition can be presented in a range (Min to Max).
- In case there is a secret ingredient or Confidential Business Information (CBI), where the manufacturer does not permit revealing 100% composition/ingredients of a chemical, the chemical owner shall strictly enforce manufacturers to privately submit an SDS detailing 100% of the composition/ingredients of chemical with local authorities (For Thailand, Department of Industrial Work or DIW).

After they have obtained the full details of the SDS, the chemical owner shall proceed to pre-registration by completing/filling in the information for the chemical on web-based chemical registration or completing a hardcopy form and attaching it to the SDS. A sample of a web-based new chemical registration and hardcopy form is presented in Appendix D.

#### **4.4 CHEMICAL REVIEW AND VERIFICATION**

When pre-registration of new chemical is submitted via web-based system, this information is to be sent to notify the verification team of the preliminary risk assessment for new chemicals to conduct a chemical review and verification.

##### **4.4.1 Safety Discipline**

- Review and approve new chemicals through the web-based chemical registration.
- Identify National Fire Protection Association (NFPA) diamond signs.
- Identify hazardous chemicals and specify any required documents (SOR AOR 1) that are needed to submit to local authorities based on local law.
- Provide specific control or highlight measures that are very necessary to handle and store the chemical safely.

##### **4.4.2 Health/Medic/Doctor Discipline**

- Review and approve new chemicals through the web-based chemical registration.
- Identify the NFPA diamond signs.
- Identify and highlight health hazards.
- Provide advice and give comments for chemical owners/users in order to prevent Health hazards.

##### **4.4.3 Environment Discipline**

- Review and approve new chemicals through the web-based chemical registration.
- Provide advice and give comments for chemical owners/users to prevent environmental impact.

##### **4.4.4 Permit & License Discipline**

- Review and approve new chemicals through the web-based chemical registration.
- Identify dangerous goods in accordance with the local hazardous substance Act. Dangerous Goods type 4 are strictly banned/prohibited in Thailand (Exception: Certified Reference Materials (CRM) that are used for analytical laboratory analysis).
- Coordinate work with local authorities and prepare permit and licenses document to import chemicals before purchasing.

## 4.5 BANNED SUBSTANCES

**For Thai Domestic Assets**, all chemicals that are considered as Dangerous Goods Type 4 (Exception: CRM used for analytical laboratory analysis) shall be strictly banned/prohibited, in accordance with the hazardous substance Act.

**For International Assets**, all chemicals shall be considered as banned substances based on applicable local law and regulations, MOUs and cross-country agreement/treaties of chemical management that each country signed and committed to.

## 4.6 FINAL APPROVAL AND REGISTERED CHEMICALS

Chemicals can be purchased after approval from all disciplines during the preliminary risk assessment process. Web-based chemicals shall have an identity number generated, known as Registered Chemicals List (RCL) number, for approved chemicals. This RCL number is presented in the form of RCL-Approved Year-Running Number-Chemical Name. For example, RCL-2019-003-Methylene Chloride means Methylene Chloride has been finally approved and registered as the third chemical of year 2019.

There is no expiry date for RCL numbers. The RCL number of chemicals still remains valid until there is any change in composition. For this case, the chemical owner shall repeat the process of pre-registration and preliminary risk assessment for a new chemicals process.

The process overview of a web-based chemical registration is shown in Appendix E.

## 5. TRAINING

Everyone who is involved with chemicals, from purchasing, storing, handling, transporting, spill responding to disposing of all chemicals shall have a basic knowledge of chemical hazards and safe chemical handling. This basic knowledge of chemical hazards and safe chemical handling can be communicated and provided through appropriate training.

The chemical owner and site SSHE officer of each Asset shall identify the specific training requirements for everyone who is involved with chemicals and then assign the appropriate training.

Contractor shall provide basic knowledge of chemical hazards and safe chemical handling through either in-house or external training to their own Contractor personnel before commencing work with chemicals. Alternatively, the Contractor may seek support from PTTEP to provide the safe chemicals handling and storage for Train-the-Trainer. Afterwards, the Contractor trainer shall provide the training to their own personnel.

## 6. PURCHASING

Only chemicals with approval and RCL number can be purchased, including stock and direct purchasing. If there is any request for purchasing new chemicals without approval or RCL number from the chemical owner, the procurement team has the authority to reject this request.

If the new chemical has not been approved with an RCL number yet, the chemical owner must proceed to the preliminary risk assessment for a new chemical process which is explained earlier in Section 4.

### **Chemicals Delivery to Sites by Suppliers**

Chemicals delivery to sites/warehouses by suppliers may be considered as SSHE contract mode 3, in accordance with SSHE Contractor management Procedure. SSHE Contract mode 3 means the Contractor/Supplier operates within its own SSHE Management System (SSHE MS) that has no interfaces with the Company SSHE MS and they are not required to report SSHE performance data including incidents to PTTEP. However, this does not exclude the possibility that the EP Company may wish to guide and influence SSHE performance under the contract/service.

**Note:** Chemical owners/users and procurement shall inform all suppliers that:

- SDS are delivered with chemicals. The SDS is explained in more detail in Appendix F.
- All chemical containers/packages are supplied with Globally Harmonized System of Classification and Labelling of Chemicals (GHS) label.
- Required documents such as SOR AOR 1 by Thai Law shall be available with the chemicals, which are applicable to Thai Domestic Assets.
- Supplier delivery trucks that enter any PTTEP premises are to comply with local law & regulations as well as United Nations (UN) Recommendations on the Transport of Dangerous Goods (UNRTDG).

## **7. LABELLING**

All chemicals used in PTTEP premises shall be identified and their hazards are to be communicated through a GHS label. GHS label shall be applied to:

- All chemical drums/containers/packaging.
- Exception: chemical waste containers (Waste labels shall be applied in accordance with the PTTEP Waste Management Procedure).

GHS label description and format are shown in Appendix G.

**Remark:** The NFPA label is an optional step to be implemented for packaging/containers as well as transportation. The NFPA Label is explained more in detail in Appendix H.

## **8. TRANSPORTATION**

The Logistics team shall ensure that transportation of hazardous substances is implemented in compliance with local law & regulations as well as International regulations, The International Civil Aviation Organization (ICAO)/International Air Transport Association (IATA) for air transportation, International Maritime Dangerous Goods (IMDG) for marine transportation, European Agreement Concerning the International Carriage of Dangerous Goods by Rail (RID) for rail transportation and



European Agreement Concerning the International Carriage of Dangerous Goods by Road (ADR) for land transportation.

**Remark:**

- Personnel, who are involved with transport of dangerous goods/hazard substances by air, shall be trained in dangerous goods and be kept up with recurrent training within 24 months of previous training. Dangerous goods training must be approved by the appropriate authority of the State of the Operator in accordance with the provisions of Annex 6 - Operation of Aircraft.
- Personnel who are involved with marine transport of dangerous goods/hazard substances shall pass the certified training from IMDG.

**Land Transportation**

The major concerned hazards of chemical spills during land transportation are physical, health, and environmental hazards. A chemical land transportation accident has the potential to affect PTTEP reputation and stakeholders.

- **Competency of Driver for Carriage of Hazardous Substance**

Drivers for carriage of hazardous substances shall be provided appropriate training and have a specific license, in accordance with local law & regulations and ADR requirement.

- **Land Transport Vehicle Specification**

Land transport vehicles for carriage of hazardous substances shall be specifically designed, tested, certified in accordance with local law & regulations and ADR requirement.

- **Mixed Loading Prohibition**

Packages bearing different danger labels shall not loaded together in the same vehicle or container unless mixed loading is permitted. Guidance on mixed loading in the same vehicle or container is presented in the ADR requirement.

- **Placarding**

Placarding and marking of containers, bulk containers, tank containers, portable tanks and vehicles shall be identified with clear visibility, in compliance with local law & regulations as well as the ADR requirement. Transportation signs and a guidance on placard (UNRTDG Classification) are shown in Appendix I.

## **9. STORAGE**

### **9.1 CHEMICAL INVENTORY**

Chemicals in a warehouse/material yard shall be recorded in the chemical inventory list and required documents such as the SDS and Emergency Response Plan shall be in place. The First-in and First-out method shall be implemented for dispatching chemicals to users. A Chemical inventory list should contain the following information as per the guidance:

- Date of receiving, dispatching, expiry.
- Volume, number of containers/packaging, size of container.
- SDS, required documents such as SOR AOR 1 by Thai Law, GHS Label.

## 9.2 STORAGE AREA

Chemical storage areas, including indoor and outdoor areas, shall be allocated and designated. Chemical storage area specifications for construction shall be well designed in accordance with local law & regulations. Before construction the following items/topics should be taken into account, but are not limited to:

- Wall and fire wall;
- Floor;
- Door and Emergency Exit Door;
- Roof;
- Spill Retention Arrangements;
- Drainage;
- Ventilation System;
- Lighting System, Emergency Lighting, Electrical Appliance;
- Lightning Protection System;
- Hazardous Area Determination;
- Alarm System;
- Fire-fighting system including active and passive system;
- Water storage system for supplying water for an emergency;
- Warning Signs and Safety Signs;
- Eye wash station;
- Traffic Route and Dispatching point; and
- Spill Response Equipment, etc.

Chemicals and hazardous substances shall be segregated properly in the store in compliance with local law and regulations. Appendix J presents the Chemical and Hazardous Substances Storage Table which is applicable for Thailand.

**Remark:** For International Assets, where in case of no applicable local law & regulation to follow or comply with for chemical and hazardous substances segregation in storage area, the segregation guidance is provided and presented in Appendix K.

For marine transportation (Storage), chemical segregation shall conform to the IMDG, which is presented in Appendix L.

### **9.3 TEMPORARY STORAGE AREA AT WORKING AREAS**

Sometimes, only a small and proper volume of chemicals is moved to a working area and left at the working area for stand-by use. For example, a scale inhibitor drum or container is left standing by the chemical injector tank to feed the production process. The onsite supervisor/chemical user shall pay attention to the following:

- Check the condition of packaging/container.
- SDS and GHS label is available at the working area.
- Segregate and identify the status of chemical containers whether “Full” or “Empty”.
- Empty chemical containers shall be returned to the warehouse/material yard for disposal.
- Barricade the temporary storage area at the working area to prevent access by unauthorized persons.
- Ensure availability of emergency eye wash station or portable eye wash.
- Chemical containers shall be placed inside the bund wall or on the spill canvas to prevent any chemical spill to the Environment.
- Provision of emergency response facilities (Spill and fire-fighting).

Contractor shall follow the above requirements and strictly follow the site rules about safe chemical handling and storage.

## **10. EMERGENCY RESPONSE AND INCIDENT REPORTING**

### **10.1 EMERGENCY RESPONSE**

The chemical owner and chemical user with the Asset team shall prepare and have an emergency response plan in place including for fire & explosion, spills to Environment, unintentional exposure to chemical users, etc., before using the chemical. The emergency response requirement is already given in the SDS of chemicals. Chemical users shall ensure that all emergency equipment and clean up equipment are available and functional on site. Emergency drills shall be scheduled and exercised periodically with support from Assets.

It is important to remark that when in doubt or in case of an emergency when handling or using chemicals, immediate contact with the chemical distributor or manufacturer shall be established.

### **10.2 CHEMICAL SPILL RESPONSE**

For spill response, the chemical owner and chemical user with the Asset team shall develop a chemical spill response plan and encounter spill based on the site requirements.

For International Assets, a chemical spill response plan shall be developed and handled for all tiers of chemical spill incidents in compliance with local legislation and in-country regulations.

### **10.3 DECONTAMINATION**

In case of a chemical spill to the Environment, the site SSHE officer shall arrive at the contamination area and assess the situation before the decontamination process. A specific decontamination plan shall be developed by site SSHE to comply with local legislation, International Standards, and SDS information.

### **10.4 INCIDENT REPORTING**

In case of a chemical spill to Environment or loss of containment, no matter how small the volume is, it shall be considered and reported as an incident in accordance with the PTTEP Incident Management Standard.

## **11. WASTE MANAGEMENT AND DISPOSAL**

When a chemical has expired or is no longer required for operations, including contaminated chemical containers/packages or contaminated chemical waste water, they shall be treated, managed and disposed of under the method in accordance with local legislation, International Standards as well as the PTTEP Waste Management Procedure.

Before transporting containers/packages to waste disposal locations which are approved by the local authority, all containers/packages that contain chemical waste shall be marked and controlled. A full set of SDS or brief SDS of disposed chemicals shall be handed in/submitted to both the transporting and waste disposal Service Companies for their safe operation.

## **12. PERSONAL PROTECTIVE EQUIPMENT (PPE)**

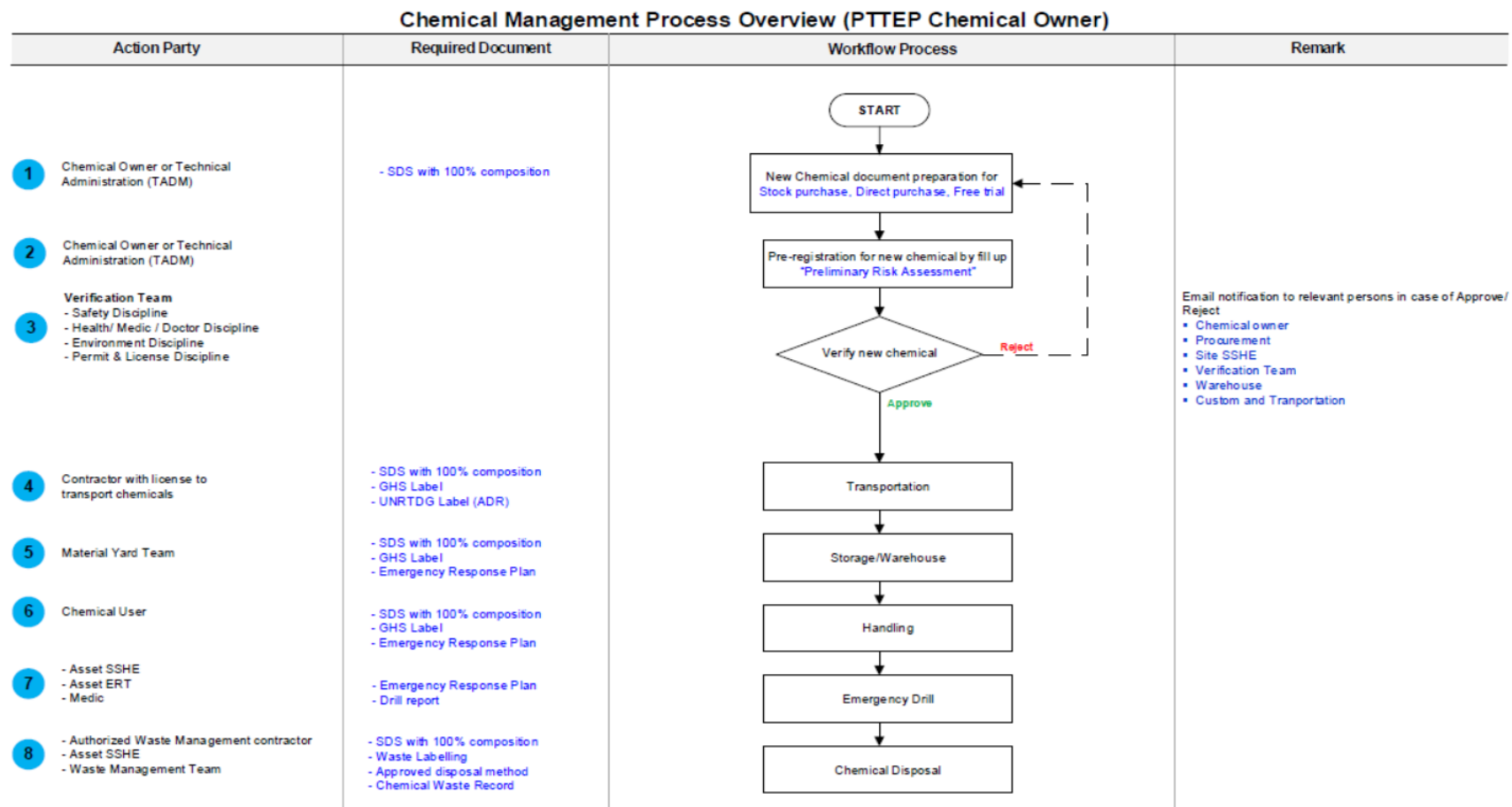
It is necessary to define and provide PPE for routine operations as well as for emergencies. It is mandatory to allocate appropriate PPE for specific chemical handling, as stated in the SDS.

Everyone who is involved with chemical handling shall be trained in the proper use and care of all necessary PPE.

For approved PPE Standards, this information can be obtained from PTTEP Operational Safety Management Standard, Appendix 1: Approved PPE Standard.

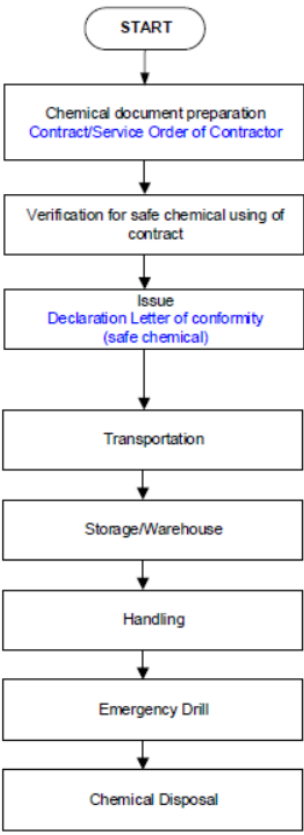
## APPENDICES

### APPENDIX A: CHEMICAL MANAGEMENT PROCESS OVERVIEW (PTTEP CHEMICAL OWNER)



## APPENDIX B: CHEMICAL MANAGEMENT PROCESS OVERVIEW (CONTRACTOR CHEMICAL OWNER)

**Chemical Management Process Overview (Contract/Service Order of Contractor)**

Action Party	Required Document	Workflow Process	Remark
<p><b>1</b> - Contract Holder - Contractor</p> <p><b>2</b> Contractor</p> <p><b>3</b> Contractor</p> <p><b>4</b> Contractor with license to transport chemicals</p> <p><b>5</b> - Contract Holder - Contractor</p> <p><b>6</b> Chemical User</p> <p><b>7</b> - Contractor - CSR - Asset SSHE - Asset ERT - Medic</p> <p><b>8</b> - Authorized Waste Management contractor - Asset SSHE - Waste Management Team</p>	<p>- SDS with 100% composition - GHS Label - List of chemical for Contract/Service Order</p> <p>- SDS with 100% composition - GHS Label</p> <p>- SDS with 100% composition - GHS Label - UNRTDG Label (ADR)</p> <p>- SDS with 100% composition - GHS Label - Emergency Response Plan</p> <p>- SDS with 100% composition - GHS Label - Emergency Response Plan</p> <p>- Emergency Response Plan - Drill report</p> <p>- SDS with 100% composition - Approved disposal method - Chemical Waste Record - Waste Labelling</p>	 <pre> graph TD     START([START]) --&gt; A[Chemical document preparation Contract/Service Order of Contractor]     A --&gt; B[Verification for safe chemical using of contract]     B --&gt; C[Issue Declaration Letter of conformity (safe chemical)]     C --&gt; D[Transportation]     D --&gt; E[Storage/Warehouse]     E --&gt; F[Handling]     F --&gt; G[Emergency Drill]     G --&gt; H[Chemical Disposal]           </pre>	<p>Verification in term of law/Regulations - Dangerous Goods type 1-4 - Hazardous chemical</p> <p>Issue to; - Contract Holder - Company Site Representative (CSR) - Asset SSHE - Medic</p> <p>Temporary storage at each site/project</p>



## APPENDIX C: DECLARATION LETTER OF CONFORMITY (SAFE CHEMICAL)

Updated Declaration Letter of Conformity (Safe Chemical) form is available on [SSHE Intranet > SSHE MS > SSHE MS Documents > Corporate Tools > Appendix: Chemical Management Procedure](#)

**Remark:** This form is editable for International Assets. It is designed for Contractors in Thailand only.

Company's Original Letterhead
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<b>Declaration Letter of Conformity Safe Chemical</b>
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Date of Issue: DD/MM/YYYY

Type of Declaration: ☐ Under Contract ☐ Under Service Order

Purpose of Usage: ☐ Petroleum Industry ☐ Food & Drug ☐ Pest Control ☐ Household

☐ Others.....

### Confirmation of Declaration Statement from Company

1. We declare that the product(s) listed below:

Chemical Trade Name	Quantity/Weight/Volume Used in PTTEP Premises

Is/are manufactured/imported by us and we are aware that chemical composition(s) is/are revealed and secret composition(s), known as secret recipe or Confidential Business Information (CBI) in Safety Data Sheet, fully comply with the following requirement:

- ☐ Is/are not dangerous goods type 4 (Except, certificate reference material (CRM) is used for analytical laboratory), according to Hazardous Substance Act, which is applicable for Thailand.
- ☐ Is/are dangerous goods type 1, 2 or 3. We are fully aware that we comply with the further requirements of control/ mitigation according to Hazardous Substance Act, which is applicable for Thailand.
- ☐ Is/are not dangerous goods, according to Hazardous Substance Act, which is applicable for Thailand.
- ☐ Is/are not hazardous chemical, according to Notification of Department of Labor Protection and Welfare about Hazardous Chemical List, which is applicable for Thailand.
- ☐ Is/are not prohibited/ banned according to the memorandum of understanding (MOU) and cross-country agreement/treaty of chemical management that each country signed and committed.
- ☐ Has/have the full detail of Safety Data Sheet (16 Elements) as well as GHS labelling on packaging.
- ☐ Has/have safe design of chemical packaging in compliance with local law and regulation as well as ADR requirement.

2. We declare that the information given above is true and correct.

3. We are aware that under local law and regulation, making a false declaration shall be subjected to the penalty from local authorities/ government, as well as, PTTEP.

Sincerely,

Signature of Authorized Signatory from Contractor
--

Name of Authorized Signatory

Designation of Authorized Signatory


Signature of Authorized Signatory from PTTEP
---

Name of PTTEP Contract Holder

PTTEP Acknowledgement

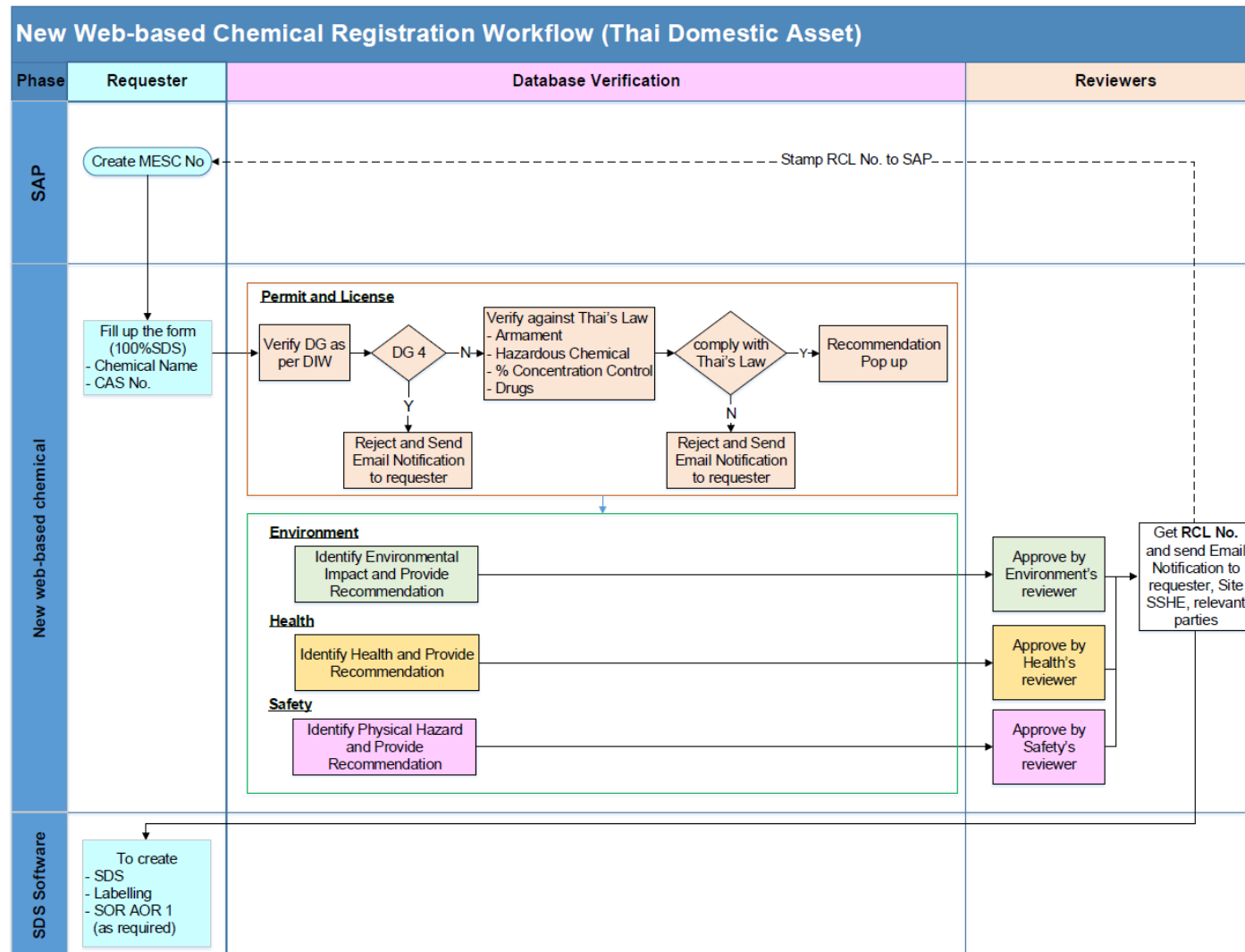
## APPENDIX D: PRELIMINARY RISK ASSESSMENT FOR NEW CHEMICAL REGISTRATION FORM (THAI DOMESTIC ASSET)

Updated Preliminary Risk Assessment for New Chemical Registration form is available on [SSHE Intranet > SSHE MS > SSHE MS Documents > Corporate Tools > Appendix: Chemical Management Procedure](#)

	<b>Preliminary Risk Assessment For New Chemical Registration Form (Thai Domestic Asset)</b>		PDR.Ref.No. 11038-PDR-SSHE-505/38-R03	
			Rev.4      Date: Nov 2019	
			Page 1 of 1	
<b>PART 1: to be completed by chemical owner</b>				
RCL No. <input type="text"/>				
<b>Product name/Commercial/Chemical Name:</b>				
<b>Composition Name:</b>		<b>CAS Number:</b>		<b>Weight (%):</b>
<b>Manufacturer/Trader Name:</b>		<b>Working Location (Asset/worksite):</b>		
<input type="checkbox"/> Thai Domestic <input type="checkbox"/> International		Unit Volume (Kg or Liter):		
<b>Propose of Usage:</b>		Total Purchase Volume (Kg or Liter):		
		Mean of Disposal:		
<b>Packaging:</b>		Chemical will be routed to process system or export/product system <input type="checkbox"/> No <input type="checkbox"/> Yes, Please Specify .....		
<b>Type of Purchase</b> <input type="checkbox"/> Stock Purchase <input type="checkbox"/> Direct Purchase <input type="checkbox"/> Free Trial		<b>Special storage required?</b> <input type="checkbox"/> No <input type="checkbox"/> Yes, Please Specify .....		
<b>Chemical Owner Name:</b>		<b>Department:</b>		<b>Date:</b>
<b>PART 2: to be completed by verification team</b>				
<b>Permit and License</b>		<b>Environment</b>		
<input type="checkbox"/> Dangerous goods Type ..... <input type="checkbox"/> Non Dangerous goods		<b>Recommendation to prevent enironment impact:</b>		
Composition name ..... Cas No. ....				
Composition name ..... Cas No. ....				
Official authority .....				
Recommendation.....				
Name:	Dept:	Date:	Name:	Dept:
<b>Health</b>		<b>Safety</b>		
<input type="checkbox"/> Acute toxicity <input type="checkbox"/> Germ cell mutagenicity		<input type="checkbox"/> Explosive <input type="checkbox"/> Pyrophoric solids		
<input type="checkbox"/> Skin corrosion/irritation <input type="checkbox"/> Carcinogenicity		<input type="checkbox"/> Flammable gas <input type="checkbox"/> Pyrophoric liquids		
<input type="checkbox"/> Serious eye damage/eye irritation <input type="checkbox"/> Reproductive toxicity		<input type="checkbox"/> Aerosols <input type="checkbox"/> Self-heating substances &mixtures		
<input type="checkbox"/> Aspiration hazard (Ingestion) <input type="checkbox"/> Specific target organ toxicity - repeated exposure		<input type="checkbox"/> Flammable liquids <input type="checkbox"/> Substances &mixtures, which in contact with water, emit flammable gases		
<input type="checkbox"/> Specific target organ toxicity-single exposure <input type="checkbox"/> Respiratory/skin sensitization		<input type="checkbox"/> Flammable solids <input type="checkbox"/> Oxidizing liquids		
Other/Recommendation.....		<input type="checkbox"/> Gas under pressure <input type="checkbox"/> Oxidizing solids		
		<input type="checkbox"/> Corrosive to metals <input type="checkbox"/> Oxidizing gas		
		<input type="checkbox"/> Self-reactive substances and Mixtures <input type="checkbox"/> Organic peroxides		
		<input type="checkbox"/> Desensitized Explosives		
Other/Recommendation.....				
Name:	Dept:	Date:	Name:	Dept:
<b>Approved</b> <input type="checkbox"/> Yes <input type="checkbox"/> No		Comment (if any).....		



## APPENDIX E: PROCESS OVERVIEW OF WEB-BASED CHEMICAL REGISTRATION



## APPENDIX F: SAFETY DATA SHEET (SDS)

In accordance with Occupational Safety And Health Administration (OSHA), the Hazard Communication Standard (HCS) (29 CFR 1910.1200(g)), revised in 2012, requires that the chemical manufacturer, distributor, or importer provide SDSs (formerly MSDSs or Material Safety Data Sheets) for each hazardous chemical to downstream users to communicate information on these hazards. The information contained in the SDS is largely the same as the MSDS, except now the SDSs are required to be presented in a consistent user-friendly, 16-section format which is explained below. The information contained in the SDS must be in **English** (although it may be in other languages as well).

1. Identification
2. Hazard(s) Identification
3. Composition/Information on ingredients
4. First-aid measures
5. Fire-fighting measures
6. Accidental release measures
7. Handling and storage
8. Exposure controls/personal protection
9. Physical properties
10. Stability and reactivity
11. Toxicological information
12. Ecological information
13. Disposal information
14. Transport information
15. Regulatory information
16. Other information

## APPENDIX G: GHS LABELLING FORMAT

GHS stands for the Globally Harmonized System of Classification and Labelling of Chemicals. The GHS defines and classifies the hazards of chemical products and communicates Health and Safety information on labels and SDSs. The goal is that the same set of rules for classifying hazards, and the same format and content for labels and SDSs will be adopted and used around the world.

GHS covers all hazardous chemicals and may be adopted to cover chemicals in the workplace, chemicals in transport, consumer products, pesticides and pharmaceuticals. The target audiences for GHS include workers, transport workers, emergency responders and consumers.

Classification of the hazards of chemicals based on the GHS rules can be classified into 3 major hazard groups, namely physical hazards, health hazards, and environmental hazards. Within each of these hazard groups there are classes and categories which are summarized in the below table:

**Table G1: GHS Hazard Classification**

Physical Hazards (17 Classes)	Health Hazards (10 Classes)	Environmental Hazards (2 Classes)
Explosives	Acute Toxicity	Hazardous to the Aquatic Environment
Flammable Gases	Skin Corrosion/Irritation	Hazardous to the Ozone Layer
Aerosols	Serious Eye Damage/Irritation	
Oxidizing Gases	Respiratory or Skin Sensitization	
Gases under Pressure	Germ Cell Mutagenicity	
Flammable Liquids	Carcinogenicity	
Flammable Solids	Reproductive Toxicity	
Self-reactive Substances and Mixtures	Specific Target Organ Toxicity Single Exposure	
Pyrophoric Liquids	Specific Target Organ Toxicity Repeated Exposure	
Pyrophoric Solids	Aspiration Hazard	
Self-heating Substances and Mixtures		
Substances and Mixtures which, in Contact with Water, Emit Flammable Gases		

Physical Hazards (17 Classes)	Health Hazards (10 Classes)	Environmental Hazards (2 Classes)
Oxidizing Liquids		
Oxidizing Solids		
Organic Peroxides		
Corrosive to Metals		
Desensitized Explosives		

### GHS-Compliant Label

In accordance with OSHA, chemical labels must include 6 distinct elements:



**Figure G1: Example of a GHS-Compliant Label**

- Product Identifier:** Normally placed in the upper left hand corner of the label, and corresponds with Section 1 of the SDS. It identifies the hazardous chemical by an appropriate term, and can include the chemical name, code number and/or batch number.
- Signal Word:** There are two types of signal words used to determine the severity of the hazard. For each label, either “Danger” (a more severe hazard) or “Warning” (a less severe hazard) must be used. There is only one word per label and, since hazards exist within a variety of classes, a “Danger”-level warning is used if it exists in any one class.
- Hazard Statement:** Describes the nature and degree of the hazard. Labels can contain multiple hazard statements, and should always be standardized and consistent within each hazard classification category.



4. **Precautionary Statement:** Instructs workers and users on measures for minimizing exposure and lowering the risk of harm from a chemical. There are four different types of precautionary statements that should be provided in the label: a prevention statement that describes how to minimize exposure, a response statement that describes what to do in case of exposure, a statement describing how the chemical should be stored, and a disposal statement with instructions for proper disposal of the chemical.
5. **Supplier Information:** Includes the name, address and telephone number of the chemical manufacturer, supplier or importer.
6. **Pictogram:** Composed of a hazard symbol surrounded by a red border to visually illustrate the hazards of a chemical so they are universally readable. There are currently nine pictograms, and depending on the chemical, a single label can contain multiple pictograms to specify multiple hazards.



**Figure G2: GHS Pictograms**

For more details, examples of GHS label arrangement on various types of packaging can be found and are presented in the globally harmonized system of classification and labelling of chemical (GHS), 7<sup>th</sup> revised edition.

## APPENDIX H: NFPA704 LABEL SYSTEM (FIRE DIAMOND)

NFPA 704 is a labelling system used to identify hazardous materials. It is published by the National Fire Protection Association (NFPA). NFPA 704 is a supplemental labelling system specifically intended for emergency responders, though other people can read and benefit from these labels in normal working conditions. This NFPA label is an **optional step** to be implemented for packaging/containers as well as for transportation.

The NFPA 704 label contains lots of information in a compact and easy-to-understand format, which is essential in emergency situations. The most recognizable part of the label is the diamond, which is further broken up into four smaller diamonds. Each of the diamonds is color-coded and represents a different type of hazard. Within the diamond is a number (with the exception of the white diamond). The number corresponds to the level of danger a chemical poses.

The lower the number, the lower the hazard. The numbers range from zero to four, with zero representing no hazard at all, and four representing an extreme hazard. Each number also has a specific meaning based on which diamond it is in.



**Figure H1: NFPA704 Label**

Rating the severity of a hazard in each small diamond shape is explained in the table below.





**Table H1: Criteria for Rating the Severity of the Hazard in each Small Diamond Shape**





Health (Blue)	
0	Poses no Health hazard, no precautions are necessary and would offer no hazard beyond that of ordinary combustible materials (e.g., water).
1	Exposure would cause irritation with only minor residual injury (e.g., acetone).
2	Intense or continued but not chronic exposure could cause temporary incapacitation or possible residual injury (e.g., diethyl ether).
3	Short exposure could cause serious temporary or moderate residual injury (e.g., chlorine).
4	Very short exposure could cause death or major residual injury (e.g., hydrogen cyanide, phosphine, carbon monoxide).
Instability/Reactivity (Yellow)	
0	Normally stable, even under fire exposure conditions, and is not reactive with water (e.g. helium).
1	Normally stable, but can become unstable at elevated temperatures and pressures (e.g. propene).
2	Undergoes violent chemical change at elevated temperatures and pressures, reacts violently with water, or may form explosive mixtures with water (e.g., white phosphorus, potassium, sodium).
3	Capable of detonation or explosive decomposition, but requires a strong initiating source, must be heated under confinement before initiation, reacts explosively with water, or will detonate if severely shocked (e.g. ammonium nitrate, chlorine trifluoride).
4	Readily capable of detonation or explosive decomposition at normal temperatures and pressures (e.g., nitro-glycerine, chlorine azide, chlorine dioxide).

**Table H1: Criteria for Rating the Severity of the Hazard in each Small Diamond Shape (continued)**





<b>Flammability (Red)</b>	
<b>0</b>	Materials that will not burn under typical fire conditions (e.g., carbon dioxide), including intrinsically non-combustible materials such as concrete, stone and sand. (Materials that will not burn in air when exposed to a temperature of 816°C (1500°F) for a period of 5 minutes.).
<b>1</b>	Materials that require considerable preheating, under all ambient temperature conditions, before ignition and combustion can occur (e.g., mineral oil). Includes some finely divided suspended solids that do not require heating before ignition can occur. (Flash point at or above 93.4°C (200°F).
<b>2</b>	Must be moderately heated or exposed to relatively high ambient temperature before ignition can occur (e.g., diesel fuel) and some finely divided suspended solids that do not require heating before ignition can occur. Flash point between 38°C (100°F) and 93°C (200°F).
<b>3</b>	Liquids and solids (including finely divided suspended solids) that can be ignited under almost all ambient temperature conditions (e.g., gasoline). Liquids having a flash point below 23°C (73°F) and having a boiling point at or above 38°C (100°F) or having a flash point between 23°C (73°F) and 38°C (100°F).
<b>4</b>	Will rapidly or completely vaporize at normal atmospheric pressure and temperature, or is readily dispersed in air and will burn readily (e.g., acetylene, diethylzinc). Includes pyrophoric substances. Flash point below 23°C (73°F).
<b>Special (White)</b>	
The white "special notice" area can contain several symbols. The following symbols are defined by the NFPA 704 Standard.	
<b>OX</b>	Oxidizer (e.g., potassium perchlorate, ammonium nitrate, hydrogen peroxide).
<b>W</b>	Reacts with water in an unusual or dangerous manner (e.g., cesium, sodium, sulfuric acid).
<b>SA</b>	Simple asphyxiant gas. Specifically limited to the following gases: nitrogen, helium, neon, argon, krypton and xenon.




## APPENDIX I: TRANSPORTATION SIGNS AND GUIDANCE ON PLACARDS (UNRTDG CLASSIFICATION)




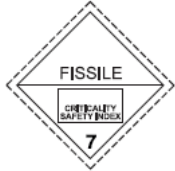
Label model No.	Division or Category	Symbol and symbol colour	Background	Figure in bottom corner (and figure colour)	Specimen labels	Note
<b>Class 1 hazard: Explosive substances or articles</b>						
1	Divisions 1.1, 1.2, 1.3	Exploding bomb: black	Orange	1 (black)		<b>**</b> Place for division – to be left blank if explosive is the subsidiary hazard <b>*</b> Place for compatibility group – to be left blank if explosive is the subsidiary hazard
1.4	Division 1.4	1.4: black Numerals shall be about 30 mm in height and be about 5 mm thick (for a label measuring 100 mm × 100 mm)	Orange	1 (black)		<b>*</b> Place for compatibility group
1.5	Division 1.5	1.5: black Numerals shall be about 30 mm in height and be about 5 mm thick (for a label measuring 100 mm × 100 mm)	Orange	1 (black)		<b>*</b> Place for compatibility group
1.6	Division 1.6	1.6: black Numerals shall be about 30 mm in height and be about 5 mm thick (for a label measuring 100 mm × 100 mm)	Orange	1 (black)		<b>*</b> Place for compatibility group




Label model No.	Division or Category	Symbol and symbol colour	Background	Figure in bottom corner (and figure colour)	Specimen labels	Note
<b>Class 2 hazard: Gases</b>						
2.1	Flammable gases	Flame: black or white (except as provided for in 5.2.2.2.1.6 d))	Red	2 (black or white) (except as provided for in 5.2.2.2.1.6 d))		-
2.2	Non-flammable, non-toxic gases	Gas cylinder: black or white	Green	2 (black or white)		-
2.3	Toxic gases	Skull and crossbones: black	White	2 (black)		-
<b>Class 3 hazard: Flammable liquids</b>						
3	-	Flame: black or white	Red	3 (black or white)		-



Label model No.	Division or Category	Symbol and symbol colour	Background	Figure in bottom corner (and figure colour)	Specimen labels	Note
<b>Class 4.1 hazard: Flammable solids, self-reactive substances, polymerizing substances and solid desensitized explosives</b>						
4.1	-	Flame: black	White with 7 vertical red stripes	4 (black)		-
<b>Class 4.2 hazard: Substances liable to spontaneous combustion</b>						
4.2	-	Flame: black	Upper half white, lower half red	4 (black)		-
<b>Class 4.3 hazard: Substances which, in contact with water emit flammable gases</b>						
4.3	-	Flame: black or white	Blue	4 (black or white)		-
<b>Class 5.1 hazard: Oxidizing substances</b>						
5.1	-	Flame over circle: black	Yellow	5.1 (black)		-

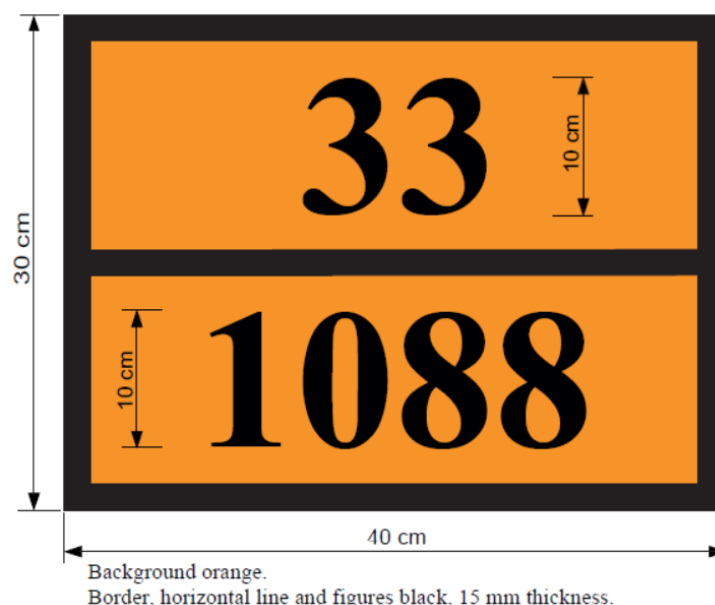
Label model No.	Division or Category	Symbol and symbol colour	Background	Figure in bottom corner (and figure colour)	Specimen labels	Note
<b>Class 5.2 hazard: Organic peroxides</b>						
5.2	-	Flame: black or white	Upper half red, lower half yellow	5.2 (black)		-
<b>Class 6.1 hazard: Toxic substances</b>						
6.1	-	Skull and crossbones: black	White	6 (black)		-
<b>Class 6.2 hazard: Infectious substances</b>						
6.2	-	Three crescents superimposed on a circle: black	White	6 (black)		The lower half of the label may bear the inscriptions: "INFECTIOUS SUBSTANCE" and "In the case of damage or leakage immediately notify Public Health Authority" in black colour

Label model No.	Division or Category	Symbol and symbol colour	Background	Figure in bottom corner (and figure colour)	Specimen labels	Note
<b>Class 7 hazard: Radioactive material</b>						
7A	Category I – WHITE	Trefoil: black	White	7 (black)		Text (mandatory), black in lower half of label: “RADIOACTIVE” “CONTENTS ...” “ACTIVITY ...” One red vertical bar shall follow the word: “RADIOACTIVE”
7B	Category II – YELLOW	Trefoil: black	Upper half yellow with white border, lower half white	7 (black)		Text (mandatory), black in lower half of label: “RADIOACTIVE” “CONTENTS ...” “ACTIVITY ...” In a black outlined box: “TRANSPORT INDEX”; Two red vertical bars shall follow the word: “RADIOACTIVE”
7C	Category III – YELLOW	Trefoil: black	Upper half yellow with white border, lower half white	7 (black)		Text (mandatory), black in lower half of label: “RADIOACTIVE” “CONTENTS ...” “ACTIVITY ...” In a black outlined box: “TRANSPORT INDEX”; Three red vertical bars shall follow the word: “RADIOACTIVE”
7E	Fissile material	-	White	7 (black)		Text (mandatory): black in upper half of label: “FISSILE”; In a black outlined box in the lower half of label: “CRITICALITY SAFETY INDEX”

Label model No.	Division or Category	Symbol and symbol colour	Background	Figure in bottom corner (and figure colour)	Specimen labels	Note
<b>Class 8 hazard: Corrosive substances</b>						
8	-	Liquids, spilling from two glass vessels and attacking a hand and a metal: black	Upper half white, lower half black with white border	8 (white)		-
<b>Class 9 hazard: Miscellaneous dangerous substances and articles, including environmentally hazardous substances</b>						
9	-	7 vertical stripes in upper half: black	White	9 underlined (black)		-
9A	-	7 vertical stripes in upper half: black; battery group, one broken and emitting flame in lower half: black	White	9 underlined (black)		-

### Orange-Colored Plate

Transport units carrying dangerous goods shall display two rectangular orange-colored plates conforming to ADR specifications, set in a vertical plane. They shall be clearly visible. An example of an orange-colored plate with a hazard identification number and UN number is presented in the figure below:



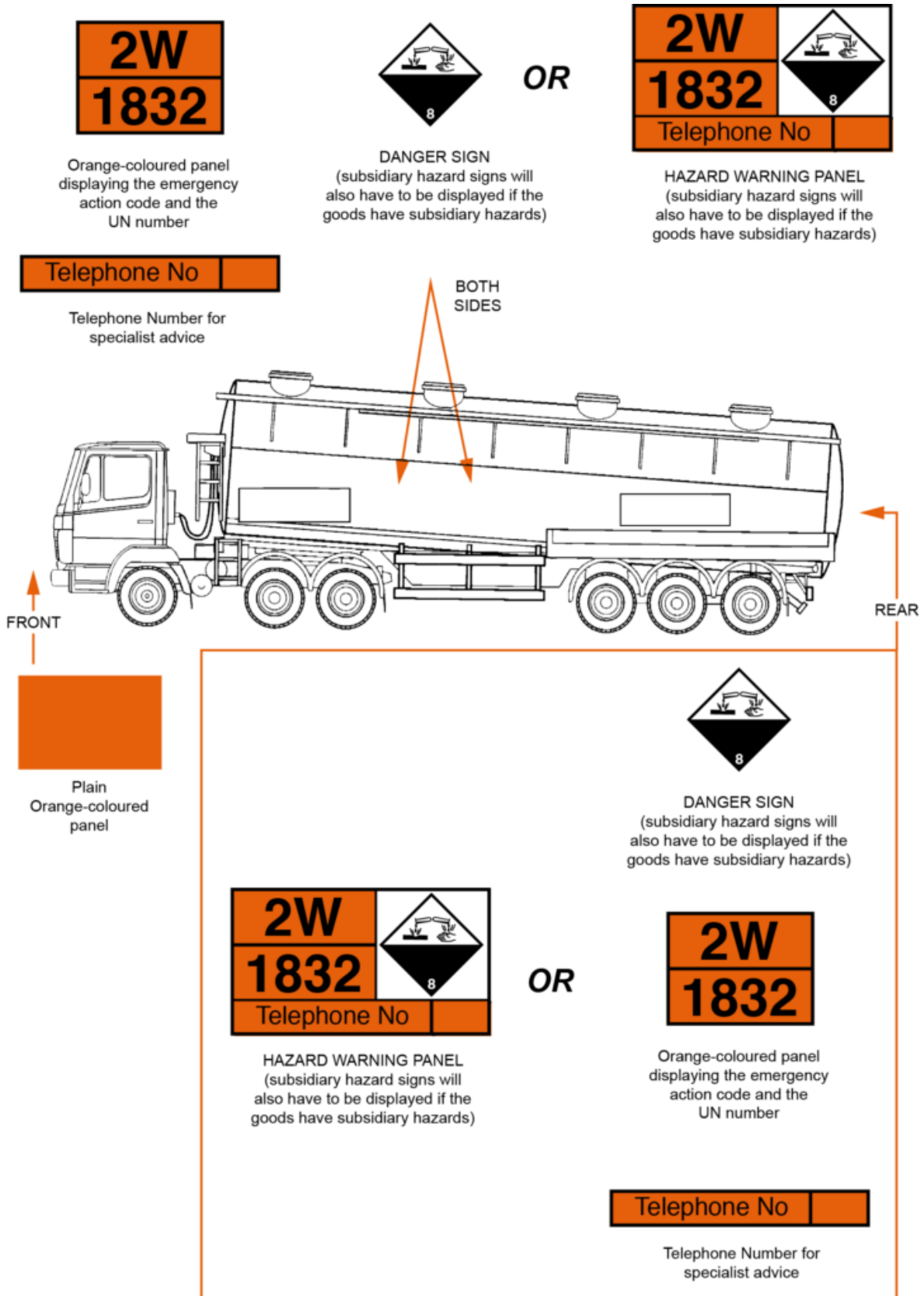
**Figure I1: Example of Orange-Colored Plate with Hazard Identification Number and UN Number**

The upper part of the plate represents a hazard identification number, also known as the Kemler Code (2 or 3 figures preceded, where appropriate, by the letter X. The figures indicate the following hazards:

- 2 Emission of gas due to pressure or to chemical reaction
- 3 Flammability of liquids (vapors) and gases or self-heating liquid
- 4 Flammability of solids or self-heating solid
- 5 Oxidizing (fire-intensifying) effect
- 6 Toxicity or risk of infection
- 7 Radioactivity
- 8 Corrosivity
- 9 Risk of spontaneous violent reaction
- X Prefixed by the letter "X". Indicates that the substance will react dangerously with water.

The lower part of the plate represents the UN number. UN numbers (United Nations numbers) are four-digit numbers that identify hazardous materials, and articles (such as explosives, flammable liquids, oxidizers, toxic liquids, etc.) in the framework of International transport. Some hazardous substances have their own UN numbers (e.g. acrylamide has UN 2074).

## Example of Placarding and Marking of Vehicles



**Figure I2: Example of Placarding and Marking of Vehicles**



## APPENDIX J: CHEMICAL SEGREGATION FOR LAND STORAGE (THAI DOMESTIC ASSET)

Storage Class		1	2A	2B	3A	3B	4.1A	4.1B	4.2	4.3	5.1A	5.1B	5.1C	5.2	6.1A	6.1B	6.2	7	8A	8B	10	11	12	13
Explosive	1	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pressurized, liquefied, dissolved gases	2A	-	17	4	-	-	-	-	-	-	-	-	10	-	-	-	-	18	5	-	-	5	-	-
Pressurized Small Gas Containers (aerosol can)	2B	-	4	-	1	1	-	-	-	-	-	-	10	-	2	2	-	18	4	4	6	6	6	6
Flammable liquids	3A	-	-	1	17	-	-	-	-	-	-	-	-	-	-	-	-	18	9	9	-	3	-	-
	3B	-	-	1	-	-	12	4	-	4	-	-	-	7	-	-	-	18	-	-	-	-	-	-
Flammable solids	4.1A	-	-	-	-	12	17	12	-	-	-	-	-	14	-	-	-	-	12	12	12	12	12	12
	4.1B	-	-	-	-	4	12	-	4	4	-	-	-	13	8	-	-	18	-	-	-	-	-	-
Substances liable to spontaneous combustion	4.2	-	-	-	-	-	-	4	-	4	-	-	-	-	-	-	-	18	4	4	4	4	-	-
Substance which in contact with water emit flammable gases	4.3	-	-	-	-	4	-	4	4	-	-	-	-	-	-	-	-	18	4	4	4	4	4	-
Oxidizing substances	5.1A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	5.1B	-	-	-	-	-	-	-	-	-	-	-	10	-	15	15	-	18	11	-	11	11	-	-
	5.1C	-	10	10	-	-	-	-	-	-	-	10	17	-	-	-	-	18	10	10	10	10	10	10
Organic peroxides	5.2	-	-	-	-	7	14	13	-	-	-	-	-	17	-	-	-	-	-	-	16	16	16	16
Combustible toxic substances	6.1A	-	-	2	-	-	-	8	-	-	-	15	-	-	-	-	-	18	-	-	-	3	-	-
Non-combustible toxic substances	6.1B	-	-	2	-	-	-	-	-	-	-	15	-	-	-	-	-	18	-	-	-	3	-	-
Infectious substances	6.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Radioactive substances	7	-	18	18	18	18	-	18	18	18	-	18	18	-	18	18	-	-	18	18	18	18	18	18
Combustible corrosive substances	8A	-	5	4	9	-	12	-	4	4	-	11	10	-	-	-	-	18	-	-	-	-	-	-
Non-combustible corrosive substances	8B	-	-	4	9	-	12	-	4	4	-	-	10	-	-	-	-	18	-	-	-	-	-	-
Combustible liquids (unless 3A or 3B)	10	-	-	6	-	-	12	-	4	4	-	11	10	16	-	-	-	18	-	-	-	-	-	-
Combustible solids	11	-	5	6	3	-	12	-	4	4	-	11	10	16	3	3	-	18	-	-	-	-	-	-
Non-combustible liquids	12	-	-	6	-	-	12	-	-	4	-	-	10	16	-	-	-	18	-	-	-	-	-	-
Non-combustible solids	13	-	-	6	-	-	12	-	-	-	-	-	10	16	-	-	-	18	-	-	-	-	-	-



mixed storage is permitted in principle



mixed storage is permitted under conditions specified by numbers



separated storage

### Storage Conditions according to the Storage Table

1. Mixed storage of flammable liquids and pressured gas container (aerosol) is permitted under the following conditions: The compartment must be ventilated and the total number of goods stored should not exceed 60 % of the useable capacity of the warehouse. The total quantity of flammable liquids and contents of the aerosol dispenser should not exceed 100,000 liters.
2. Pressurized gas containers can be stored together with toxic substances under the following conditions: The size of the fire compartment must be limited to 60 m<sup>2</sup> and the maximum capacity of the goods is limited to 60 % of the total capacity of the compartment. The temperature of the room should not exceed above 50 °C. The compartment must be ventilated and must have two emergency exits. At each exit a 6-kg ABC powder fire extinguisher must be available. If the compartment is bigger than 60 m<sup>2</sup> then these goods have to be segregated by appropriate measures or separated.
3. Materials that cause the rapid start or spread of fire, such as packaging materials, should be separated from toxic substances or flammable liquids.
4. Mixed storage is permitted if the products do not react with each other in the event of an incident. This can be achieved by segregated storage, e.g. physical separation, large gaps, separate containment basins, storage in safety cabinets.
5. In the storage room in which the maximum of 50 filled pressurized gas cylinders are permitted to store, out of these numbers, not more than 25 pressurized gas cylinders with flammable, oxidizing or toxic gases are permitted. Combustible substances (8A and 11) (excluding flammable liquids) may be stored if the storage area is separated from the pressurized gas cylinders by a wall with at least 2-m height made of non-combustible materials and the combustible substances is stored away from the wall at least 5 m.
6. Mixed storage is permitted if the safety requirements for the entire stock are applied to meet the requirements of storage class 2B.
7. Mixed storage is permitted for flammable liquids having a flash point above 61 °C provided that the mixed storage will not react in the dangerous way (combustion and/or evolution of considerable heat, evolution of flammable, asphyxiant, and/or toxic gases, formation of corrosive substances, the formation of unstable substances, or dangerous rise in pressure). In such case there must be safety distances (5 metres) between those goods.
8. Flammable toxic substances (6.1A) may be stored together with flammable solids (4.1B).
9. Flammable liquids and corrosive substances in breakable containers must not be stored together except that the preventive measures are adopted to prevent the interaction with each other in the event of an incident.
10. Mixed storage is permitted except with flammable gases.
11. Additional preventive measures are required to get approval from the Department of Industrial Works for the safety storage.
12. Flammable solids (4.1A) having explosive property may be stored together with other substances of class 3B, 4.1B, 8A, 8B, 10, 11, 12 or 13 if the safety distances designed to prevent any danger to the surroundings of a warehouse are adequate or may be required to increase. This must be checked in each case.
13. Mixed storage of organic peroxides (5.2) and flammable solids (4.1B) is permitted.
14. Mixed storage with propellants and radical initiators is permitted if they do not contain any heavy metals.
15. Oxidizing substances (5.1B) may be stored together with combustible toxic substances (6.1A) and non-combustible toxic substances (6.1B) up to a total quantity of 20 tons by taking the following safety measures: The warehouse must have a fire alarm system, an automatic fire extinguishing system and a company-run semi-professional fire brigade (employed only for firefighting with the company owned fire truck. Quantities up to 1 ton don't require these additional safety measures.
16. When organic peroxides are stored together with other chemical and hazardous substances, it is necessary to check in each case whether the safety distances (between the warehouse and the communities) designed around the warehouse is adequate to prevent any dangers or it is needed to be increased.
17. Specific safety requirements of each substance shall be considered.
18. Radioactive substances should be considered separately according to the IAEA Safety Standards and with the approval of the competent authority.

## Storage of Small-Quantity Substances

Storage of small-quantity substances in the storage facility means the storage of some specific chemical and hazardous substances in small quantities, which are substances in the storage classes 2B, 3A, 3B, 4.1B, 4.3, 5.1B, 5.1C, 5.2, 6.1A, 6.1B, 8A, 8B, 10, 11, 12 and 13 together with other kinds of substances of large quantities, where normally the mixed storage is prohibited but, if necessary, is temporarily permitted for storage in small quantities. However, it must be assured that:

1. The Safety measures necessary for other classes of chemical and hazardous substances are sufficient.
2. These small-quantity chemical and hazardous substances must not be interactive with other chemicals and hazardous substances already stored.
3. The distance measures are added, for example a 5-m safety distance, a safety cabinet or a special compartment for separate storage, etc.
4. A separation, e.g. walls or wire mesh, is installed for the storage of aerosols.

The storage of small-quantity chemicals and hazardous substances that are permitted shall be as per the following table:

**Table J1: Storage of Small-Quantity Chemicals and Hazardous Substances**

Storage Class	Storage Facility having storage capacity < 5,000 kg	Storage Facility having storage capacity > 5,000 kg
1	-	-
2A	-	-
2B	500 cans	500 cans
3A	Flammable liquids having flash point < 23°C, 100 liters; Flammable liquids having flash point between 23-60°C, 200 liters	Flammable liquids having flash point < 23°C, 100 liters; Flammable liquids having flash point between 23-60°C, 200 liters
3B	< 5,000 kg	5,000 kg
4.1A	-	-
4.1B	200 kg	200 kg
4.2	-	-
4.3	200 kg	-
5.1A	-	-
5.1B	200 kg	200 kg
5.1C	100 kg	-
5.2	100 kg (In small packaging with capacity of less than 100 g for solids and 25 ml for liquids only)	-

Storage Class	Storage Facility having storage capacity < 5,000 kg	Storage Facility having storage capacity > 5,000 kg
6.1A	50 kg	50 kg
6.1B	200 kg	200 kg
6.2	-	-
7	-	-
8A	< 5,000 kg	5,000 kg
8B	< 5,000 kg	5,000 kg
10	< 5,000 kg	5,000 kg
11	< 5,000 kg	5,000 kg
12	< 5,000 kg	5,000 kg
13	< 5,000 kg	5,000 kg

Storage classes 1, 2A, 4.1A, 4.2, 5.1A, 6.2, and 7, even in small quantities, are not permitted for mixed storage with other storage classes. They must strictly comply with the Chemical and Hazardous Substances Storage Table, presented earlier in Appendix H.





















## APPENDIX K: CHEMICAL SEGREGATION FOR LAND STORAGE (GUIDANCE FOR INTERNATIONAL ASSET)

This chemical segregation of chemicals/dangerous substances table (*Reference: HSG71 Chemical warehousing, the storage of packaged dangerous substances*) is recommended and is a guide for International Assets, where in case there are no applicable local law & regulations to follow or comply with.

Chemicals stored according to this table must comply with the following instructions:

<b>Segregate from</b>	<p>These combinations should not be kept in the same building compartment or outdoor storage compound. Compartment walls should be imperforate, of at least 30 minute fire resistance and sufficiently durable to withstand normal wear and tear. Brick or concrete construction is recommended. An alternative is to provide separate outdoor storage compounds with an adequate space between them.</p>
<b>Separation may not be necessary</b>	<p>Separation may not be necessary, but consult suppliers about requirements for individual substances. In particular, note that some types of chemicals within the same class, particularly Class 8 corrosives, may react violently, generate a lot of heat if mixed, or evolve toxic fumes.</p>
<b>ISOLATE</b>	<p>This is used for organic peroxides, for which dedicated buildings are recommended. Alternatively, some peroxides may be stored outside in fire resisting secure cabinets. In either case, adequate separation from other buildings and boundaries is required.</p>
<b>KEEP APART</b>	<p>Separate packages by at least 3 metres in the storeroom or storage area outdoors. Materials in non combustible packaging that are not dangerous substances and present a low fire hazard may be stored in the separation area. This standard of separation should be regarded as a minimum between substances known to react together readily, if that reaction would increase the danger of an escalating incident.</p>
<b>Segregate from</b> <b>KEEP APART</b>	<p>The lower standard refers to the outside storage of gas cylinders. Where non-liquefied flammable gases are concerned, the 3 metre segregation distance may be reduced to 1 metre.</p>



CLASS	1	2	3	4	5	6	8
 Explosive	 Explosive	 Flammable	 Flammable	 Flammable	 Oxidizing	 Toxic	 Corrosive
 1.0 Explosive	Segregate From	Segregate From	Segregate From	Segregate From	Segregate From	Segregate From	Segregate From
 2.1 Flammable	Segregate From	Keep Apart	Segregate From	Segregate From	Segregate From	ISOLATE	Keep Apart
 2.2 Non Toxic Non flammable	Segregate From	Keep Apart	Keep Apart	Segregation may not be necessary	Segregation may not be necessary	Segregation may not be necessary	Keep Apart
 2.3 Toxic	Segregate From	Segregate From or Keep Apart	Keep Apart	Segregation may not be necessary	Segregation may not be necessary	Segregation may not be necessary	Keep Apart
 Flammable liquids	Segregate From	Segregate From	Keep Apart	Segregate From	Segregate From	ISOLATE	Keep Apart
 4.1 Readily combustible	Segregate From	Segregate From	Segregation may not be necessary	Keep Apart	Keep Apart	Segregation may not be necessary	Segregation may not be necessary
 4.2 Spontaneously combustible	Segregate From	Segregate From	Segregation may not be necessary	Segregation may not be necessary	Segregation may not be necessary	ISOLATE	Keep Apart
 4.3 Dangerous when wet	Segregate From	Segregate From	Segregation may not be necessary	Keep Apart	Segregation may not be necessary	Segregation may not be necessary	Segregation may not be necessary
 5.1 Oxidizing substance	Segregate From	Segregate From	Segregation may not be necessary	Segregation may not be necessary	Segregation may not be necessary	Segregation may not be necessary	Keep Apart
 5.2 Organic peroxide	Segregate From	ISOLATE	Segregation may not be necessary	ISOLATE	Segregation may not be necessary	Segregation may not be necessary	Keep Apart
 Toxic	Segregate From	Keep Apart	Segregation may not be necessary	Segregation may not be necessary	Segregation may not be necessary	Segregation may not be necessary	Segregation may not be necessary
 Corrosive	Segregate From	Keep Apart	Keep Apart	Keep Apart	Segregation may not be necessary	Segregation may not be necessary	Segregation may not be necessary

## APPENDIX L: CHEMICAL SEGREGATION FOR MARINE STORAGE (IMDG)

Class	1.1 1.2 1.5	1.3 1.6	1.4	2.1	2.2	2.3	3	4.1	4.2	4.3	5.1	5.2	6.1	6.2	7	8	9
Explosives 1.1 1.2 1.5	X	X	X	4	2	2	4	4	4	4	4	4	2	4	2	4	X
Explosives 1.3 1.6	X	X	X	4	2	2	4	3	3	4	4	4	2	4	2	2	X
Explosives 1.4	X	X	X	2	1	1	2	2	2	2	2	2	X	4	2	2	X
Flammable gases 2.1	4	4	2	X	X	X	2	1	2	X	2	2	X	4	2	1	X
Non-toxic, non-flammable gases 2.2	2	2	1	X	X	X	1	X	1	X	X	1	X	2	1	X	X
Toxic gases 2.3	2	2	1	X	X	X	2	X	2	X	X	2	X	2	1	X	X
Flammable liquids 3	4	4	2	2	1	2	X	X	2	1	2	2	X	3	2	X	X
Flammable solids 4.1	4	3	2	1	X	X	X	X	1	X	1	2	X	3	2	1	X
Substances liable to spontaneous combustion 4.2	4	3	2	2	1	2	2	1	X	1	2	2	1	3	2	1	X
Substances which, in contact with water, emit flammable gases 4.3	4	4	2	X	X	X	1	X	1	X	2	2	X	2	2	1	X
Oxidizing substances (agents) 5.1	4	4	2	2	X	X	2	1	2	2	X	2	1	3	1	2	X
Organic peroxides 5.2	4	4	2	2	1	2	2	2	2	2	2	X	1	3	2	2	X
Toxic substances 6.1	2	2	X	X	X	X	X	X	1	X	1	1	X	1	X	X	X
Infectious substances 6.2	4	4	4	4	2	2	3	3	3	2	3	3	1	X	3	3	X
Radioactive materials 7	2	2	2	2	1	1	2	2	2	2	1	2	X	3	X	2	X
Corrosives 8	4	2	2	1	X	X	X	1	1	1	2	2	X	3	2	X	X
Miscellaneous dangerous substances and articles 9	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Numbers and symbols relate to the following terms as defined in this section:

1	1 – “Away from” or > 3 m
2	2 – “Separated from” or > 6 m
3	3 – “Separated by a complete compartment or hold form” or > 12 m
4	4 – “Separated longitudinally by an intervening complete compartment or hold from” or >24 m
X	X – The segregation, if any, is shown in individual schedules



## ROLES AND RESPONSIBILITIES

Roles	Responsibilities
Document Owner	<p>The owner of the Procedure is the VP, Safety Management Department, with responsibilities for:</p> <ul style="list-style-type: none"> <li>■ Issuing the Chemical Management Procedure and its revisions.</li> <li>■ Ensuring effective implementation of the Procedure.</li> </ul>
Document Custodian	<p>The custodian of the Procedure is the Manager, Operational Safety Section, with responsibilities for:</p> <ul style="list-style-type: none"> <li>■ Identifying deficiencies or potential improvements.</li> <li>■ Initiating periodic revision.</li> <li>■ Maintaining revision history and document status register.</li> </ul>
Asset Manager	<ul style="list-style-type: none"> <li>■ Ensure chemical management is maintained and implemented effectively to comply with this Procedure, local law, and International Standards.</li> <li>■ Ensure chemical management at site is audited and ensures that a chemical site inspection is conducted periodically.</li> <li>■ Ensure adequate and competent personnel to handle chemicals.</li> <li>■ Ensure proper storage space and equipment, including PPE are allocated</li> <li>■ Ensure chemical management at site meets the requirements of this Standard, local law, and International Standards.</li> <li>■ Ensure that a contingency plan and emergency response plan for chemicals are in place and effective.</li> </ul>
Chemical Owner (example: Project Owner, Project Engineer, Contract Holder, Superintendent, Supervisor, Technical Administration)	<ul style="list-style-type: none"> <li>■ Follow and comply with Chemical Management Procedure.</li> <li>■ Ensure all new chemicals obtain approval from a preliminary risk assessment.</li> <li>■ Ensure full details of the safety data sheet and labelling of all chemicals are available and easy to access for the chemical users, safety personnel and medics.</li> <li>■ Ensure all personnel who handle chemicals are competent and are provided training.</li> <li>■ Ensure all on-site chemicals are handled, stored, and disposed of safely.</li> </ul>

Roles	Responsibilities
Chemical Owner (continued)	<ul style="list-style-type: none"> <li>■ Prepare a contingency plan and emergency response plan for chemicals, with the Asset team, that are in place and communicated to chemical users and emergency responders. Ensure emergency drills are conducted periodically.</li> <li>■ Monitor and manage an inventory of chemicals and provide proper chemical containers in case of any volume transferring.</li> </ul>
Chemical User (example: Supervisor, Foreman, Operator, Technician)	<ul style="list-style-type: none"> <li>■ Pass training for chemical management as required by local law or appropriate training and be assessed as “Competent” to use, handle, store, transport chemicals.</li> <li>■ Strictly follow the SDS and clearly understand the details of the SDS before handling chemicals. SDS shall be easy to access at working areas, with the site medic and the site safety room.</li> <li>■ Ensure that globally harmonized system of classification and clear and visible labelling of chemicals (GHS label) and chemicals warning signs are place.</li> <li>■ Wear PPE properly and ensure it is in good condition.</li> <li>■ Maintain the “Chemical Inventory” record, so that it is kept updated during its life cycle.</li> <li>■ Identify chemical hazards &amp; risks, control measures in the Job Safety Analysis (JSA) and communicate the JSA to colleagues or line under command.</li> <li>■ Conduct emergency drills or chemical spill drills periodically with the Asset team.</li> <li>■ In case of a spill or emergency, stop the leak and perform chemical spill recovery.</li> </ul>
Corporate Safety	<ul style="list-style-type: none"> <li>■ Review and approve all new chemicals registration through a preliminary risk assessment. <ul style="list-style-type: none"> <li>□ For Thai Domestic Assets, a preliminary risk assessment for new chemicals shall be conducted and reviewed via the web-based chemical registration.</li> <li>□ For International Assets, a preliminary risk assessment for new chemicals shall be conducted and reviewed via a specific system. International Assets shall set up a verification team for preliminary risk assessment for new chemicals.</li> </ul> </li> <li>■ Monitor and review any updates of local law and International Standards periodically.</li> </ul>

Roles	Responsibilities
Corporate Safety (continued)	<ul style="list-style-type: none"> <li>■ Give advice to chemical owners for reviewing the preliminary risk assessment for new chemicals.</li> <li>■ Develop and provide chemical management training for personnel who are involved with chemicals.</li> <li>■ Monitor and conduct chemical audits in compliance with this Procedure.</li> </ul>
Corporate Environment	<ul style="list-style-type: none"> <li>■ Review and approve all new chemicals registration through a preliminary risk assessment. <ul style="list-style-type: none"> <li>□ Verify and provide advice to prevent any environmental impact in a preliminary risk assessment.</li> </ul> </li> </ul>
Corporate Health	<ul style="list-style-type: none"> <li>■ Review and approve all new chemicals registration through a preliminary risk assessment. <ul style="list-style-type: none"> <li>□ Verify and highlight Health hazards with specific controls in a preliminary risk assessment.</li> </ul> </li> </ul>
Site SSHE	<ul style="list-style-type: none"> <li>■ Support Asset manager to ensure that chemical management Procedure is followed and implemented effectively.</li> <li>■ Keep a record of chemical lists, SDS packages, GHS labels.</li> <li>■ Support Corporate safety to arrange or provide chemical management training for personnel who are involved with chemicals.</li> <li>■ Ensure implementing control of safe work practices and operational control in accordance with this Procedure.</li> <li>■ Advise chemical users at site on how to work with chemicals safely.</li> <li>■ Communicate chemical management Procedure and chemical awareness campaigns to personnel at site.</li> <li>■ Support chemical spill exercises and emergency during spill and clean-up.</li> </ul>
Chemical Purchaser	<ul style="list-style-type: none"> <li>■ Follow chemical management Procedure, especially section 6: Purchasing.</li> </ul>
Permit and License Team	<ul style="list-style-type: none"> <li>■ Review and approve all new chemicals registration through a preliminary risk assessment. <ul style="list-style-type: none"> <li>□ Verify all new chemicals used in PTTEP premises are not banned as dangerous good type 4 (Exception: CRM is used for analytical laboratory work), according to Hazardous Substance Act.</li> </ul> </li> <li>■ Coordinate with local authorities and prepare permit and licenses documents to import chemicals before purchasing.</li> </ul>

Roles	Responsibilities
Warehouse Personnel	<ul style="list-style-type: none"> <li>■ Maintain safe and good housekeeping for storing, handling and transporting chemicals both in the warehouse, including areas indoors and outdoors.</li> <li>■ Check and ensure that the SDS, GHS label and safety signs are in place and visible.</li> <li>■ Ensure chemicals are segregated and kept in storage/warehouse and chemical transportation in compliance with local law, this Standard, and International Standards.</li> <li>■ Ensure all fire protection systems, spill protection, ventilation systems are well designed and in place for the chemical storage area/warehouse.</li> <li>■ Ensure all personnel who are involved with chemicals are competent and have passed the appropriate training.</li> <li>■ Ensure that the contingency plan and emergency response plan for chemicals are in place and effective, and that the chemical spill drill and chemical-on-fire drills are conducted periodically with the Asset team.</li> </ul>
Customs and Transportation Support Team	<ul style="list-style-type: none"> <li>■ Identify safety scope for safe transportation of dangerous goods/chemicals in the contract and services order.</li> <li>■ Ensure that Contractors under contract/service order of transportation of dangerous goods/chemicals comply with local law and regulations as well as the ADR requirements.</li> </ul>
Contractor	<ul style="list-style-type: none"> <li>■ Strictly follow and manage chemicals used in the PTTEP premises are in compliance with this Procedure, local law, and International Standards.</li> <li>■ Collect and combine all chemicals documents including SDSs, GHS labels, and warning signs. Then, submit these documents to the Contract Holder, site safety, and site medic prior to commencing work.</li> <li>■ Under the contract/service order, conduct self-verification of safe chemicals and issue declaration letter of conformity of safe chemicals. Then, this document shall be submitted to the Contract Holder, Company site representative and Asset safety officer.</li> <li>■ Provide appropriate chemical awareness training to all personnel who are involved with chemicals. Maintain the record of training.</li> </ul>

Roles	Responsibilities
Contractor (continued)	<ul style="list-style-type: none"><li data-bbox="595 320 1412 398">■ Allocate equipment and proper PPE to personnel for managing and handling chemicals safely.</li><li data-bbox="595 409 1412 533">■ Provide emergency response equipment at work sites such as spill recovery kits, fire extinguishers, and eye wash stations/ portable.</li></ul>

## DEFINITION AND ACRONYMS

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

Term	Definition
As Low As Reasonably Practicable (ALARP)	A term used to define tolerable risk acceptance only where risk reduction is impractical or where a cost benefit analysis has been carried out and a judgment made that the cost of further risk reduction is grossly disproportionate when compared to the actual risk reduction that would be achieved.
Asset	Refers to an operating Asset, site, or location within a respective Function Group.
Certified Reference Materials	Reference material accompanied by a certificate, one or more of whose property values are certified by a Procedure which establishes its traceability to an accurate realization of the unit in which the property values are expressed, and for which each certified value is accompanied by an uncertainty at a stated level of confidence.
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.
Hazard	A hazard is an intrinsic property of anything with the potential to cause harm. Harm includes ill-health, and injury, damage to property, plant, products or the Environment, production losses, or increased liabilities
Hazard Identification	The process to identify potential sources of harm to people, the environment, asset, reputation, business or schedule.
Risk Assessment	The process covering hazard identification, risk analysis and risk evaluation.
Waste	<p>a) Any discarded, rejected, abandoned, unwanted or surplus matter, whether or not intended for sale or for recycling, reprocessing, recovery or purification by a separate operation from that which produced the matter; or</p> <p>b) Anything declared by regulation to be waste, whether of value or not.</p>

Acronyms	Description
ADR	European Agreement Concerning the International Carriage of Dangerous Goods by Road
ALARP	As Low As Reasonably Practicable
CBI	Confidential Business Information
CRM	Certified Reference Materials
DIW	Department of Industrial Work
GHS	Globally Harmonized System of Classification and Labelling of Chemicals
HCS	Hazard Communication Standard
IATA	International Air Transport Association
IMDG	International Maritime Dangerous Goods
JSA	Job Safety Analysis
MOU	Memorandum of Understanding
MSDS	Material Safety Data Sheet
NFPA	National Fire Protection Association
OSHA	Occupational Safety And Health Administration
PO	Purchase Order
PPE	Personall Protective Equipment
PR	Purchase Requisition
RCL	Registered Chemicals List
RID	European Agreement Concerning the International Carriage of Dangerous Goods by Rail
SDS	Safety Data Sheet
SSHE MS	Safety, Security, Health and Environment Management System
UN	United Nations
UNRTDG	UN Recommendations on the Transport of Dangerous Goods



## REFERENCES

Document Code	Document Title
<b>PTTEP SSHE Controlling Documents</b>	
11038-STD-SSHE-305	SSHE Training and Competency Standard
11038-STD-SSHE-401	SSHE Risk Management Standard
SSHE-106-STD-540	Operational Safety Management Standard
SSHE-106-STD-560	Occupational Health Management Standard
11003-PDR-SSHE-403-001	Health Risk Assessment Procedure
SSHE-106-PDR-521	Waste Management Procedure
<b>Other Reference Documents</b>	
-	European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR), 2019
-	Globally Harmonized System of Classification and Labelling of Chemicals (GHS), 7 <sup>th</sup> Edition, 2017
-	Hazardous Substance Act BE 2562
-	International Maritime Dangerous Goods (IMDG) Code, 2018 Edition
-	Ministerial Regulation on the Prescribing of Standards for Administration, Management and Performance of Occupational Safety, Health and Work Environment in Relation to Hazardous Chemicals B.E.2556 (A.D.2013)
-	Notification of Department of Industrial Works for Safe Chemicals and Dangerous Goods Manual, BE 2550
HSG71	Chemical Warehousing, the storage of packaged dangerous substances, 4 <sup>th</sup> Edition, 2009.
NFPA 704	Standard System for the Identification of the Hazards of Materials for Emergency Response, 2017 Edition

## REVISION HISTORY

Rev.	Description of Revision
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<b>0</b>	<b>Authorized by: CSH, Date: November 2019</b>
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|  | <ul style="list-style-type: none"><li>■ This new Procedure is downgraded from Standard.</li><li>■ Revised the number of physical, health, and environmental hazards elements in compliance with globally harmonized system of classification and labelling of chemicals (GHS), 7<sup>th</sup> Edition, issued Jul 2019.</li><li>■ Revised role and responsibility of personnel involved with chemical management</li><li>■ Revised scope of this Procedure, especially the exemption part.</li><li>■ Added hierarchy of document compliance in the scope.</li><li>■ Classified chemical management process into 2 main categories which are where PTTEP is the chemical owner and where Contractor is the chemical owner.</li><li>■ Revised preliminary risk assessment process for new chemicals.</li><li>■ Revised banned substances and removed the previous banned substance table.</li><li>■ Added Contractor Verification of Safe Chemicals before commencing work under contract/service order.</li></ul> |
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บริษัท ปตท.สผ. สยาม จำกัด

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รายงานผลการปฏิบัติตามมาตรการป้องกันและแก้ไขผลกระทบสิ่งแวดล้อม และมาตรการติดตามตรวจสอบผลกระทบสิ่งแวดล้อม  
โครงการผลิตปิโตรเลียมแหล่งสิริกิติ์และแหล่งตอนกลางเอส 1 แพลงเอส 1 จังหวัดกำแพงเพชร พิชณุโลก และสุโขทัย  
ฉบับเดือนมกราคม-ธันวาคม พ.ศ.2565

**ภาคผนวกที่ 18**  
**รายงานการซ่อมแผนฉุกเฉิน และการฝึกซ้อม**  
**แผนอพยพ โครงการเอส 1**

# Emergency Exercise Report:

## 2022 Major Emergency Exercise at Rig 976 LKU-ZA

**Subject:** 2022 Major Emergency Exercise at SINOPEC Rig 976  
✓ Pre-Fire Plan relate : Rig Sinopec 976 Pre-Fire Plan  
✓ MAE Top Event relate: Rig Operation (Workover & Completion)  
✓ Emergency Tier: 2 Major Emergency Exercise

**Date:** 17-October-2022

### Key Participants: Rig 976

1.	Roungnoppakorn Inthanon	Supervisor, Drilling operation On-Scene Commander, PTTEP
2.	Zhang Zhihang	Rig Manager, Duputy On-Scene Commander, Rig 976
3.	Chayaphol Pallakawong Na Ayuthaya	Event Logger , Rig 976
4.	Wananya Kongpunna	Muster Logger, Rig 976
5.	Prawit Hoisang	Intervention Team Leader, Rig 976
6.	Decho Utorn	Fire team, Rig 976
7.	Nithikarn Kaewkarn	Fire team, Rig 976
8.	Taratap Paosuan	Fire team, Rig 976
9.	Warut Donpaimeung	Fire team, Rig 976
10.	Ratiya Inmoonnoi	First Aid Leader, Rig 976
11.	Thanakit Deein	First Aid Team, Rig 976
12.	Nattawut Ruengoong	First Aid Team, Rig 976
13.	Kittichai Ketsopha	First Aid Team, Rig 976
14.	Tidsadee Makmueng	First Aid Team, Rig 976

### Key Participants: S1 ECC room

1.	Teerachai S.	Superintendent Production (DERTL)
2.	Manit D.	Superintendent Well Operation
3.	Worawat R.	Engineer Production (Event Logger)
4.	Kowan B.	Officer, SSHE (Muster Logger)
5.	Panupong P.	Officer, SSHE Support
6.	Bancha S.	Supervisor Production

## Key Participants: Observers

1. Pramarn Subjaroen	PS1/S	PTTEP
2. Chawalit Phromkanta	PS1/L	PTTEP
3. Ratchamongkol Kamalee	PS1/S	PTTEP
4. Sukhakong Akrayatanabordee	PS1/P	PTTEP
5. Krit Chiouycho	PS1/P	PTTEP
6. Somsak Kijkar	OTN/W	PTTEP
7. Saralasm Thavorncharoensukho	OTN	PTTEP
8. ROUNGNOPPAKORN INTHANON	OTN/W	PTTEP
9. Songklod Ruksasat	PS1/S	PTTEP
10. Jakkrit Khobluang	OTN/W	PTTEP
11. Khachonphat Srinattakun	PS1/P	PTTEP
12. Chaowrit Sankam	PS1/P	PTTEP
13. Charin Chaisri	OTN/W	PTTEP
14. Chaiyo S.	PS1/O	PTTEP
15. Uthit Saksit	PS1/M	PTTEP
16. Chuwaporn Rojanarowan	OTN	PTTEP
17. Papimon Soisod	PS1/S	PTTEP
18. Warangkana Mueangthong	OTN SSHE,	B.E.S
19. Pornwinee Yodming		BV
20. สุทธิพันธ์ สิทธิอักษร		WFT Wireline
21. สำเนา เป้าพันธุ์ดี		WFT Wireline
22. Sompop Yuangkaew		GWDC
23. Zhang Wel Dung		GWDC
24. Chutima Chaiyasad		MPC
25. Salakjit Sitti		MPC
26. Wanwisa Sangpab		MPC
27. Warayu Jitmaklam		MPC
28. Saowani Dedkhad		MPC
29. Paranee Srimakeaw		BRK
30. Sathaporn Wongsakorn		BRK
31. Apirak Chamkrai		B.E.S
32. Sunisa Pimnil		B.E.S
33. Kanjana Thongtanod		MML
34. Phatsayaporn Boontasang		MML
35. Wichan Inleang		MML
36. Aungkana Khumjunta		Halliburton

37. Niphaporn Boondee	Halliburton
38. Wikanda Khamnintha	COSL
39. Niphon Chamchoi	COSL
40. สอ. พิเชษฐ มั่งมี	อบต. ลานกระบือ
41. สำอาง พลอำชา	อบต. ลานกระบือ
42. น.ส. รัตนา มากคิด	อบต. ลานกระบือ
43. ยุพาวดี ประนาน	อบต. ลานกระบือ
44. รตอ.ภาณุพงศ์ สอนเสือ	สภ. ลานกระบือ
45. ด.ต. ภาณุศณัฐ ไพโรจน์	สภ. ลานกระบือ
46. ร.ต.ต. ภาณุภูมิ จันทร์เชื้อ	สภ. ลานกระบือ
47. นายเฝียน พิมนิล	สารวัตรกำนัน
48. นางยุพาวดี ประนาน	อบต. ลานกระบือ

### Scenario: Rig 976

Activity on site:

1. Workover section operation and the later time there was the forklift driver is lifting the pipe (Drill pipe) to storage and fire, starting at X-mas tree no.17 and the fire flash in LKU-ZA location and we have 1 injury person: signaler.

2. The signaler was badly suffered by the burn, There were burns on the right sides, approximately 10%, one degree burn. He ran away from X-mas tree No.17 around 100 meter (safe for rescue team) and fell on the ground (Waiting rescue team to help).

### Objective:

- To test the effectiveness and communication of activation of Rig operation with S1 asset.
- To test the responding of ERT and readiness of emergency equipment at Rig operation and S1 asset.
- To ensure the ERT are familiarized with triage actions and first aid treatment process.

### Drill/Exercise Chronology:

Time	Action
10.46 am.	FM-RB see the fire situation at the X-mas tree No.17 and inform the Incident to TP immediately.
10.46 am.	TP informs the Incident to DSV and RM.
10.47 am.	OSC inform TP to shut in BOP, let activate fire alarm and get ready for muster point.
10.47 am.	RM activate fire team, instruct fire team to tackle the fire at PTTEP store. Keep inform me the progress.
10.50 am.	Fire team stand by at X-mas tree No.17 for control the fire.
10.51 am.	Fire Marshal inform RM and OSC, we cannot control the fire at PTTEP store, we need the fire truck foam type to extinguish the fire. We are staying up wind and spraying the water to cool down around fire area.
10.51 am.	OSC inform TP to let activate abandon alarm, activate the ESD, make sure BHA is off bottom, shut in the well and Isolate electric supply
10.52 am.	OSC make a call to ERTL to inform incident.
10.53 am.	RM inform OSC, after check T card from POB broad, we still have one missing person. His name is Mr. Thawat Malangphoo missing and injured person, he is signaler (IP1), he has burn injured on right side. He is in stable condition, but he is feeling panic. FB-RM informed radio operator that he the last one who saw signaler escaped fire at the X-mas tree No.17.
10.53 am.	DSV inform RM to activate search and rescue operation, please searching injured and missing person around X-mas tree no.17. Keep updating the progress.
10.56 am.	Rescue team inform RM to search for injury person and found injury person nearby X-mas tree No.17 area, mobilize him to safe area and perform medical treatment. Keep updating the progress.
10.56 am.	OSC make a call to ERTL to inform incident.
11.00 am.	PTTEP fire water truck and ambulance team arrived to LKU-ZA location.
11.01 am.	PTTEP fire team leader come to commander tent for report. and ambulance team member arrive to the location already.
11.02 am.	Fire marshal came to commander tent, guide PTTEP fire truck team to mobilized to fire area and OSC already inform the information to PTTEP fire truck.
11.02 am.	PTTEP fire water truck stand by the fire at X-mas tree for control the fire.



Time	Action
11.05 am.	Rig medic let ambulance team member to first aid tent and the information. RM inform OSC to mobilized IP 1 inside the ambulance. The ambulance is leaving the location and heading to Lankrabue hospital.
11.05 am.	OSC make a call to ERTL to inform incident.
11.12 am.	President of Subdistrict Administrative Organization of Lankrabue and a fire truck team arrived LKU-ZA location. He came to meet OSC at commander tent.
11.18 am.	Fire team leader inform RM, the fire is under control already. We already extinguish the fire and spray water around the area no fire come back again.
11.20 am.	All fire team went to the commander tent for report again for inform OSC to extinguished of the fire, we are safe now, No one get hurt and will go to the muster point together.
11.20 am.	OSC make a call to ERTL to inform incident and waiting police investigation.
11.21 am.	OSC announced the end drill. " End of Emergency drill. End of Emergency drill. The Emergency situation come back to normal and activate clear alarm.

#### Findings & Recommendations:

Item	Findings	Recommendations/Actions	Resp.	Target
1	According to observed by fire team, the Sinopec fire team did not know to practice when fire gun operation.	Recommend to often fire drill at the Sinopec Rig976 and training the rig crew.	Sinopec	20 Dec 2022
2	According to observed by nurse, the Sinopec first aid team didn't use sterilized equipment while first aid to injury person.	Recommend providing sterilized equipment and conduct first aid drill at the Sinopec Rig976 include re-training for first aid team.	Sinopec	20 Dec 2022

## Exercise Pictorial

	
<p>FM-RB saw the fire situation at the X-mas tree No.17 and inform the Incident to TP immediately.</p>	<p>All people get ready for muster point after hearing fire alarm.</p>
	
<p>Fire team perform the suit at fire station. Fire team stand by the fire at X-mas tree No.17 for control.</p>	<p>All people stand by at muster point for head count, we still have one missing person.</p>
	
<p>DSV inform RM to activate search and rescue operation, please searching injury and missing person around X-mas tree No.17.</p>	<p>PTTEP fire water truck arrived to LKU-ZA location.</p>



## Exercise Pictorial



Rescue team inform RM to search for injury person and found injury person nearby X-mas tree unit area, mobilize him to safe area and perform medical treatment.



PTTEP fire water truck and rig fire team and fire water truck by subdistrict Administrative of Lankrabue stand by the fire at X-mas tree No.17 for control the fire.



Ambulance team member arrive to the location already and rig medic let ambulance team member to first aid tent. Then transfer injury person to LKU hospital.



The fire is under control already. We already extinguish the fire and spray water around the area no fire come back again.



All fire team went to the commander tent to report OSC that we are safe now, No one get hurt and will go to the muster point together.



OSC announced the end drill. " End of Emergency drill. End of Emergency drill. The Emergency situation come back to normal and activate clear alarm.

Resources utilized:

- Water fire pump, hose, and fire gun
- PTTEP fire water truck and ambulance
- Subdistrict Administrative Lankrabue fire water truck
- Spine board rescue stretcher
- First aid bag

Recovery Plan:

- Followed S1 Emergency Response Plan (S1 ERP)

Summary of exercise/drill:

This exercise is met an objective requirement? ☒ Yes ☐ No

Any additional comment:

None

<div>PREPARED BY:</div> <div></div> <div>Roungnoppakorn Inthanon</div> <div>Well services Supervisor, OTN/W</div>	<div>REVIEWED BY:</div> <div>Suthorn Domhom</div> <div>Superintendent, SSHE • PS1 : PS1/S</div>	<div>ENDORSED BY:</div> <div>Superintendent, Well Operations, OTN/W</div>
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บริษัท ปตท.สผ. สยาม จำกัด

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รายงานผลการปฏิบัติตามมาตรการป้องกันและแก้ไขผลกระทบสิ่งแวดล้อม และมาตรการติดตามตรวจสอบผลกระทบสิ่งแวดล้อม  
โครงการผลิตปิโตรเลียมแหล่งสิริกิติ์และแหล่งตอนกลางเอส 1 แพลงเอส 1 จังหวัดกำแพงเพชร พิชณุโลก และสุโขทัย  
ฉบับเดือนมกราคม-ธันวาคม พ.ศ.2565

ภาคผนวกที่ 19  
S1 Emergency Response Plan



**PTTEP**

PTT Exploration and Production Public Company Limited

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## **S1 Emergency Response Plan**

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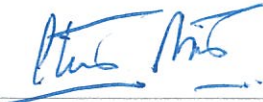

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**November 2019**

### Approval Register

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<b>Prepared by</b>	Putchaya Thunhapran, SSHE Engineer
<b>Effective Date</b>	November 2019

### 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

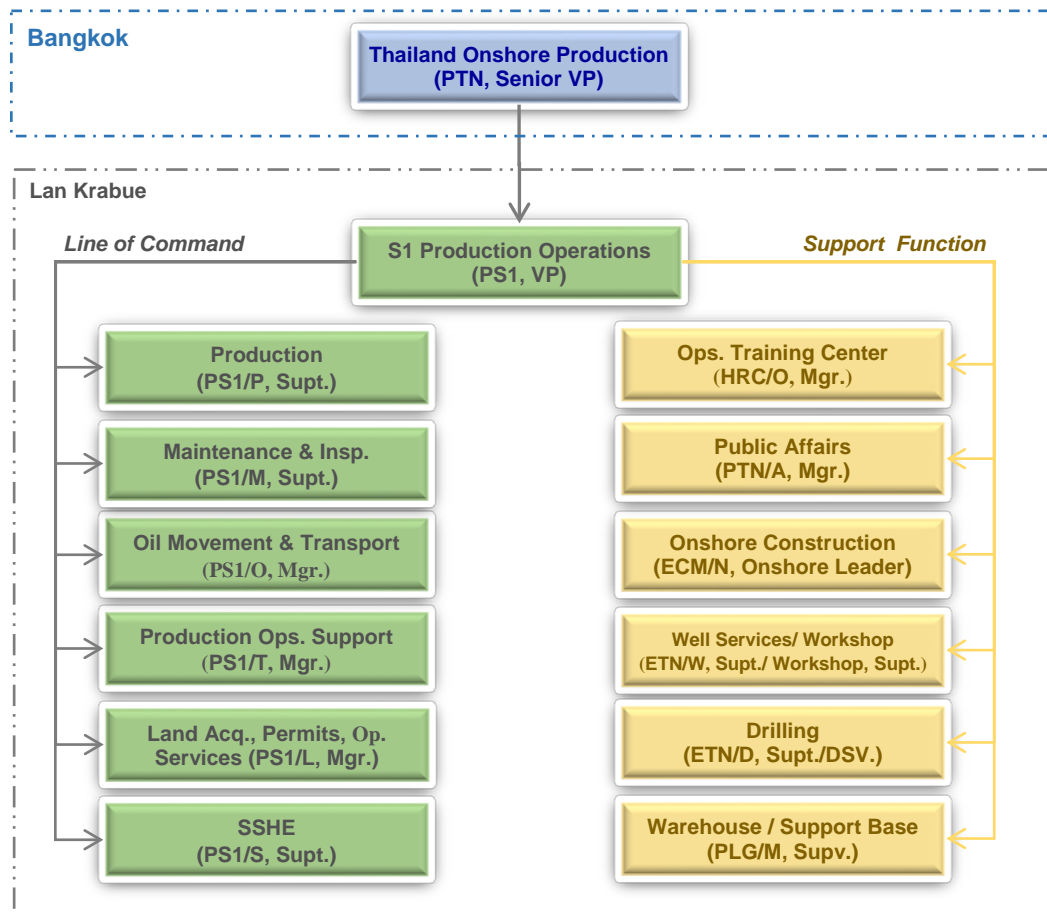
S1 production operations are governed by Vice President (VP) of S1 Production Operations Department with a total of six (6) sections of the followings:

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.

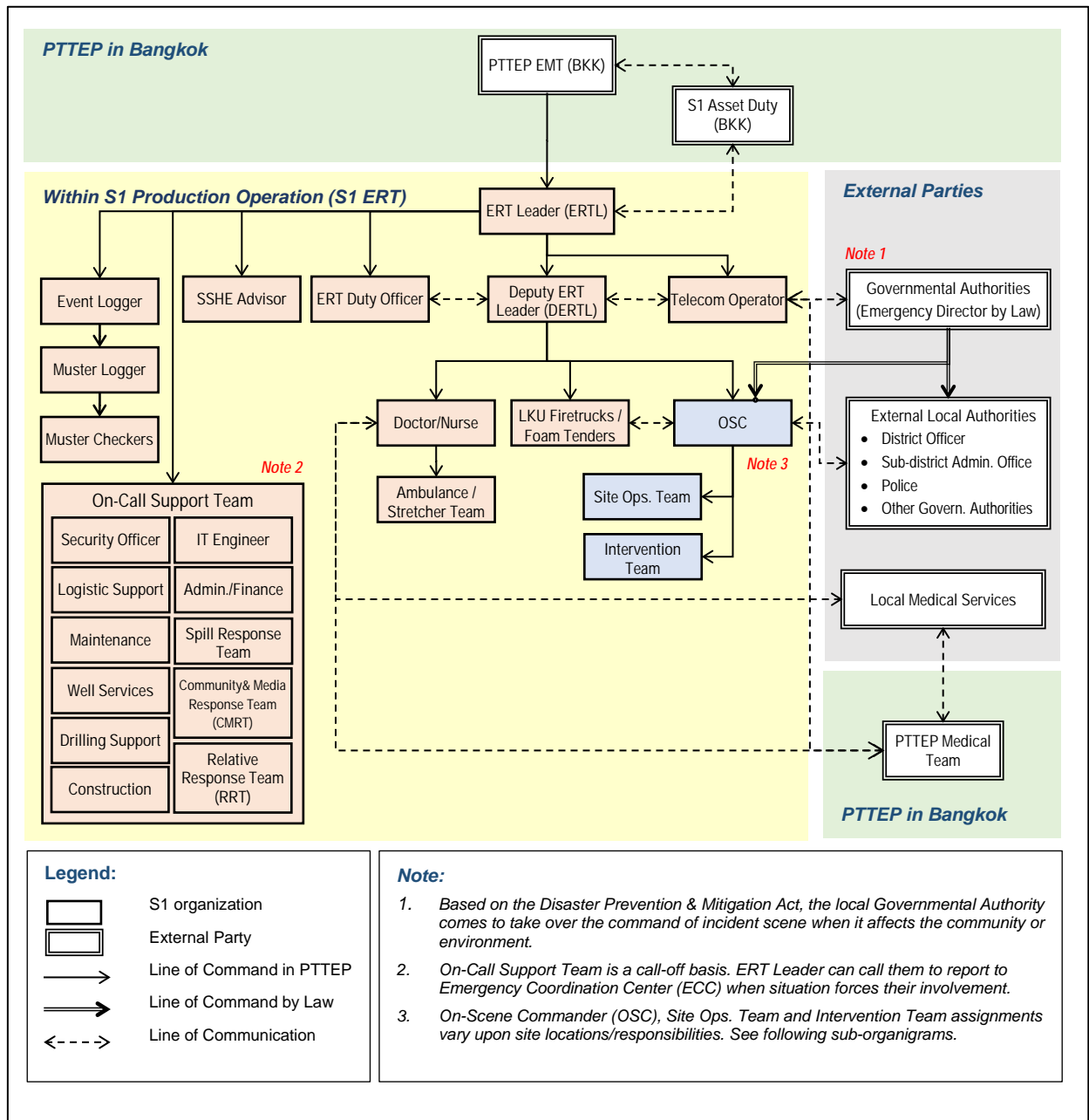


ERT members are:-

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
<b>Site Operations Team:</b> <ul style="list-style-type: none"> <li>- Production Supervisor</li> <li>- Power Plant Operator</li> <li>- Panel Operator</li> </ul>	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		
<b>Intervention Team:</b>  Fire Chief  Fireteam Leader 1 <ul style="list-style-type: none"> <li>- Fireteam 1 member</li> <li>- Fireteam 1 member</li> </ul> Fireteam Leader 2 <ul style="list-style-type: none"> <li>- Fireteam 2 member / Crude/LPG Fire Pump</li> <li>- Fireteam 2 member</li> </ul> Fireteam Leader 3 (Backup – F/S) <ul style="list-style-type: none"> <li>- Fireteam 3 member</li> <li>- Fireteam 3 member</li> </ul> Fireteam Leader 4 (Backup – West Well Sites) <ul style="list-style-type: none"> <li>- Fireteam 4 member</li> <li>- Fireteam 4 member</li> </ul> Fireteam Leader 5 (Backup – East Well Sites) <ul style="list-style-type: none"> <li>- Fireteam 5 member</li> <li>- Fireteam 5 member</li> <li>- Fireteam 5 member</li> </ul>	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
<b>On-Call Support Team:</b>  <ul style="list-style-type: none"> <li>- Security Officer</li> <li>- IT Engineer</li> <li>- Logistics Support</li> <li>- Admin./Finance</li> <li>- Construction</li> <li>- Maintenance</li> <li>- Spill Response Team</li> <li>- Community &amp; Media Response Team</li> <li>- Relative Response Team</li> </ul>	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
<b>Site Operations Team:</b> <ul style="list-style-type: none"> <li>- Production Supervisor</li> <li>- Production Operator</li> <li>- LKU CAO Operator</li> <li>- NTM CCR Operator</li> <li>- STN CCR Operator</li> </ul>	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
<b>Intervention Team (Well Sites):</b> <ul style="list-style-type: none"> <li>- Fire Chief</li> <li>- Fireteam Leader 1 <ul style="list-style-type: none"> <li>- Fireteam 1 member</li> <li>- Fireteam 1 member</li> </ul> </li> <li>- Fireteam Leader 2 (Back-up – Well Sites) <ul style="list-style-type: none"> <li>- Fireteam 2 member</li> <li>- Fireteam 2 member</li> <li>- Fireteam 2 member</li> </ul> </li> <li>- Fireteam Leader 3 (Back-up – Well Sites) <ul style="list-style-type: none"> <li>- Fireteam 3 member</li> </ul> </li> </ul>	<b>Well Sites in a radius of 30 km from LKU Flow Station including DDC training center</b> 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"> <li>- Fireteam 3 member</li> <li>- Fireteam 3 member</li> </ul>	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
<b>Intervention Team (NTM-A):</b> <ul style="list-style-type: none"> <li>- Fire Chief</li> <li>- Fireteam Leader 1 <ul style="list-style-type: none"> <li>- Fireteam 1 member</li> <li>- Fireteam 1 member</li> <li>- Fireteam 1 member</li> <li>- Fireteam 1 member</li> </ul> </li> <li>- Fireteam 2 member</li> </ul>	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
<b>Intervention Team (STN-A):</b> <ul style="list-style-type: none"> <li>- Fire Chief <ul style="list-style-type: none"> <li>- Fireteam 3 member</li> </ul> </li> </ul>	On-duty Production Operator #1 Production Operators assigned to NTM-A, east & west well sites	STN-A East/West Well Sites, NTM-A
<b>Intervention Team (MPFs):</b>	Request support by nearby production hub and/or external local authorities	The other production hub
<b>On-Call Support Team:</b> <ul style="list-style-type: none"> <li>- Security Officer</li> <li>- IT Engineer</li> <li>- Logistics Support</li> <li>- Admin./Finance</li> <li>- Construction</li> <li>- Maintenance</li> <li>- Spill Response Team</li> <li>- Community &amp; Media Response Team</li> <li>- Relative Response Team</li> </ul>	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
<b>Site Operations Team:</b> - Depot Supervisor	BPR Depot Supervisor	BPR Depot
<b>Intervention Team:</b> - 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 (Rail Side) BPR Depot (Road Side) BPR Depot (Rail Side)
<b>On-Call Support Team:</b> - 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
<b>On-Call Support Team:</b> <ul style="list-style-type: none"> <li>- Security Officer</li> <li>- IT Engineer</li> <li>- Logistics Support</li> <li>- Admin./Finance</li> <li>- Construction</li> <li>- Maintenance</li> <li>- Spill Response Team</li> <li>- Community &amp; Media Response Team</li> <li>- Relative Response Team</li> </ul>	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
<b>On-Call Support Team:</b> <ul style="list-style-type: none"> <li>- Security Officer</li> <li>- IT Engineer</li> <li>- Logistics Support</li> <li>- Admin./Finance</li> <li>- Construction</li> <li>- Maintenance</li> <li>- Spill Response Team</li> <li>- Community &amp; Media Response Team</li> <li>- Relative Response Team</li> </ul>	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.

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

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

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

<b>Deputy Emergency Response Team Leader (DERTL)</b>	
Responsible Person	<p>The person appointed by ERTL based on the area affected by an incident.</p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• PS1/O for BPR depot in Phitsanulok Province and CNS rail tanker inspection and maintenance workshop in BKK.</li> </ul>
Responsibilities	<ul style="list-style-type: none"> <li>• Minimise injury, environmental pollution, asset/property damage and reputation;</li> <li>• 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;</li> <li>• Collaborate with local external parties; and</li> <li>• Coordinate with RRT and CMRT when necessary.</li> </ul>
Key Actions	<ul style="list-style-type: none"> <li>• Update the situation with OSC and assess for the effective response strategy;</li> <li>• 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;</li> <li>• Provide technical advice to OSC, ERTL/ERT Duty Officer;</li> <li>• Closely report to and take constant directions from ERTL/ERTL Duty Officer for uninterrupted and effective management of the emergency situation.</li> <li>• Communicate, directly or through Telecom Operator, with local external parties e.g. governmental authorities, community, etc involving in the emergency situation;</li> <li>• Support in collaboration between OSC and external parties;</li> <li>• Communicate and collaborate with CMRT and RRT when the situation requires; and</li> <li>• Log own actions, messages on communication, involved party, and time on the log sheet and pass it to event logger.</li> </ul>

On-scene Commander (OSC) or Deputy OSC		
Responsible Person	The person appointed by DERTL based on the area affected by an incident.	
	<b>Location</b>	<b>OSC</b>
	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"> <li>• Protect personnel including staff, contractors, community, intervention &amp; medical teams;</li> <li>• Minimise the impact to environment and community in the vicinity;</li> <li>• Assess the situation and establish the tactical response;</li> <li>• Take commands of all immediate responsive activities on the incident scene;</li> <li>• Report to and provide constant updates of the situation to DERTL;</li> <li>• Collaborate with involving local authorities; and</li> <li>• Maintain records of events.</li> </ul>	
Key Actions	<ul style="list-style-type: none"> <li>• Assess the current emergency situation, associated hazards, impacts, and their potentials;</li> <li>• Establish tactical response plan e.g. isolation, blowdown, spill containment, evacuation, intervention, etc;</li> <li>• Command the site operation, intervention &amp; medical teams on the scene;</li> <li>• Provide necessary resources to site operation, intervention and medical teams;</li> </ul>	

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

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"> <li>• Be under command of the OSC;</li> <li>• Operate/control/stabilize the affected facility and area; and</li> <li>• Support the intervention and medical teams.</li> </ul>
Key Actions	<ul style="list-style-type: none"> <li>• Provide detailed current status of facility and area to the OSC e.g. process &amp; area condition, process safety system, F&amp;G system, firefighting system, etc;</li> <li>• Control and stabilize the facility and area e.g. shutdown, isolation, blowdown, inhibit/override of system, removal of hazards, etc;</li> <li>• Maintain safe conditions of facilities and area throughout emergency situation;</li> <li>• Notify hazards associated with process, facility, and area to OSC and intervention team;</li> <li>• Keep OSC updated with changes in conditions of the process, facilities, and area; and</li> <li>• Log own actions, messages on communication, involved party, and time on the log sheet and pass it to event logger as applicable.</li> </ul>



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

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

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

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

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

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

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

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

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

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

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"> <li>Direct all personnel in the designated area to leave the area for musters in a safe manner using appropriate routes and exits;</li> <li>Assist handicaps e.g. elderlies, children, injured, pregnant, disable, etc.</li> <li>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;</li> <li>Close doors to help suppress or hinder the fire;</li> <li>Guide personnel to the muster points and assist in checking personnel having arrived safely at muster points; and</li> <li>Update with the list of staff stationed in the building given by PS1/S (emergency team).</li> </ul>



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"> <li><input type="checkbox"/> Logistic Support;</li> <li><input type="checkbox"/> Well Service;</li> <li><input type="checkbox"/> Maintenance;</li> <li><input type="checkbox"/> Security Supervisor;</li> <li><input type="checkbox"/> Community &amp; Media Response Team;</li> <li><input type="checkbox"/> Relative Response Team.</li> <li><input type="checkbox"/> Drilling;</li> <li><input type="checkbox"/> Construction;</li> <li><input type="checkbox"/> IT/ Telecom Supervisor;</li> <li><input type="checkbox"/> Spill Response Team;</li> </ul>
Key Actions	<ul style="list-style-type: none"> <li>• Be ready on call, able to report to ECC within 2 hours when called by ERTL or ERT duty officer;</li> <li>• Be the link of communication between ERT and their assigned sections, departments, contractors;</li> <li>• Advise ERT on their specialized matters;</li> <li>• Collaborate with the assigned discipline on request;</li> <li>• Execute the task to support emergency response requested by ERT;</li> <li>• Receive briefing from ERTL or delegation;</li> <li>• Advise ERT members on matters relating to their discipline matters;</li> <li>• Call in or consult with other staff in their disciplines as required;</li> <li>• Provide support to ERT members as required; and</li> <li>• Log own actions, messages on communication, involved party and time on the log sheet and pass it to event logger.</li> </ul>

<b>Community &amp; Media Response Team (CMRT)</b>	
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 &amp; 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"> <li>• Establish a proactive media liaison and public affairs strategy;</li> <li>• 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;</li> <li>• Brief ERTL on local media interest, issues developing and requests from the media for information;</li> <li>• Assist in developing/delivering a response to the local media and community as directed by ERTL;</li> <li>• 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;</li> <li>• Maintain a personal log of events undertaken during the incident life cycle and pass completed log sheets to Event Logger;</li> <li>• Ensure that Event Logger has a record of all contact with authorities;</li> <li>• Establish contact numbers where the media can call for information;</li> <li>• Pass any press releases to ERTL for approval process;</li> <li>• Update ERTL on all media and external affairs issues;</li> <li>• Monitor media related to an emergency; and</li> <li>• Liaise with ERTL if there is a requirement to confront any press interviews/conference.</li> </ul>

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"> <li>• Have information on staff's selected relative's contact number for emergency;</li> <li>• 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;</li> <li>• Advise ERTL on personnel and welfare issues relating to staff.</li> <li>• Hold the information on the status of ERT members, staff and contractors affected by the incident and emergency e.g. injured, deceased, locations, etc.</li> <li>• Coordinate with PTTEP HHR (Human resources) division;</li> <li>• Coordinate with hospitals for treatment of injured persons and provide the additional support required;</li> <li>• Consider mobilising RRT to interface with family or relatives of the impacted staff;</li> <li>• 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;</li> <li>• Assist the Event Logger in tracking personnel on the status boards and ensure accuracy of information; and</li> <li>• Establish the requirement for counselling services for those affected by the emergency (open to all employees and contractors).</li> </ul>

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

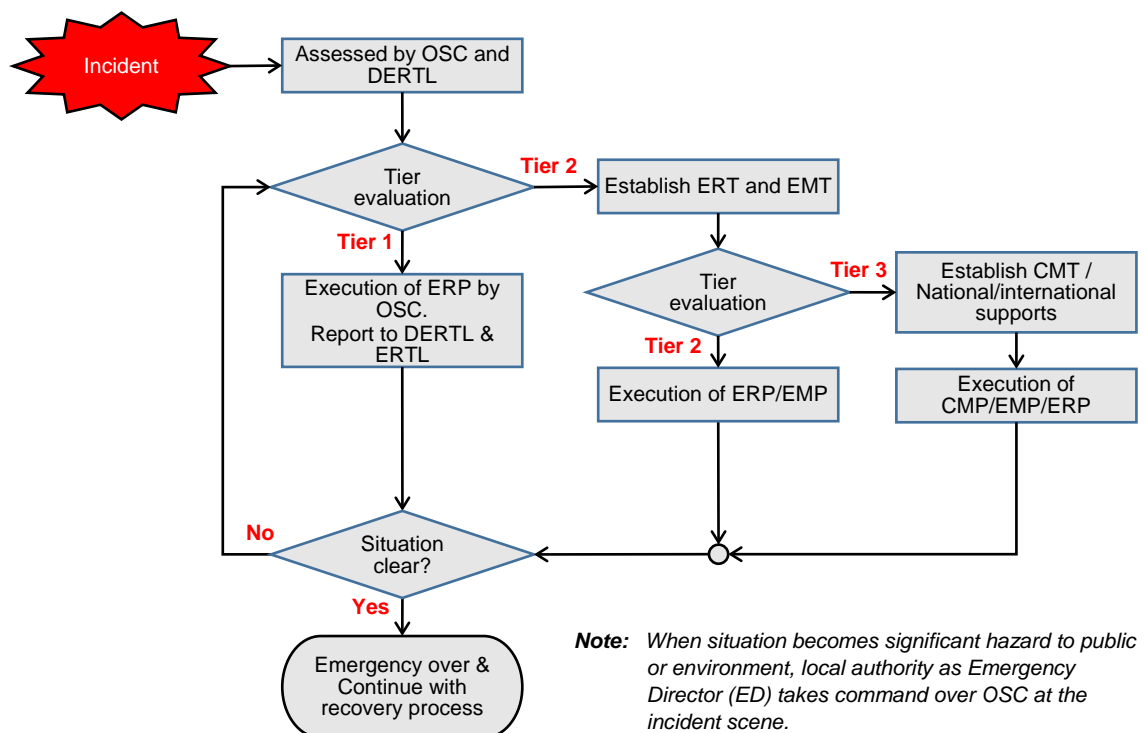
The response action of an emergency situation occurring at S1 operating sites can be summarized in flowing details.

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

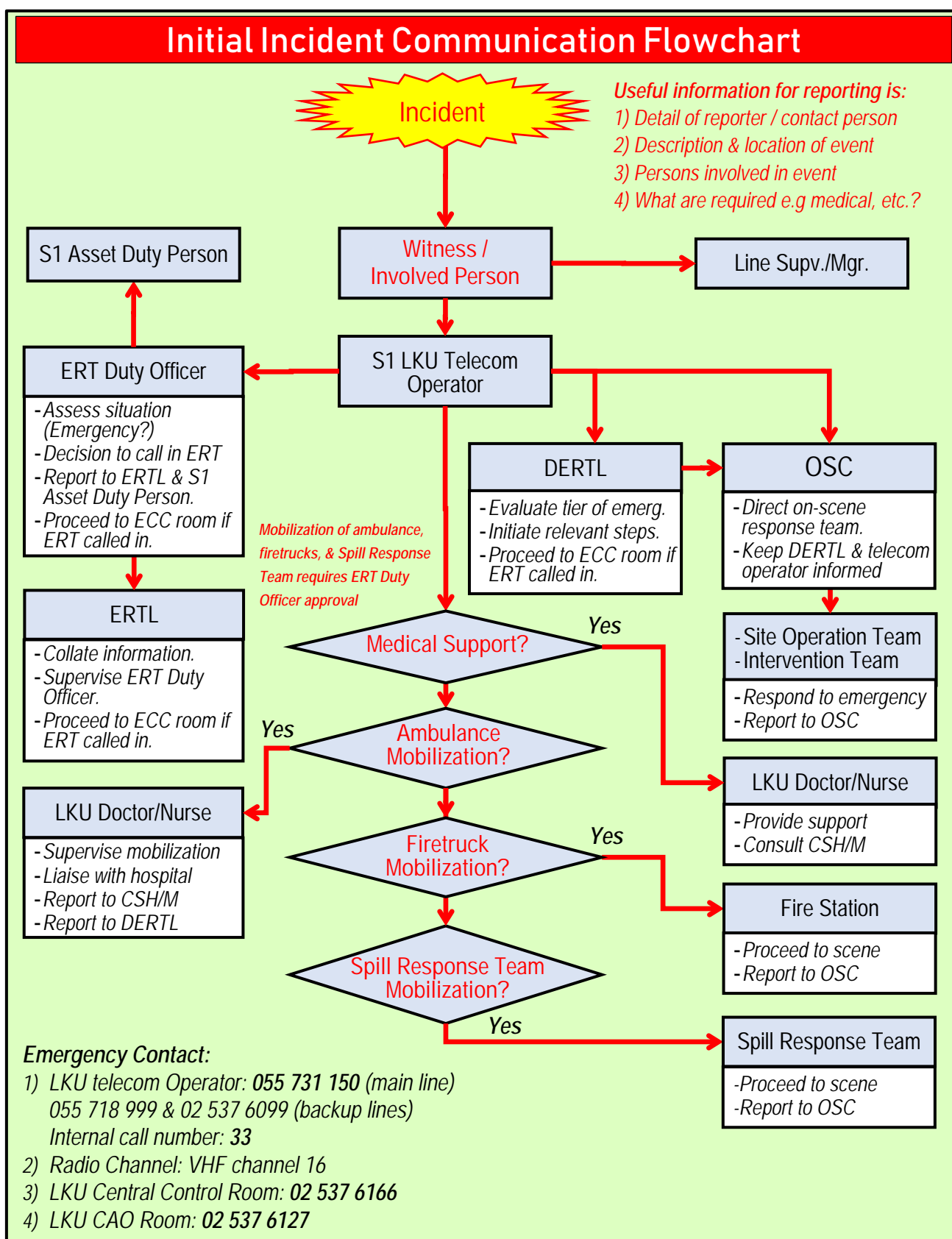
Portable radios (VHF) are provided to S1 operational staff and assigned as the primary option for emergency communication. In normal situations, all handheld radio users are on channel 15. In emergency situations, telecom operator broadcasts to all stations involving an emergency e.g. ERT, OSC, affected 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; LKUtelexRoom@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.

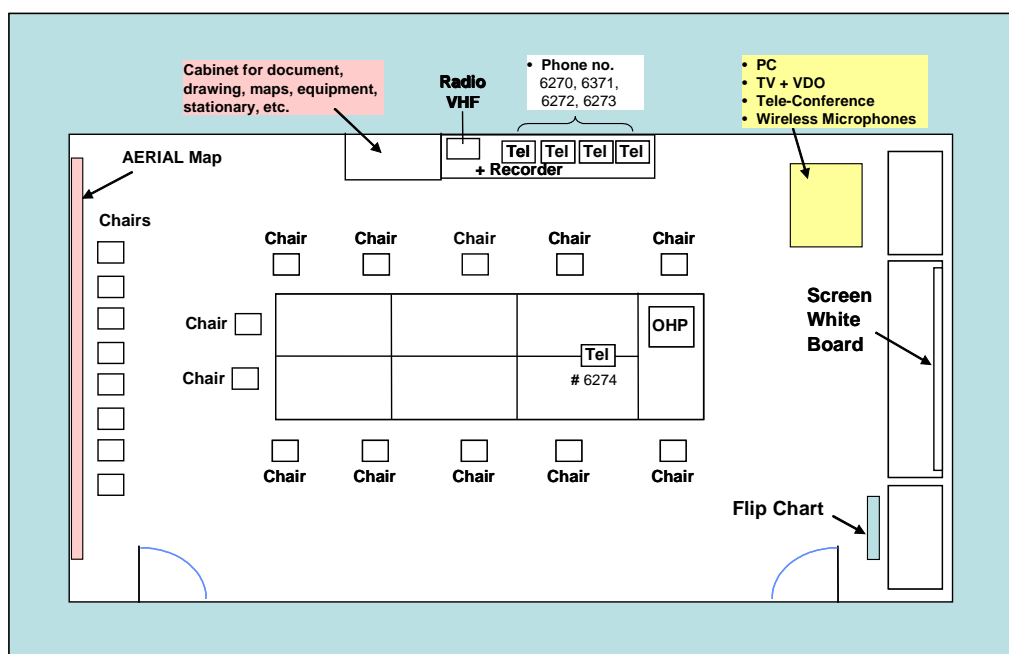
At LKU office, 4 separate rooms are provided for:-

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

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

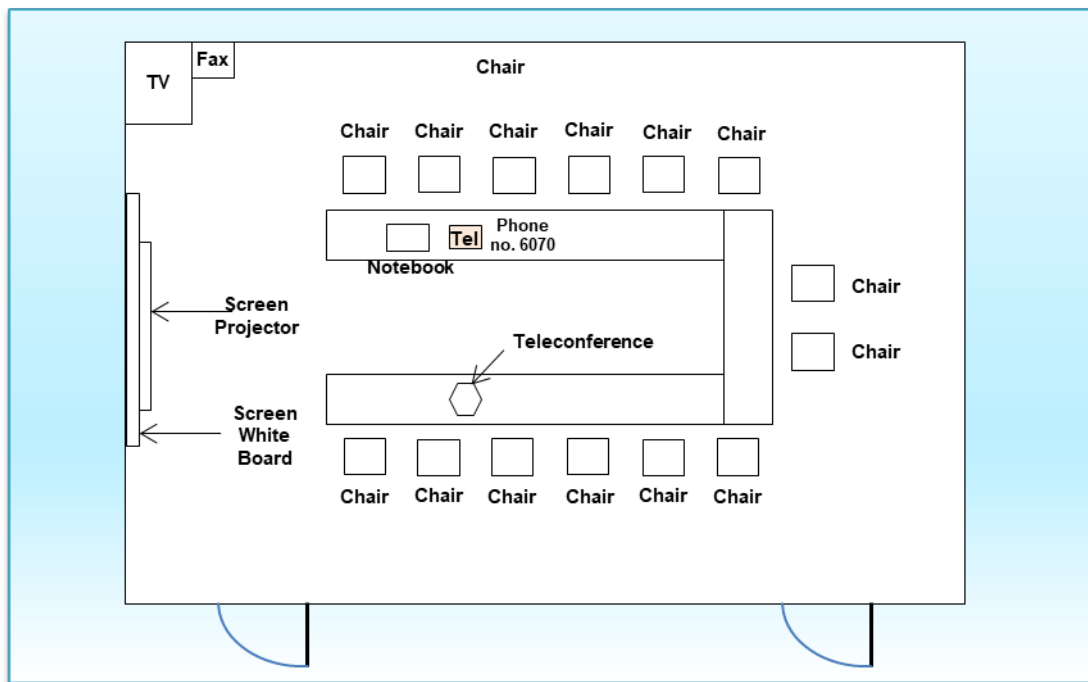
In case the ECC room at LKU building #1 meeting room #1 cannot be utilized when an emergency occurs such as fire or bomb threat at the office building, flooding, road blockage, the predetermined alternative venues are:

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

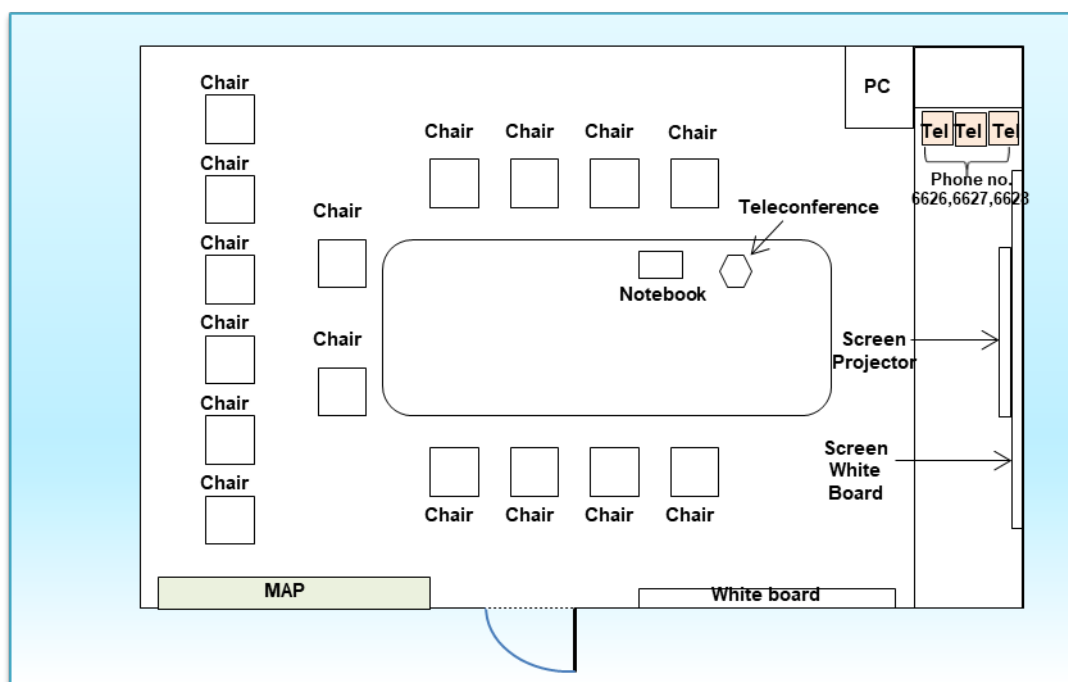
- Ensure that the PC is working correctly;
- Log on the main PC using appropriate user name & password (kept in the cupboard);
- Ensure all required document e.g. emergency contact list, community contact list, etc. are available;
- Check that all telephones are working correctly;
- Await the briefing 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 1<sup>st</sup> 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

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### 3. 1<sup>st</sup> 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](http://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.com](http://www.pttep.com)ค่ะ/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"

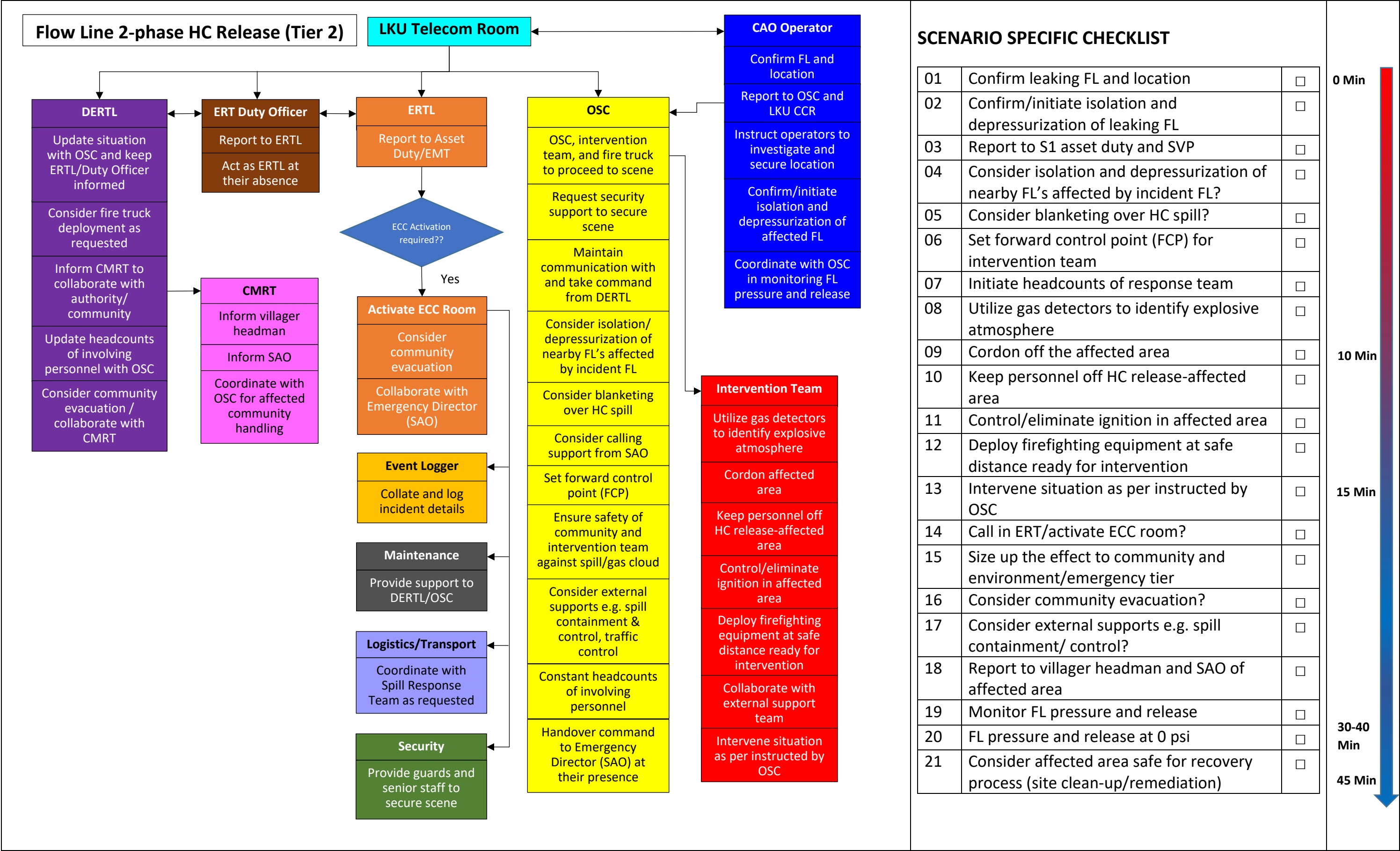
## APPENDIX F: EXAMPLE OF S1 DUTY ROSTER

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



## 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 <b>tier 3 response level</b>.</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 <b>a tier 1 – 2 response level</b>.</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
<b>PTTEP SSHE Controlling Documents</b>	
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)
<b>Other Reference Documents</b>	
-	Disaster Prevention and Mitigation Act B.E.2550 พรบ.ป้องกันและบรรเทาสาธารณภัย พ.ศ. 2550

## REVISION HISTORY

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




บริษัท ปตท.สผ. สยาม จำกัด

รายงานผลการปฏิบัติตามมาตรการป้องกันและแก้ไขผลกระทบสิ่งแวดล้อม และมาตรการติดตามตรวจสอบผลกระทบสิ่งแวดล้อม  
โครงการผลิตปิโตรเลียมแหล่งสิริกิติ์และแหล่งตอนกลางเอส 1 แพลงเอส 1 จังหวัดกำแพงเพชร พิชณุโลก และสุโขทัย  
ฉบับเดือนมกราคม-ธันวาคม พ.ศ.2565

## ภาคผนวกที่ 20

เอกสารตรวจสอบและบำรุงรักษาระบบท่อลำเลียง  
(Flowline Inspection)

<div><div>PTTEP</div></div>	<h1>FLOWLINE SUMMARY REPORT</h1>		PS1/M INSPECTION TEAM					
FLOWLINE INFORMATION			NORMAL					
Tag number:		S1-LKUCA -FSTN-6-CAA-P-CO		Report number:		FL-6-CAA-CO-2022-02		
Line number:		CAA		Inspection date:		22 มี.ย. 2022		
Location: From-To		LKU-CA      FSTN		Inservice date:		01 มี.ย. 2000		
P&ID number:		LKU-1-08-037RSV23 & LCA-1-08-002C		API Classification:		2.00		
Piping group:		Process		API MII (yrs):		5.00		
Service description:		Crude oil		WO number:		500358034		
THICKNESS SUMMARY			NORMAL					
CML-TP Number:		B-B3-S66-W67-U		Nominal thickness (mm):		7.92		
Distance Description:		726m 726000mm From W67 0mm		Lowest actual thickness (mm):		6.7		
Location Description:		1200 After S-106-35		Retirement thickness (mm):		2.00		
NPS (inch):		6.00		Selected corrosion rate (mm/yr):		0.00		
Material:		API 5L B		Remaining life (yrs):		15.88		
CML MII, RL/2 (yrs):		5.00		Next inspection date (NID):		01 มี.ย. 2025		
MAWP								
Piping inspection interval (months):			Derate Pressure rec (psig):					
t:ta-2(CRxInterval) (mm):			retired after derate pressure (mm):					
MAWP (psig):			Remaining Life after Pressure (months):					
EXTERNAL VISUAL INSPECTION SUMMARY						GOOD		
Damage mechanism check list								
Leak or Seepage		Good						
General corrosion		Good						
Vibration		Good						
Soil-to-Air Interface		N/A						
Corrosion under insulation (CUI)		N/A						
Corrosion under support (CUS)		Good						
Other		N/A						
Piping component check list								
Weld seam		Good						
Painting		N/A						
Insulation		N/A						
Pipe Support		Good						
Flange/Bolt/Nut/Gasket		N/A						
Instrument Component		N/A						
Deck Penetration		N/A						
Other		N/A						
INSPECTION SUMMARY				RECOMMENDATION DESCRIPTION				
<p>- 6" BL-CAA Crude flowline inspection was performed 60% INSP Coverage on subsection 5, 1 &amp; 2 and the overall of this flowline results still in normal thickness with no any significant to low reading thickness or high corrosion rate on this period.</p> <p>The minimum remaining thickness at CML no.A-A2-S19-W19-W is 5.32 mm. with SCR 0.12 mm./yr. &amp; RL is 27.72 yrs.</p> <p>Note; As previous inspection on Feb 22'2022.</p> <p>1.) Subsection no.A4, B1, C1 &amp; D4 of this flowline have weld joint under block culvert shall be plan to inspect.</p> <p>2.) MFL Technique could not be done due to obstruct block culvert on inspection time as detail:</p> <p>-Section A5 at weld no.W35 still under block culvert C-166-02 and Under wrapping = 20 m.</p> <p>-Section D4 at weld no.W147 still under block culvert Not MFL = 10 m</p> <p>3.) External wrapping at weld no.W10 and still in good condition.</p> <p>4.) TFM Techniue was done for confirm internal condition at 39% of weld joints (Totally 78 welds) and found still in normal condition.</p>				<p>- Continue normal flowline 60% inspection (Sub-section 3, 4 &amp; 5) of entire flowline length for plan in next year 2023.(Jun-23)</p> <p>- Plan to extent inspection 20% or Min.10 of welding joint by TFM Technique for detect internal weld metal loss within 12 months.(Feb-23)</p> <p>- Plan to extend for flowline under block culvert inspection shall be done at least once a year for general visual inspection or other NDE Technique should be executed for internal corrosion detection for pipe &amp; weld.</p> <p>- For crude transfer flowlines, the normal maximum operating pressure shall not exceed 500 PSIG.</p> <p>Note: 6"BL-CAA is flowline criticallity ranking 1st by production aspect.</p>				
REQUIRED ACTION								
Temporary repair				Repaint				
Permanent repair				Rerating				
				Derating				
Inspected by:		Manop N.			Date:		09 ก.ค. 2022	
API Inspector reviewed by:		Jirawat C.			Date:		11 ก.ค. 2022	
PTTEP Leader reviewed:		Apichat P.			Date:		24 ก.ค. 2022	




	<h1>FLOWLINE THICKNESS REPORT</h1>	PS1/M INSPECTION TEAM
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Tag No.:	S1-LKUCA -FSTN-6-CAA-P-CO		Total length (m):	2200	Installation date:	01 ឆ.ប. 2000	Service life (yrs):	22.66
Pipe size (in):	6		% Inspection:	20	1st Inspection date:	02 ឆ.ប. 2020	6th Inspection date:	08 ឆ.ប. 2015
Flowline No.:	CAA		No. of section (sections):	5	2nd Inspection date:	15 ឆ.ប. 2021	7th Inspection date:	03 ឆ.ប. 2016
From-To:	LKU-CA	FSTN	Length of section (m):	440	3rd Inspection date:	10 ឆ.ប. 2021	8th Inspection date:	05 ឆ.ប. 2017
Process:	P	Process	Length of subsection (m):	88	4th Inspection date:	22 ក.វ. 2022	9th Inspection date:	06 ស.គ. 2018
Service:	CO	Crude oil	Total spool (spools):	201	5th Inspection date:	22 ឆ.ប. 2022	10th Inspection	06 ឆ.ប. 2019


## THICKNESS MEASUREMENT RESULT

[illegible]



				FLOWLINE THICKNESS REPORT													PS1/M INSPECTION TEAM	
Tag No.:		S1-LKUCA -FSTN-6-CAA-P-CO			Total length (m):		2200			Installation date:		01 มิ.ย. 2000		Service life (yrs):		22.66		
Pipe size (in):		6			% Inspection:		20			1st Inspection date:		02 มิ.ย. 2020		6th Inspection date:		08 มิ.ย. 2015		
Flowline No.:		CAA			No. of section (sections):		5			2nd Inspection date:		15 มิ.ย. 2021		7th Inspection date:		03 มิ.ย. 2016		
From-To:		LKU-CA	FSTN	Length of section (m):		440			3rd Inspection date:		10 มิ.ย. 2021		8th Inspection date:		05 มิ.ย. 2017			
Process:		P	Process	Length of subsection (m):		88			4th Inspection date:		22 ก.พ. 2022		9th Inspection date:		06 ส.ค. 2018			
Service:		CO	Crude oil	Total spool (spools):		201			5th Inspection date:		22 มิ.ย. 2022		10th Inspection		06 มิ.ย. 2019			
THICKNESS MEASUREMENT RESULT																		
Section	Subsection	Weld Joint	Distance (m)	CML Name	Location Desc	Nominal Thickness (mm)	Retired Thickness (mm)	Up/Down/Weld	MFL	Previous Inspection Date	Previous Thickness (mm)		Last Inspection Date	Last Thickness (mm)		SCR (mm/yr)	RL (yrs)	Temporary Repair
											Top (0)	Bottom (180)		Top (0)	Bottom (180)			
		8	77	A-A1-S7-W8-U	1900 Before S-168-14	7.92	2.00	U		06 ส.ค. 2018	7.49	7.29	22 มิ.ย. 2022	7.38	7.25	0.01	508.86	
		8	77	A-A1-S8-W8-D	1900 Before S-168-14	7.92	2.00	D		06 ส.ค. 2018	7.69	7.69	22 มิ.ย. 2022	7.69	7.69	0.00	5146.10	
		8	77	A-A1-S8-W8-W	1900 Before S-168-14	7.92	2.00	W TFM										
		9	88	A-A1-S8-W9-U	6000 After C-168-11	7.92	2.00	U		06 ส.ค. 2018	7.49	7.39	22 มิ.ย. 2022	7.49	7.39	0.00	4874.62	
		9	88	A-A1-S9-W9-D	6000 After C-168-11	7.92	2.00	D		06 ส.ค. 2018	7.49	7.39	22 มิ.ย. 2022	7.49	7.39	0.00	4874.62	
		9	88	A-A1-S9-W9-W	6000 After C-168-11	7.92	2.00	W TFM										
		10	99	A-A1-S9-W10-U	100 Before C-168-10	7.92	2.00	U		06 ส.ค. 2018	7.39	6.89	22 มิ.ย. 2022	7.39	6.89	0.00	4422.15	
		10	99	A-A1-S10-W10-D	100 Before C-168-10	7.92	2.00	D		06 ส.ค. 2018	7.49	6.89	22 มิ.ย. 2022	7.49	6.89	0.00	4422.15	
		10	99	A-A1-S10-W10-W	100 Before C-168-10	7.92	2.00	W TFM					09 มิ.ย. 2021		7.61	0.01	380.45	
		11	110	A-A1-S10-W11-U	400 Before S-168-08	7.92	2.00	U		06 ส.ค. 2018	7.29	7.30	22 มิ.ย. 2022	7.29	7.30	0.00	4784.13	
		11	110	A-A1-S11-W11-D	400 Before S-168-08	7.92	2.00	D		06 ส.ค. 2018	7.59	6.89	22 มิ.ย. 2022	7.69	6.89	0.00	4422.15	
		11	110	A-A1-S11-W11-W	400 Before S-168-08	7.92	2.00	W TFM					09 มิ.ย. 2021		7.17	0.04	144.91	
		12	121	A-A1-S11-W12-U	400 Before S-168-06	7.92	2.00	U		06 ส.ค. 2018	7.29	7.29	22 มิ.ย. 2022	7.29	7.27	0.01	1021.60	
		12	121	A-A1-S12-W12-D	400 Before S-168-06	7.92	2.00	D		06 ส.ค. 2018	7.79	7.79	22 มิ.ย. 2022	7.79	7.79	0.00	5236.59	
		12	121	A-A1-S12-W12-W	400 Before S-168-06	7.92	2.00	W TFM					09 มิ.ย. 2021		7.35	0.03	197.32	
		13	132	A-A1-S12-W13-U	100 Before S-168-04	7.92	2.00	U		06 ส.ค. 2018	6.69	7.59	22 มิ.ย. 2022	6.69	7.59	0.00	4241.17	
		13	132	A-A1-S13-W13-D	100 Before S-168-04	7.92	2.00	D		06 ส.ค. 2018	6.89	7.19	22 มิ.ย. 2022	6.89	7.19	0.00	4422.15	
		13	132	A-A1-S13-W13-W	100 Before S-168-04	7.92	2.00	W TFM					09 มิ.ย. 2021		7.35	0.03	197.32	
A	A2	14	143	A-A2-S13-W14-U	1200 Before S-168-02	7.92	2.00	U		06 มิ.ย. 2019	6.79	7.29	22 มิ.ย. 2022	6.79	7.29	0.00	3839.87	
		14	143	A-A2-S14-W14-D	1200 Before S-168-02	7.92	2.00	D		06 มิ.ย. 2019	7.19	7.09	22 มิ.ย. 2022	7.19	7.09	0.00	4080.53	
		14	143	A-A2-S14-W14-W	1200 Before S-168-02	7.92	2.00	W TFM					09 มิ.ย. 2021		7.17	0.04	144.91	

				FLOWLINE THICKNESS REPORT													PS1/M INSPECTION TEAM				
Tag No.:				S1-LKUCA -FSTN-6-CAA-P-CO				Total length (m):				2200		Installation date:		01 มิ.ย. 2000		Service life (yrs):		22.66	
Pipe size (in):				6				% Inspection:				20		1st Inspection date:		02 มิ.ย. 2020		6th Inspection date:		08 มิ.ย. 2015	
Flowline No.:				CAA				No. of section (sections):				5		2nd Inspection date:		15 มิ.ย. 2021		7th Inspection date:		03 มิ.ย. 2016	
From-To:				LKU-CA		FSTN		Length of section (m):				440		3rd Inspection date:		10 มิ.ย. 2021		8th Inspection date:		05 มิ.ย. 2017	
Process:				P		Process		Length of subsection (m):				88		4th Inspection date:		22 ก.พ. 2022		9th Inspection date:		06 ส.ค. 2018	
Service:				CO		Crude oil		Total spool (spools):				201		5th Inspection date:		22 มิ.ย. 2022		10th Inspection		06 มิ.ย. 2019	
THICKNESS MEASUREMENT RESULT																					
Section	Subsection	Weld Joint	Distance (m)	CML Name	Location Desc	Nominal Thickness (mm)	Retired Thickness (mm)	Up/Down/Weld	MFL	Previous Inspection Date	Previous Thickness (mm)		Last Inspection Date	Last Thickness (mm)		SCR (mm/yr)	RL (yrs)	Temporary Repair			
											Top (0)	Bottom (180)		Top (0)	Bottom (180)						
		15	154	A-A2-S14-W15-U	1100 Before S-167-37	7.92	2.00	U		06 มิ.ย. 2019	7.09	7.19	22 มิ.ย. 2022	7.09	7.19	0.00	4080.53				
		15	154	A-A2-S15-W15-D	1100 Before S-167-37	7.92	2.00	D		06 มิ.ย. 2019	7.79	7.29	22 มิ.ย. 2022	7.79	7.29	0.00	4240.97				
		15	154	A-A2-S15-W15-W	1100 Before S-167-37	7.92	2.00	W TFM					09 มิ.ย. 2021		7.43	0.02	232.97				
		16	165	A-A2-S15-W16-U	1000 After S-167-35	7.92	2.00	U		06 มิ.ย. 2019	6.69	7.79	22 มิ.ย. 2022	6.69	7.41	0.00	3759.65				
		16	165	A-A2-S16-W16-D	1000 After S-167-35	7.92	2.00	D		06 มิ.ย. 2019	7.20	7.39	22 มิ.ย. 2022	7.20	7.39	0.01	416.88				
		16	165	A-A2-S16-W16-W	1000 After S-167-35	7.92	2.00	W TFM					09 มิ.ย. 2021		7.35	0.03	197.32				
		17	176	A-A2-S16-W17-U	1200 After S-167-34	7.92	2.00	U		06 มิ.ย. 2019	7.59	7.69	22 มิ.ย. 2022	7.59	7.69	0.00	4481.63				
		17	176	A-A2-S17-W17-D	1200 After S-167-34	7.92	2.00	D		06 มิ.ย. 2019	7.29	7.69	22 มิ.ย. 2022	7.29	7.69	0.00	4240.97				
		17	176	A-A2-S17-W17-W	1200 After S-167-34	7.92	2.00	W TFM					09 มิ.ย. 2021		7.35	0.03	197.32				
		18	187	A-A2-S17-W18-U	1000 After S-167-33	7.92	2.00	U		06 มิ.ย. 2019	7.30	7.09	22 มิ.ย. 2022	7.30	7.09	0.00	4080.53				
		18	187	A-A2-S18-W18-D	1000 After S-167-33	7.92	2.00	D		06 มิ.ย. 2019	6.89	7.30	22 มิ.ย. 2022	6.89	7.30	0.00	3920.09				
		18	187	A-A2-S18-W18-W	1000 After S-167-33	7.92	2.00	W TFM					09 มิ.ย. 2021		7.43	0.02	232.97				
		19	198	A-A2-S18-W19-U	1630 After S-167-32	7.92	2.00	U		06 มิ.ย. 2019	7.19	7.29	22 มิ.ย. 2022	7.19	7.29	0.00	4160.75				
		19	198	A-A2-S19-W19-D	1630 After S-167-32	7.92	2.00	D		06 มิ.ย. 2019	7.39	7.29	22 มิ.ย. 2022	7.39	7.29	0.00	4240.97				
		19	198	A-A2-S19-W19-W	1630 After S-167-32	7.92	2.00	W TFM					18 ก.พ. 2022		5.32	0.12	27.72				
		20	209	A-A2-S19-W20-U	1650 After S-167-30	7.92	2.00	U		06 มิ.ย. 2019	7.29	7.39	22 มิ.ย. 2022	7.29	7.39	0.00	4240.97				
		20	209	A-A2-S20-W20-D	1650 After S-167-30	7.92	2.00	D		06 มิ.ย. 2019	7.29	7.59	22 มิ.ย. 2022	7.29	7.59	0.00	4240.97				
		20	209	A-A2-S20-W20-W	1650 After S-167-30	7.92	2.00	W TFM					18 ก.พ. 2022		7.62	0.01	406.87				
		21	220	A-A2-S20-W21-U	1700 After S-167-28	7.92	2.00	U		06 มิ.ย. 2019	7.29	7.29	22 มิ.ย. 2022	7.29	7.29	0.00	4240.97				
		21	220	A-A2-S21-W21-D	1700 After S-167-28	7.92	2.00	D		06 มิ.ย. 2019	6.69	7.60	22 มิ.ย. 2022	6.69	7.54	0.00	3759.65				
		21	220	A-A2-S21-W21-W	1700 After S-167-28	7.92	2.00	W TFM					18 ก.พ. 2022		6.09	0.08	48.53				

				FLOWLINE THICKNESS REPORT													PS1/M INSPECTION TEAM	
Tag No.: S1-LKUCA -FSTN-6-CAA-P-CO					Total length (m): 2200			Installation date: 01 มิ.ย. 2000		Service life (yrs): 22.66								
Pipe size (in): 6					% Inspection: 20			1st Inspection date: 02 มิ.ย. 2020		6th Inspection date: 08 มิ.ย. 2015								
Flowline No.: CAA					No. of section (sections): 5			2nd Inspection date: 15 มิ.ย. 2021		7th Inspection date: 03 มิ.ย. 2016								
From-To: LKU-CA			FSTN		Length of section (m): 440			3rd Inspection date: 10 มิ.ย. 2021		8th Inspection date: 05 มิ.ย. 2017								
Process: P			Process		Length of subsection (m): 88			4th Inspection date: 22 ก.พ. 2022		9th Inspection date: 06 ส.ค. 2018								
Service: CO			Crude oil		Total spool (spools): 201			5th Inspection date: 22 มิ.ย. 2022		10th Inspection 06 มิ.ย. 2019								
THICKNESS MEASUREMENT RESULT																		
Section	Subsection	Weld Joint	Distance (m)	CML Name	Location Desc	Nominal Thickness (mm)	Retired Thickness (mm)	Up/Down/Weld	MFL	Previous Inspection Date	Previous Thickness (mm)		Last Inspection Date	Last Thickness (mm)		SCR (mm/yr)	RL (yrs)	Temporary Repair
											Top (0)	Bottom (180)		Top (0)	Bottom (180)			
A	A3	22	231	A-A3-S21-W22-U	1500 After S-167-27	7.92	2.00	U		08 มิ.ย. 2015	7.10	7.70	02 มิ.ย. 2020	7.10	7.70	0.01	507.72	
		22	231	A-A3-S22-W22-D	1500 After S-167-27	7.92	2.00	D		08 มิ.ย. 2015	7.19	7.40	02 มิ.ย. 2020	7.20	7.40	0.00	17.57	
		22	231	A-A3-S22-W22-W	1500 After S-167-27	7.92	2.00	W TFM					18 ก.พ. 2022		7.18	0.03	152.02	
		23	242	A-A3-S22-W23-U	1500 After S-167-25	7.92	2.00	U		08 มิ.ย. 2015	7.20	7.40	02 มิ.ย. 2020	7.20	7.30	0.02	258.84	
		23	242	A-A3-S23-W23-D	1500 After S-167-25	7.92	2.00	D		08 มิ.ย. 2015	7.50	7.80	02 มิ.ย. 2020	7.50	7.80	0.03	182.52	
		23	242	A-A3-S23-W23-W	1500 After S-167-25	7.92	2.00	W TFM					18 ก.พ. 2022		7.00	0.04	118.03	
		24	253	A-A3-S23-W24-U	1500 After S-167-22	7.92	2.00	U		08 มิ.ย. 2015	7.30	7.40	02 มิ.ย. 2020	7.30	7.40	0.03	175.88	
		24	253	A-A3-S24-W24-D	1500 After S-167-22	7.92	2.00	D		08 มิ.ย. 2015	7.70	7.70	02 มิ.ย. 2020	7.70	7.70	0.03	189.16	
		24	253	A-A3-S24-W24-W	1500 After S-167-22	7.92	2.00	W TFM					18 ก.พ. 2022		7.26	0.03	173.09	
		25	264	A-A3-S24-W25-U	1500 After S-167-20	7.92	2.00	U		08 มิ.ย. 2015	7.50	7.50	02 มิ.ย. 2020	7.50	7.50	0.01	547.56	
		25	264	A-A3-S25-W25-D	1500 After S-167-20	7.92	2.00	D		08 มิ.ย. 2015	6.90	7.59	02 มิ.ย. 2020	6.90	7.20	0.02	243.90	
		25	264	A-A3-S25-W25-W	1500 After S-167-20	7.92	2.00	W TFM					18 ก.พ. 2022		7.26	0.03	173.09	
		26	275	A-A3-S25-W26-U	1500 After S-167-18	7.92	2.00	U		08 มิ.ย. 2015	7.20	7.30	02 มิ.ย. 2020	7.20	7.30	0.03	172.56	
		26	275	A-A3-S26-W26-D	1500 After S-167-18	7.92	2.00	D		08 มิ.ย. 2015	7.00	7.70	02 มิ.ย. 2020	7.00	7.30	0.04	124.44	
		26	275	A-A3-S26-W26-W	1500 After S-167-18	7.92	2.00	W TFM					18 ก.พ. 2022		7.35	0.03	203.85	
		27	286	A-A3-S26-W27-U	2000 After S-167-16	7.92	2.00	U		08 มิ.ย. 2015	7.50	7.50	02 มิ.ย. 2020	7.50	7.50	0.01	547.56	
		27	286	A-A3-S27-W27-D	2000 After S-167-16	7.92	2.00	D		08 มิ.ย. 2015	6.99	7.70	02 มิ.ย. 2020	6.90	7.20	0.02	271.44	
		27	286	A-A3-S27-W27-W	2000 After S-167-16	7.92	2.00	W TFM					18 ก.พ. 2022		7.00	0.04	118.03	
		28	297	A-A3-S27-W28-U	2000 After S-167-14	7.92	2.00	U		08 มิ.ย. 2015	7.49	7.89	02 มิ.ย. 2020	7.50	7.90	0.00	18.58	
		28	297	A-A3-S28-W28-D	2000 After S-167-14	7.92	2.00	D		08 มิ.ย. 2015	7.59	7.79	02 มิ.ย. 2020	7.60	7.80	0.00	18.92	
		28	297	A-A3-S28-W28-W	2000 After S-167-14	7.92	2.00	W TFM					18 ก.พ. 2022		7.44	0.02	246.14	



	<h1>FLOWLINE THICKNESS REPORT</h1>	PS1/M INSPECTION TEAM
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Tag No.:	S1-LKUCA -FSTN-6-CAA-P-CO		Total length (m):	2200	Installation date:	01 มี.ย. 2000	Service life (yrs):	22.66
Pipe size (in):	6		% Inspection:	20	1st Inspection date:	02 มี.ย. 2020	6th Inspection date:	08 มี.ย. 2015
Flowline No.:	CAA		No. of section (sections):	5	2nd Inspection date:	15 มี.ย. 2021	7th Inspection date:	03 มี.ย. 2016
From-To:	LKU-CA	FSTN	Length of section (m):	440	3rd Inspection date:	10 มี.ย. 2021	8th Inspection date:	05 มี.ย. 2017
Process:	P	Process	Length of subsection (m):	88	4th Inspection date:	22 ก.พ. 2022	9th Inspection date:	06 ส.ค. 2018
Service:	CO	Crude oil	Total spool (spools):	201	5th Inspection date:	22 มี.ย. 2022	10th Inspection	06 มี.ย. 2019

## THICKNESS MEASUREMENT RESULT

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	<h1>FLOWLINE THICKNESS REPORT</h1>	PS1/M INSPECTION TEAM
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Tag No.:	S1-LKUCA -FSTN-6-CAA-P-CO		Total length (m):	2200	Installation date:	01 มิ.ย. 2000	Service life (yrs):	22.66
Pipe size (in):	6		% Inspection:	20	1st Inspection date:	02 มิ.ย. 2020	6th Inspection date:	08 มิ.ย. 2015
Flowline No.:	CAA		No. of section (sections):	5	2nd Inspection date:	15 มิ.ย. 2021	7th Inspection date:	03 มิ.ย. 2016
From-To:	LKU-CA	FSTN	Length of section (m):	440	3rd Inspection date:	10 มิ.ย. 2021	8th Inspection date:	05 มิ.ย. 2017
Process:	P	Process	Length of subsection (m):	88	4th Inspection date:	22 ก.พ. 2022	9th Inspection date:	06 ส.ค. 2018
Service:	CO	Crude oil	Total spool (spools):	201	5th Inspection date:	22 มิ.ย. 2022	10th Inspection	06 มิ.ย. 2019

## THICKNESS MEASUREMENT RESULT

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				FLOWLINE THICKNESS REPORT													PS1/M INSPECTION TEAM	
Tag No.: S1-LKUCA -FSTN-6-CAA-P-CO					Total length (m): 2200			Installation date: 01 มิ.ย. 2000		Service life (yrs): 22.66								
Pipe size (in): 6					% Inspection: 20			1st Inspection date: 02 มิ.ย. 2020		6th Inspection date: 08 มิ.ย. 2015								
Flowline No.: CAA					No. of section (sections): 5			2nd Inspection date: 15 มิ.ย. 2021		7th Inspection date: 03 มิ.ย. 2016								
From-To: LKU-CA			FSTN		Length of section (m): 440			3rd Inspection date: 10 มิ.ย. 2021		8th Inspection date: 05 มิ.ย. 2017								
Process: P			Process		Length of subsection (m): 88			4th Inspection date: 22 ก.พ. 2022		9th Inspection date: 06 ส.ค. 2018								
Service: CO			Crude oil		Total spool (spools): 201			5th Inspection date: 22 มิ.ย. 2022		10th Inspection 06 มิ.ย. 2019								
THICKNESS MEASUREMENT RESULT																		
Section	Subsection	Weld Joint	Distance (m)	CML Name	Location Desc	Nominal Thickness (mm)	Retired Thickness (mm)	Up/Down/Weld	MFL	Previous Inspection Date	Previous Thickness (mm)		Last Inspection Date	Last Thickness (mm)		SCR (mm/yr)	RL (yrs)	Temporary Repair
											Top (0)	Bottom (180)		Top (0)	Bottom (180)			
		43	462	A-A5-S42-W43-U	3000 Before S-166-23	7.92	2.00	U		05 มิ.ย. 2017	7.29	7.00	22 มิ.ย. 2022	7.39	7.18	0.01	431.28	
		43	462	A-A5-S43-W43-D	3000 Before S-166-23	7.92	2.00	D		05 มิ.ย. 2017	7.59	7.59	22 มิ.ย. 2022	7.61	7.63	-0.00	18.95	
		43	462	A-A5-S43-W43-W	3000 Before S-166-23	7.92	2.00	W TFM										
B	B1	44	473	B-B1-S43-W44-U	2200 After S-166-21	7.92	2.00	U		06 ส.ค. 2018	7.59	7.39	22 มิ.ย. 2022	7.82	7.84	-0.05	19.66	
		44	473	B-B1-S44-W44-D	2200 After S-166-21	7.92	2.00	D		06 ส.ค. 2018	6.59	6.49	22 มิ.ย. 2022	6.90	6.88	-0.04	16.48	
		44	473	B-B1-S44-W44-W	2200 After S-166-21	7.92	2.00	W TFM										
		45	484	B-B1-S44-W45-U	Under Box Culvert	7.92	2.00	U										
		45	484	B-B1-S45-W45-D	Under Box Culvert	7.92	2.00	D										
		45	484	B-B1-S45-W45-W	Under Box Culvert	7.92	2.00	W TFM										
		46	495	B-B1-S45-W46-U	2800 After S-166-18	7.92	2.00	U		06 ส.ค. 2018	6.69	6.70	22 มิ.ย. 2022	6.71	6.92	-0.00	15.91	
		46	495	B-B1-S46-W46-D	2800 After S-166-18	7.92	2.00	D		06 ส.ค. 2018	7.30	7.39	22 มิ.ย. 2022	7.67	7.51	-0.01	18.61	
		46	495	B-B1-S46-W46-W	2800 After S-166-18	7.92	2.00	W TFM					10 มิ.ย. 2021		6.83	0.05	93.16	
		47	506	B-B1-S46-W47-U	2500 Before S-166-16	7.92	2.00	U		06 ส.ค. 2018	7.50	7.49	22 มิ.ย. 2022	7.65	7.63	-0.01	19.02	
		47	506	B-B1-S47-W47-D	2500 Before S-166-16	7.92	2.00	D		06 ส.ค. 2018	7.20	7.59	22 มิ.ย. 2022	7.52	7.68	-0.02	18.65	
		47	506	B-B1-S47-W47-W	2500 Before S-166-16	7.92	2.00	W TFM					10 มิ.ย. 2021		7.43	0.02	233.00	
		48	517	B-B1-S47-W48-U	2800 After S-166-14	7.92	2.00	U		06 ส.ค. 2018	7.39	7.59	22 มิ.ย. 2022	7.62	7.85	-0.02	18.99	
		48	517	B-B1-S48-W48-D	2800 After S-166-14	7.92	2.00	D		06 ส.ค. 2018	7.39	7.39	22 มิ.ย. 2022	7.57	7.72	-0.02	18.82	
		48	517	B-B1-S48-W48-W	2800 After S-166-14	7.92	2.00	W TFM					10 มิ.ย. 2021		7.70	0.01	544.77	
		49	528	B-B1-S48-W49-U	2800 After S-166-12	7.92	2.00	U		06 ส.ค. 2018	7.99	7.99	22 มิ.ย. 2022	7.98	7.92	0.02	327.91	
		49	528	B-B1-S49-W49-D	2800 After S-166-12	7.92	2.00	D		06 ส.ค. 2018	7.69	7.39	22 มิ.ย. 2022	7.49	7.51	-0.01	18.55	
		49	528	B-B1-S49-W49-W	2800 After S-166-12	7.92	2.00	W TFM					10 มิ.ย. 2021		7.87	0.00	2468.53	



	<h1>FLOWLINE THICKNESS REPORT</h1>	PS1/M INSPECTION TEAM
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Tag No.:	S1-LKUCA -FSTN-6-CAA-P-CO		Total length (m):	2200	Installation date:	01 มิ.ย. 2000	Service life (yrs):	22.66
Pipe size (in):	6		% Inspection:	20	1st Inspection date:	02 มิ.ย. 2020	6th Inspection date:	08 มิ.ย. 2015
Flowline No.:	CAA		No. of section (sections):	5	2nd Inspection date:	15 มิ.ย. 2021	7th Inspection date:	03 มิ.ย. 2016
From-To:	LKU-CA	FSTN	Length of section (m):	440	3rd Inspection date:	10 มิ.ย. 2021	8th Inspection date:	05 มิ.ย. 2017
Process:	P	Process	Length of subsection (m):	88	4th Inspection date:	22 ก.พ. 2022	9th Inspection date:	06 ส.ค. 2018
Service:	CO	Crude oil	Total spool (spools):	201	5th Inspection date:	22 มิ.ย. 2022	10th Inspection	06 มิ.ย. 2019

## THICKNESS MEASUREMENT RESULT

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	<h1>FLOWLINE THICKNESS REPORT</h1>	PS1/M INSPECTION TEAM
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Tag No.:	S1-LKUCA -FSTN-6-CAA-P-CO		Total length (m):	2200	Installation date:	01 ឆ.ប. 2000	Service life (yrs):	22.66
Pipe size (in):	6		% Inspection:	20	1st Inspection date:	02 ឆ.ប. 2020	6th Inspection date:	08 ឆ.ប. 2015
Flowline No.:	CAA		No. of section (sections):	5	2nd Inspection date:	15 ឆ.ប. 2021	7th Inspection date:	03 ឆ.ប. 2016
From-To:	LKU-CA	FSTN	Length of section (m):	440	3rd Inspection date:	10 ឆ.ប. 2021	8th Inspection date:	05 ឆ.ប. 2017
Process:	P	Process	Length of subsection (m):	88	4th Inspection date:	22 ក.វ. 2022	9th Inspection date:	06 ឆ.គ. 2018
Service:	CO	Crude oil	Total spool (spools):	201	5th Inspection date:	22 ឆ.ប. 2022	10th Inspection	06 ឆ.ប. 2019

## THICKNESS MEASUREMENT RESULT

[illegible]





	<h1>FLOWLINE THICKNESS REPORT</h1>	PS1/M INSPECTION TEAM
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Tag No.:	S1-LKUCA -FSTN-6-CAA-P-CO		Total length (m):	2200	Installation date:	01 ឆ.ប. 2000	Service life (yrs):	22.66
Pipe size (in):	6		% Inspection:	20	1st Inspection date:	02 ឆ.ប. 2020	6th Inspection date:	08 ឆ.ប. 2015
Flowline No.:	CAA		No. of section (sections):	5	2nd Inspection date:	15 ឆ.ប. 2021	7th Inspection date:	03 ឆ.ប. 2016
From-To:	LKU-CA	FSTN	Length of section (m):	440	3rd Inspection date:	10 ឆ.ប. 2021	8th Inspection date:	05 ឆ.ប. 2017
Process:	P	Process	Length of subsection (m):	88	4th Inspection date:	22 ក.វ. 2022	9th Inspection date:	06 ស.គ. 2018
Service:	CO	Crude oil	Total spool (spools):	201	5th Inspection date:	22 ឆ.ប. 2022	10th Inspection	06 ឆ.ប. 2019

## THICKNESS MEASUREMENT RESULT


[illegible]



Tag No.:	S1-LKUCA -FSTN-6-CAA-P-CO		Total length (m):	2200	Installation date:	01 ឆ.ប. 2000	Service life (yrs):	22.66
Pipe size (in):	6		% Inspection:	20	1st Inspection date:	02 ឆ.ប. 2020	6th Inspection date:	08 ឆ.ប. 2015
Flowline No.:	CAA		No. of section (sections):	5	2nd Inspection date:	15 ឆ.ប. 2021	7th Inspection date:	03 ឆ.ប. 2016
From-To:	LKU-CA	FSTN	Length of section (m):	440	3rd Inspection date:	10 ឆ.ប. 2021	8th Inspection date:	05 ឆ.ប. 2017
Process:	P	Process	Length of subsection (m):	88	4th Inspection date:	22 ក.វ. 2022	9th Inspection date:	06 ស.គ. 2018
Service:	CO	Crude oil	Total spool (spools):	201	5th Inspection date:	22 ឆ.ប. 2022	10th Inspection	06 ឆ.ប. 2019

## THICKNESS MEASUREMENT RESULT

[illegible]

				FLOWLINE THICKNESS REPORT													PS1/M INSPECTION TEAM	
Tag No.: S1-LKUCA -FSTN-6-CAA-P-CO					Total length (m): 2200			Installation date: 01 มิ.ย. 2000		Service life (yrs): 22.66								
Pipe size (in): 6					% Inspection: 20			1st Inspection date: 02 มิ.ย. 2020		6th Inspection date: 08 มิ.ย. 2015								
Flowline No.: CAA					No. of section (sections): 5			2nd Inspection date: 15 มิ.ย. 2021		7th Inspection date: 03 มิ.ย. 2016								
From-To: LKU-CA			FSTN		Length of section (m): 440			3rd Inspection date: 10 มิ.ย. 2021		8th Inspection date: 05 มิ.ย. 2017								
Process: P			Process		Length of subsection (m): 88			4th Inspection date: 22 ก.พ. 2022		9th Inspection date: 06 ส.ค. 2018								
Service: CO			Crude oil		Total spool (spools): 201			5th Inspection date: 22 มิ.ย. 2022		10th Inspection 06 มิ.ย. 2019								
THICKNESS MEASUREMENT RESULT																		
Section	Subsection	Weld Joint	Distance (m)	CML Name	Location Desc	Nominal Thickness (mm)	Retired Thickness (mm)	Up/Down/Weld	MFL	Previous Inspection Date	Previous Thickness (mm)		Last Inspection Date	Last Thickness (mm)		SCR (mm/yr)	RL (yrs)	Temporary Repair
											Top (0)	Bottom (180)		Top (0)	Bottom (180)			
		78	847	B-B5-S77-W78-U	600 Before S-106-14	7.92	2.00	U		05 มิ.ย. 2017	7.39	7.89	22 มิ.ย. 2022	7.39	7.89	0.00	5385.25	
		78	847	B-B5-S78-W78-D	600 Before S-106-14	7.92	2.00	D		05 มิ.ย. 2017	7.49	7.30	22 มิ.ย. 2022	7.49	7.30	0.02	264.76	
		78	847	B-B5-S78-W78-W	600 Before S-106-14	7.92	2.00	W TFM										
		79	858	B-B5-S78-W79-U	2500 Before S-106-13A	7.92	2.00	U		05 มิ.ย. 2017	7.79	6.89	22 มิ.ย. 2022	7.79	6.89	0.00	4885.39	
		79	858	B-B5-S79-W79-D	2500 Before S-106-13A	7.92	2.00	D		05 มิ.ย. 2017	7.30	7.50	22 มิ.ย. 2022	7.30	7.50	0.01	529.53	
		79	858	B-B5-S79-W79-W	2500 Before S-106-13A	7.92	2.00	W TFM					10 มิ.ย. 2021		7.52	0.02	290.16	
		80	869	B-B5-S79-W80-U	500 Before S-106-12	7.92	2.00	U		05 มิ.ย. 2017	7.49	7.70	22 มิ.ย. 2022	7.49	7.70	0.00	5485.22	
		80	869	B-B5-S80-W80-D	500 Before S-106-12	7.92	2.00	D		05 มิ.ย. 2017	7.49	7.50	22 มิ.ย. 2022	7.49	7.50	0.00	5485.22	
		80	869	B-B5-S80-W80-W	500 Before S-106-12	7.92	2.00	W TFM					10 มิ.ย. 2021		7.35	0.03	197.34	
		81	880	B-B5-S80-W81-U	500 Before S-106-10	7.92	2.00	U		05 มิ.ย. 2017	7.40	7.70	22 มิ.ย. 2022	7.40	7.70	0.02	269.76	
		81	880	B-B5-S81-W81-D	500 Before S-106-10	7.92	2.00	D		05 มิ.ย. 2017	6.89	7.90	22 มิ.ย. 2022	6.89	7.90	0.00	4885.39	
		81	880	B-B5-S81-W81-W	500 Before S-106-10	7.92	2.00	W TFM					10 มิ.ย. 2021		7.52	0.02	290.16	
		82	891	B-B5-S81-W82-U	300 Before S-106-08	7.92	2.00	U		05 มิ.ย. 2017	7.79	7.39	22 มิ.ย. 2022	7.79	7.39	0.00	5385.25	
		82	891	B-B5-S82-W82-D	300 Before S-106-08	7.92	2.00	D		05 มิ.ย. 2017	7.29	6.69	22 มิ.ย. 2022	7.29	6.69	0.00	4685.44	
		82	891	B-B5-S82-W82-W	300 Before S-106-08	7.92	2.00	W TFM					10 มิ.ย. 2021		6.43	0.07	62.50	
		83	902	B-B5-S82-W83-U	300 Before S-106-06	7.92	2.00	U		05 มิ.ย. 2017	7.40	7.40	22 มิ.ย. 2022	7.40	7.40	0.02	269.76	
		83	902	B-B5-S83-W83-D	300 Before S-106-06	7.92	2.00	D		05 มิ.ย. 2017	7.40	7.60	22 มิ.ย. 2022	7.40	7.60	0.02	269.76	
		83	902	B-B5-S83-W83-W	300 Before S-106-06	7.92	2.00	W TFM					10 มิ.ย. 2021		7.26	0.03	167.56	
C	C1	84	913	C-C1-S83-W84-U	400 Before S-106-04	7.92	2.00	U		06 ส.ค. 2018	7.19	7.50	22 มิ.ย. 2022	7.11	7.50	0.02	247.64	
		84	913	C-C1-S84-W84-D	400 Before S-106-04	7.92	2.00	D		06 ส.ค. 2018	10.40	10.39	22 มิ.ย. 2022	9.88	9.92	0.13	59.92	
		84	913	C-C1-S84-W84-W	400 Before S-106-04	7.92	2.00	W TFM					10 มิ.ย. 2021		7.09	0.04	128.94	




	<h1>FLOWLINE THICKNESS REPORT</h1>	PS1/M INSPECTION TEAM
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Tag No.:	S1-LKUCA -FSTN-6-CAA-P-CO		Total length (m):	2200	Installation date:	01 ឆ.ប. 2000	Service life (yrs):	22.66
Pipe size (in):	6		% Inspection:	20	1st Inspection date:	02 ឆ.ប. 2020	6th Inspection date:	08 ឆ.ប. 2015
Flowline No.:	CAA		No. of section (sections):	5	2nd Inspection date:	15 ឆ.ប. 2021	7th Inspection date:	03 ឆ.ប. 2016
From-To:	LKU-CA	FSTN	Length of section (m):	440	3rd Inspection date:	10 ឆ.ប. 2021	8th Inspection date:	05 ឆ.ប. 2017
Process:	P	Process	Length of subsection (m):	88	4th Inspection date:	22 ក.វ. 2022	9th Inspection date:	06 ស.គ. 2018
Service:	CO	Crude oil	Total spool (spools):	201	5th Inspection date:	22 ឆ.ប. 2022	10th Inspection	06 ឆ.ប. 2019


## THICKNESS MEASUREMENT RESULT


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				FLOWLINE THICKNESS REPORT													PS1/M INSPECTION TEAM	
Tag No.: S1-LKUCA -FSTN-6-CAA-P-CO					Total length (m): 2200			Installation date: 01 มิ.ย. 2000		Service life (yrs): 22.66								
Pipe size (in): 6					% Inspection: 20			1st Inspection date: 02 มิ.ย. 2020		6th Inspection date: 08 มิ.ย. 2015								
Flowline No.: CAA					No. of section (sections): 5			2nd Inspection date: 15 มิ.ย. 2021		7th Inspection date: 03 มิ.ย. 2016								
From-To: LKU-CA			FSTN		Length of section (m): 440			3rd Inspection date: 10 มิ.ย. 2021		8th Inspection date: 05 มิ.ย. 2017								
Process: P			Process		Length of subsection (m): 88			4th Inspection date: 22 ก.พ. 2022		9th Inspection date: 06 ส.ค. 2018								
Service: CO			Crude oil		Total spool (spools): 201			5th Inspection date: 22 มิ.ย. 2022		10th Inspection 06 มิ.ย. 2019								
THICKNESS MEASUREMENT RESULT																		
Section	Subsection	Weld Joint	Distance (m)	CML Name	Location Desc	Nominal Thickness (mm)	Retired Thickness (mm)	Up/Down/Weld	MFL	Previous Inspection Date	Previous Thickness (mm)		Last Inspection Date	Last Thickness (mm)		SCR (mm/yr)	RL (yrs)	Temporary Repair
											Top (0)	Bottom (180)		Top (0)	Bottom (180)			
		92	1001	C-C1-S91-W92-U	2200 Before S-096-21	7.92	2.00	U		06 ส.ค. 2018	10.09	10.79	22 มิ.ย. 2022	10.09	10.76	0.00	7317.93	
		92	1001	C-C1-S92-W92-D	2200 Before S-096-21	7.92	2.00	D		06 ส.ค. 2018	7.39	7.69	22 มิ.ย. 2022	7.39	7.65	0.00	4874.62	
		92	1001	C-C1-S92-W92-W	2200 Before S-096-21	7.92	2.00	W TFM					22 ก.พ. 2022		7.18	0.03	152.10	
		93	1012	C-C1-S92-W93-U	1200 Before S-096-21	7.92	2.00	U		06 ส.ค. 2018	7.40	7.39	22 มิ.ย. 2022	7.40	7.39	0.00	4874.62	
		93	1012	C-C1-S93-W93-D	1200 Before S-096-21	7.92	2.00	D		06 ส.ค. 2018	10.00	10.10	22 มิ.ย. 2022	10.00	9.88	0.08	99.00	
		93	1012	C-C1-S93-W93-W	1200 Before S-096-21	7.92	2.00	W TFM					22 ก.พ. 2022		7.26	0.03	173.17	
		94	1023	C-C1-S93-W94-U	500 After S-096-21	7.92	2.00	U		06 ส.ค. 2018	10.00	9.90	22 มิ.ย. 2022	10.00	9.90	0.02	357.30	
		94	1023	C-C1-S94-W94-D	500 After S-096-21	7.92	2.00	D		06 ส.ค. 2018	7.29	7.40	22 มิ.ย. 2022	7.29	7.40	0.00	4784.13	
		94	1023	C-C1-S94-W94-W	500 After S-096-21	7.92	2.00	W TFM					22 ก.พ. 2022		7.26	0.03	173.17	
		95	1034	C-C1-S94-W95-U	1500 Before S-096-19	7.92	2.00	U		06 ส.ค. 2018	7.89	7.39	22 มิ.ย. 2022	7.89	7.39	0.00	4874.62	
		95	1034	C-C1-S95-W95-D	1500 Before S-096-19	7.92	2.00	D		06 ส.ค. 2018	7.29	7.89	22 มิ.ย. 2022	7.29	7.65	0.00	4784.13	
		95	1034	C-C1-S95-W95-W	1500 Before S-096-19	7.92	2.00	W TFM					18 ก.พ. 2022		7.80	0.01	1049.76	
		96	1045	C-C1-S95-W96-U	1000 Before S-096-17	7.92	2.00	U		06 ส.ค. 2018	7.39	7.49	22 มิ.ย. 2022	7.39	7.49	0.00	4874.62	
		96	1045	C-C1-S96-W96-D	1000 Before S-096-17	7.92	2.00	D		06 ส.ค. 2018	7.59	7.49	22 มิ.ย. 2022	7.59	7.49	0.00	4965.11	
		96	1045	C-C1-S96-W96-W	1000 Before S-096-17	7.92	2.00	W TFM					18 ก.พ. 2022		7.44	0.02	246.14	
C	C2	97	1056	C-C2-S96-W97-U	1800 Before S-096-15	7.92	2.00	U		06 มิ.ย. 2019	7.60	7.09	22 มิ.ย. 2022	7.60	7.09	0.00	4080.53	
		97	1056	C-C2-S97-W97-D	1800 Before S-096-15	7.92	2.00	D		06 มิ.ย. 2019	7.29	7.40	22 มิ.ย. 2022	7.29	7.40	0.00	4240.97	
		97	1056	C-C2-S97-W97-W	1800 Before S-096-15	7.92	2.00	W TFM		10 มิ.ย. 2021		7.26	18 ก.พ. 2022		7.44	-0.26	18.38	
		98	1067	C-C2-S97-W98-U	1500 Before S-096-13	7.92	2.00	U		06 มิ.ย. 2019	7.09	6.99	22 มิ.ย. 2022	7.09	6.99	0.00	4000.31	
		98	1067	C-C2-S98-W98-D	1500 Before S-096-13	7.92	2.00	D		06 มิ.ย. 2019	7.39	7.39	22 มิ.ย. 2022	7.39	7.39	0.00	4321.19	
		98	1067	C-C2-S98-W98-W	1500 Before S-096-13	7.92	2.00	W TFM		10 มิ.ย. 2021		7.43	18 ก.พ. 2022		7.44	-0.01	18.38	


				FLOWLINE THICKNESS REPORT													PS1/M INSPECTION TEAM	
Tag No.:		S1-LKUCA -FSTN-6-CAA-P-CO			Total length (m):		2200		Installation date:		01 มิ.ย. 2000		Service life (yrs):		22.66			
Pipe size (in):		6			% Inspection:		20		1st Inspection date:		02 มิ.ย. 2020		6th Inspection date:		08 มิ.ย. 2015			
Flowline No.:		CAA			No. of section (sections):		5		2nd Inspection date:		15 มิ.ย. 2021		7th Inspection date:		03 มิ.ย. 2016			
From-To:		LKU-CA	FSTN	Length of section (m):		440		3rd Inspection date:		10 มิ.ย. 2021		8th Inspection date:		05 มิ.ย. 2017				
Process:		P	Process	Length of subsection (m):		88		4th Inspection date:		22 ก.พ. 2022		9th Inspection date:		06 ส.ค. 2018				
Service:		CO	Crude oil	Total spool (spools):		201		5th Inspection date:		22 มิ.ย. 2022		10th Inspection		06 มิ.ย. 2019				
THICKNESS MEASUREMENT RESULT																		
Section	Subsection	Weld Joint	Distance (m)	CML Name	Location Desc	Nominal Thickness (mm)	Retired Thickness (mm)	Up/Down/Weld	MFL	Previous Inspection Date	Previous Thickness (mm)		Last Inspection Date	Last Thickness (mm)		SCR (mm/yr)	RL (yrs)	Temporary Repair
											Top (0)	Bottom (180)		Top (0)	Bottom (180)			
		99	1078	C-C2-S98-W99-U	1500 Before S-096-11	7.92	2.00	U		06 มิ.ย. 2019	7.50	7.20	22 มิ.ย. 2022	7.50	7.20	0.01	416.88	
		99	1078	C-C2-S99-W99-D	1500 Before S-096-11	7.92	2.00	D		06 มิ.ย. 2019	7.39	7.30	22 มิ.ย. 2022	7.39	7.30	0.01	424.90	
		99	1078	C-C2-S99-W99-W	1500 Before S-096-11	7.92	2.00	W TFM					18 ก.พ. 2022		7.09	0.04	133.18	
		100	1089	C-C2-S99-W100-U	1000 Before S-096-09	7.92	2.00	U		06 มิ.ย. 2019	7.39	7.49	22 มิ.ย. 2022	7.39	7.42	0.00	4321.19	
		100	1089	C-C2-S100-W100-D	1000 Before S-096-09	7.92	2.00	D		06 มิ.ย. 2019	7.49	7.69	22 มิ.ย. 2022	7.49	7.65	0.00	4401.41	
		100	1089	C-C2-S100-W100-W	1000 Before S-096-09	7.92	2.00	W TFM					18 ก.พ. 2022		7.26	0.03	173.09	
		101	1100	C-C2-S100-W101-U	1000 Before S-096-07	7.92	2.00	U		06 มิ.ย. 2019	6.99	7.89	22 มิ.ย. 2022	6.99	7.76	0.00	4000.31	
		101	1100	C-C2-S101-W101-D	1000 Before S-096-07	7.92	2.00	D		06 มิ.ย. 2019	7.79	7.50	22 มิ.ย. 2022	7.66	7.62	0.01	563.21	
		101	1100	C-C2-S101-W101-W	1000 Before S-096-07	7.92	2.00	W TFM										
		102	1111	C-C2-S101-W102-U	900 Before S-096-05	7.92	2.00	U		06 มิ.ย. 2019	7.59	7.50	22 มิ.ย. 2022	7.59	7.50	0.01	440.94	
		102	1111	C-C2-S102-W102-D	900 Before S-096-05	7.92	2.00	D		06 มิ.ย. 2019	7.79	7.89	22 มิ.ย. 2022	7.79	7.89	0.00	4642.06	
		102	1111	C-C2-S102-W102-W	900 Before S-096-05	7.92	2.00	W TFM										
C	C3	103	1122	C-C3-S102-W103-U	700 Before S-096-03	7.92	2.00	U		08 มิ.ย. 2015	7.69	7.69	02 มิ.ย. 2020	7.70	7.70	0.00	19.26	
		103	1122	C-C3-S103-W103-D	700 Before S-096-03	7.92	2.00	D		08 มิ.ย. 2015	7.99	6.99	02 มิ.ย. 2020	7.60	7.00	0.00	16.89	
		103	1122	C-C3-S103-W103-W	700 Before S-096-03	7.92	2.00	W TFM					18 ก.พ. 2022		6.82	0.05	95.16	
		104	1133	C-C3-S103-W104-U	900 Before S-096-01	7.92	2.00	U		08 มิ.ย. 2015	7.39	7.59	02 มิ.ย. 2020	7.40	7.60	0.00	18.24	
		104	1133	C-C3-S104-W104-D	900 Before S-096-01	7.92	2.00	D		08 มิ.ย. 2015	6.99	7.49	02 มิ.ย. 2020	7.00	7.50	0.00	16.89	
		104	1133	C-C3-S104-W104-W	900 Before S-096-01	7.92	2.00	W TFM					18 ก.พ. 2022		7.18	0.03	152.02	
		105	1144	C-C3-S104-W105-U	900 Before S-095-60	7.92	2.00	U		08 มิ.ย. 2015	7.59	7.79	02 มิ.ย. 2020	7.30	7.40	0.06	91.12	
		105	1144	C-C3-S105-W105-D	900 Before S-095-60	7.92	2.00	D		08 มิ.ย. 2015	7.59	7.60	02 มิ.ย. 2020	7.20	7.40	0.08	66.48	
		105	1144	C-C3-S105-W105-W	900 Before S-095-60	7.92	2.00	W TFM					18 ก.พ. 2022		7.35	0.03	203.85	

				FLOWLINE THICKNESS REPORT													PS1/M INSPECTION TEAM	
Tag No.: S1-LKUCA -FSTN-6-CAA-P-CO						Total length (m): 2200			Installation date: 01 มิ.ย. 2000		Service life (yrs): 22.66							
Pipe size (in): 6						% Inspection: 20			1st Inspection date: 02 มิ.ย. 2020		6th Inspection date: 08 มิ.ย. 2015							
Flowline No.: CAA						No. of section (sections): 5			2nd Inspection date: 15 มิ.ย. 2021		7th Inspection date: 03 มิ.ย. 2016							
From-To: LKU-CA			FSTN			Length of section (m): 440			3rd Inspection date: 10 มิ.ย. 2021		8th Inspection date: 05 มิ.ย. 2017							
Process: P			Process			Length of subsection (m): 88			4th Inspection date: 22 ก.พ. 2022		9th Inspection date: 06 ส.ค. 2018							
Service: CO			Crude oil			Total spool (spools): 201			5th Inspection date: 22 มิ.ย. 2022		10th Inspection 06 มิ.ย. 2019							
THICKNESS MEASUREMENT RESULT																		
Section	Subsection	Weld Joint	Distance (m)	CML Name	Location Desc	Nominal Thickness (mm)	Retired Thickness (mm)	Up/Down/Weld	MFL	Previous Inspection Date	Previous Thickness (mm)		Last Inspection Date	Last Thickness (mm)		SCR (mm/yr)	RL (yrs)	Temporary Repair
											Top (0)	Bottom (180)		Top (0)	Bottom (180)			
		106	1155	C-C3-S105-W106-U	700 Before S-095-58	7.92	2.00	U		08 มิ.ย. 2015	7.40	7.39	02 มิ.ย. 2020	7.40	7.40	0.00	18.24	
		106	1155	C-C3-S106-W106-D	700 Before S-095-58	7.92	2.00	D		08 มิ.ย. 2015	7.39	6.69	02 มิ.ย. 2020	7.40	6.60	0.02	254.81	
		106	1155	C-C3-S106-W106-W	700 Before S-095-58	7.92	2.00	W TFM					18 ก.พ. 2022		7.00	0.04	118.03	
		107	1166	C-C3-S106-W107-U	600 Before S-095-56	7.92	2.00	U		08 มิ.ย. 2015	7.49	7.89	02 มิ.ย. 2020	7.20	7.60	0.06	89.40	
		107	1166	C-C3-S107-W107-D	600 Before S-095-56	7.92	2.00	D		08 มิ.ย. 2015	7.09	7.80	02 มิ.ย. 2020	7.00	7.60	0.02	276.99	
		107	1166	C-C3-S107-W107-W	600 Before S-095-56	7.92	2.00	W TFM					10 มิ.ย. 2021		7.35	0.03	197.34	
		108	1177	C-C3-S107-W108-U	600 Before S-095-54	7.92	2.00	U		08 มิ.ย. 2015	7.29	7.50	02 มิ.ย. 2020	7.30	7.50	0.00	17.90	
		108	1177	C-C3-S108-W108-D	600 Before S-095-54	7.92	2.00	D		08 มิ.ย. 2015	7.29	7.49	02 มิ.ย. 2020	7.30	7.50	0.00	17.90	
		108	1177	C-C3-S108-W108-W	600 Before S-095-54	7.92	2.00	W TFM					10 มิ.ย. 2021		7.26	0.03	167.56	
		109	1188	C-C3-S108-W109-U	600 Before S-095-52	7.92	2.00	U		08 มิ.ย. 2015	7.60	7.60	02 มิ.ย. 2020	7.60	7.60	0.01	557.53	
		109	1188	C-C3-S109-W109-D	600 Before S-095-52	7.92	2.00	D		08 มิ.ย. 2015	7.39	7.30	02 มิ.ย. 2020	7.40	7.30	0.01	527.64	
		109	1188	C-C3-S109-W109-W	600 Before S-095-52	7.92	2.00	W TFM					10 มิ.ย. 2021		7.61	0.01	380.50	
C	C4	110	1199	C-C4-S109-W110-U	500 Before S-095-50	7.92	2.00	U		03 มิ.ย. 2016	7.40	7.50	15 มิ.ย. 2021	7.42	7.26	0.03	154.40	
		110	1199	C-C4-S110-W110-D	500 Before S-095-50	7.92	2.00	D		03 มิ.ย. 2016	7.60	7.60	15 มิ.ย. 2021	7.67	7.71	0.01	435.30	
		110	1199	C-C4-S110-W110-W	500 Before S-095-50	7.92	2.00	W TFM					10 มิ.ย. 2021		7.87	0.00	2468.53	
		111	1210	C-C4-S110-W111-U	400 Before S-095-48	7.92	2.00	U		03 มิ.ย. 2016	6.90	7.70	15 มิ.ย. 2021	6.81	7.82	0.03	165.52	
		111	1210	C-C4-S111-W111-D	400 Before S-095-48	7.92	2.00	D		03 มิ.ย. 2016	7.80	7.10	15 มิ.ย. 2021	7.73	7.32	0.04	139.72	
		111	1210	C-C4-S111-W111-W	400 Before S-095-48	7.92	2.00	W TFM					10 มิ.ย. 2021		7.26	0.03	167.56	
		112	1221	C-C4-S111-W112-U	400 Before S-095-46	7.92	2.00	U		03 มิ.ย. 2016	7.40	7.50	15 มิ.ย. 2021	7.42	7.50	0.04	142.35	
		112	1221	C-C4-S112-W112-D	400 Before S-095-46	7.92	2.00	D		03 มิ.ย. 2016	7.10	7.50	15 มิ.ย. 2021	7.04	7.40	0.05	109.34	
		112	1221	C-C4-S112-W112-W	400 Before S-095-46	7.92	2.00	W TFM					10 มิ.ย. 2021		7.61	0.01	380.50	

				FLOWLINE THICKNESS REPORT													PS1/M INSPECTION TEAM	
Tag No.: S1-LKUCA -FSTN-6-CAA-P-CO						Total length (m): 2200				Installation date: 01 มิ.ย. 2000		Service life (yrs): 22.66						
Pipe size (in): 6						% Inspection: 20				1st Inspection date: 02 มิ.ย. 2020		6th Inspection date: 08 มิ.ย. 2015						
Flowline No.: CAA						No. of section (sections): 5				2nd Inspection date: 15 มิ.ย. 2021		7th Inspection date: 03 มิ.ย. 2016						
From-To: LKU-CA			FSTN			Length of section (m): 440				3rd Inspection date: 10 มิ.ย. 2021		8th Inspection date: 05 มิ.ย. 2017						
Process: P			Process			Length of subsection (m): 88				4th Inspection date: 22 ก.พ. 2022		9th Inspection date: 06 ส.ค. 2018						
Service: CO			Crude oil			Total spool (spools): 201				5th Inspection date: 22 มิ.ย. 2022		10th Inspection 06 มิ.ย. 2019						
THICKNESS MEASUREMENT RESULT																		
Section	Subsection	Weld Joint	Distance (m)	CML Name	Location Desc	Nominal Thickness (mm)	Retired Thickness (mm)	Up/Down/Weld	MFL	Previous Inspection Date	Previous Thickness (mm)		Last Inspection Date	Last Thickness (mm)		SCR (mm/yr)	RL (yrs)	Temporary Repair
											Top (0)	Bottom (180)		Top (0)	Bottom (180)			
		113	1232	C-C4-S112-W113-U	1100 Before S-095-44	7.92	2.00	U		03 มิ.ย. 2016	7.50	7.69	15 มิ.ย. 2021	7.51	7.90	0.02	289.43	
		113	1232	C-C4-S113-W113-D	1100 Before S-095-44	7.92	2.00	D		03 มิ.ย. 2016	7.60	7.30	15 มิ.ย. 2021	7.45	7.72	0.01	1087.85	
		113	1232	C-C4-S113-W113-W	1100 Before S-095-44	7.92	2.00	W TFM					10 มิ.ย. 2021		7.36	0.03	201.24	
		114	1243	C-C4-S113-W114-U	1100 Before S-095-42	7.92	2.00	U		03 มิ.ย. 2016	7.00	7.60	15 มิ.ย. 2021	7.05	7.53	0.05	112.00	
		114	1243	C-C4-S114-W114-D	1100 Before S-095-42	7.92	2.00	D		03 มิ.ย. 2016	7.50	7.40	15 มิ.ย. 2021	7.42	7.20	0.06	86.49	
		114	1243	C-C4-S114-W114-W	1100 Before S-095-42	7.92	2.00	W TFM					10 มิ.ย. 2021		7.26	0.03	167.56	
		115	1254	C-C4-S114-W115-U	1000 Before S-095-40	7.92	2.00	U		03 มิ.ย. 2016	7.50	7.39	15 มิ.ย. 2021	7.40	7.41	0.00	18.24	
		115	1254	C-C4-S115-W115-D	1000 Before S-095-40	7.92	2.00	D		03 มิ.ย. 2016	7.20	7.00	15 มิ.ย. 2021	7.72	7.00	0.03	166.33	
		115	1254	C-C4-S115-W115-W	1000 Before S-095-40	7.92	2.00	W TFM					10 มิ.ย. 2021		7.26	0.03	167.56	
C	C5	116	1265	C-C5-S115-W116-U	1200 Before S-095-38	7.92	2.00	U		05 มิ.ย. 2017	7.39	7.79	22 มิ.ย. 2022	7.39	7.79	0.00	5385.25	
		116	1265	C-C5-S116-W116-D	1200 Before S-095-38	7.92	2.00	D		05 มิ.ย. 2017	6.89	7.80	22 มิ.ย. 2022	6.89	7.70	0.00	4885.39	
		116	1265	C-C5-S116-W116-W	1200 Before S-095-38	7.92	2.00	W TFM					10 มิ.ย. 2021		6.30	0.08	55.80	
		117	1276	C-C5-S116-W117-U	1000 Before S-095-36	7.92	2.00	U		05 มิ.ย. 2017	7.49	7.09	22 มิ.ย. 2022	7.49	7.09	0.00	5085.33	
		117	1276	C-C5-S117-W117-D	1000 Before S-095-36	7.92	2.00	D		05 มิ.ย. 2017	7.50	7.29	22 มิ.ย. 2022	7.50	7.29	0.00	5285.28	
		117	1276	C-C5-S117-W117-W	1000 Before S-095-36	7.92	2.00	W TFM					10 มิ.ย. 2021		6.83	0.05	93.16	
		118	1287	C-C5-S117-W118-U	1000 Before S-095-34	7.92	2.00	U		05 มิ.ย. 2017	7.09	7.99	22 มิ.ย. 2022	7.09	7.95	0.00	5085.33	
		118	1287	C-C5-S118-W118-D	1000 Before S-095-34	7.92	2.00	D		05 มิ.ย. 2017	7.39	7.50	22 มิ.ย. 2022	7.39	7.50	0.00	5385.25	
		118	1287	C-C5-S118-W118-W	1000 Before S-095-34	7.92	2.00	W TFM					10 มิ.ย. 2021		7.26	0.03	167.56	
		119	1298	C-C5-S118-W119-U	1000 Before S-095-32	7.92	2.00	U		05 มิ.ย. 2017	7.09	7.80	22 มิ.ย. 2022	7.09	7.75	0.00	5085.33	
		119	1298	C-C5-S119-W119-D	1000 Before S-095-32	7.92	2.00	D		05 มิ.ย. 2017	7.49	7.60	22 มิ.ย. 2022	7.49	7.49	0.00	5485.22	
		119	1298	C-C5-S119-W119-W	1000 Before S-095-32	7.92	2.00	W TFM					10 มิ.ย. 2021		7.70	0.01	544.77	



				FLOWLINE THICKNESS REPORT													PS1/M INSPECTION TEAM	
Tag No.: S1-LKUCA -FSTN-6-CAA-P-CO					Total length (m): 2200			Installation date: 01 มิ.ย. 2000		Service life (yrs): 22.66								
Pipe size (in): 6					% Inspection: 20			1st Inspection date: 02 มิ.ย. 2020		6th Inspection date: 08 มิ.ย. 2015								
Flowline No.: CAA					No. of section (sections): 5			2nd Inspection date: 15 มิ.ย. 2021		7th Inspection date: 03 มิ.ย. 2016								
From-To: LKU-CA			FSTN		Length of section (m): 440			3rd Inspection date: 10 มิ.ย. 2021		8th Inspection date: 05 มิ.ย. 2017								
Process: P			Process		Length of subsection (m): 88			4th Inspection date: 22 ก.พ. 2022		9th Inspection date: 06 ส.ค. 2018								
Service: CO			Crude oil		Total spool (spools): 201			5th Inspection date: 22 มิ.ย. 2022		10th Inspection 06 มิ.ย. 2019								
THICKNESS MEASUREMENT RESULT																		
Section	Subsection	Weld Joint	Distance (m)	CML Name	Location Desc	Nominal Thickness (mm)	Retired Thickness (mm)	Up/Down/Weld	MFL	Previous Inspection Date	Previous Thickness (mm)		Last Inspection Date	Last Thickness (mm)		SCR (mm/yr)	RL (yrs)	Temporary Repair
											Top (0)	Bottom (180)		Top (0)	Bottom (180)			
		120	1309	C-C5-S119-W120-U	800 Before S-095-30	7.92	2.00	U		05 มิ.ย. 2017	7.59	7.70	22 มิ.ย. 2022	7.59	7.70	0.00	5585.20	
		120	1309	C-C5-S120-W120-D	800 Before S-095-30	7.92	2.00	D		05 มิ.ย. 2017	7.49	7.80	22 มิ.ย. 2022	7.49	7.80	0.00	5485.22	
		120	1309	C-C5-S120-W120-W	800 Before S-095-30	7.92	2.00	W TFM					10 มิ.ย. 2021		7.52	0.02	290.16	
		121	1320	C-C5-S120-W121-U	800 Before S-095-28	7.92	2.00	U		05 มิ.ย. 2017	7.40	7.40	22 มิ.ย. 2022	7.40	7.18	0.04	118.81	
		121	1320	C-C5-S121-W121-D	800 Before S-095-28	7.92	2.00	D		05 มิ.ย. 2017	7.40	6.99	22 มิ.ย. 2022	7.40	6.99	0.00	4985.36	
		121	1320	C-C5-S121-W121-W	800 Before S-095-28	7.92	2.00	W TFM					11 มิ.ย. 2021		7.87	0.00	2468.85	
		122	1331	C-C5-S121-W122-U	800 Before S-095-26	7.92	2.00	U		05 มิ.ย. 2017	7.39	7.70	22 มิ.ย. 2022	7.39	7.70	0.00	5385.25	
		122	1331	C-C5-S122-W122-D	800 Before S-095-26	7.92	2.00	D		05 มิ.ย. 2017	7.39	7.70	22 มิ.ย. 2022	7.39	7.70	0.00	5385.25	
		122	1331	C-C5-S122-W122-W	800 Before S-095-26	7.92	2.00	W TFM					11 มิ.ย. 2021		7.35	0.03	197.37	
D	D1	123	1342	D-D1-S122-W123-U	1000 Before S-095-24	7.92	2.00	U		06 ส.ค. 2018	7.40	7.39	22 มิ.ย. 2022	7.40	7.39	0.00	4874.62	
		123	1342	D-D1-S123-W123-D	1000 Before S-095-24	7.92	2.00	D		06 ส.ค. 2018	7.70	7.40	22 มิ.ย. 2022	7.70	7.40	0.01	488.37	
		123	1342	D-D1-S123-W123-W	1000 Before S-095-24	7.92	2.00	W TFM					11 มิ.ย. 2021		7.09	0.04	128.95	
		124	1353	D-D1-S123-W124-U	700 Before S-095-22	7.92	2.00	U		06 ส.ค. 2018	7.09	7.50	22 มิ.ย. 2022	7.09	7.50	0.00	4603.14	
		124	1353	D-D1-S124-W124-D	700 Before S-095-22	7.92	2.00	D		06 ส.ค. 2018	7.29	7.59	22 มิ.ย. 2022	7.29	7.45	0.00	4784.13	
		124	1353	D-D1-S124-W124-W	700 Before S-095-22	7.92	2.00	W TFM					22 ก.พ. 2022		7.71	0.01	590.85	
		125	1364	D-D1-S124-W125-U	800 Before S-095-20	7.92	2.00	U		06 ส.ค. 2018	7.39	7.40	22 มิ.ย. 2022	7.39	7.40	0.00	4874.62	
		125	1364	D-D1-S125-W125-D	800 Before S-095-20	7.92	2.00	D		06 ส.ค. 2018	7.70	7.19	22 มิ.ย. 2022	7.70	7.19	0.00	4693.63	
		125	1364	D-D1-S125-W125-W	800 Before S-095-20	7.92	2.00	W TFM					22 ก.พ. 2022		7.35	0.03	203.95	
		126	1375	D-D1-S125-W126-U	1500 After S-095-19	7.92	2.00	U		06 ส.ค. 2018	7.29	7.39	22 มิ.ย. 2022	7.29	7.39	0.00	4784.13	
		126	1375	D-D1-S126-W126-D	1500 After S-095-20	7.92	2.00	D		06 ส.ค. 2018	7.29	7.29	22 มิ.ย. 2022	7.29	7.29	0.00	4784.13	
		126	1375	D-D1-S126-W126-W	1500 After S-095-21	7.92	2.00	W TFM					22 ก.พ. 2022		7.71	0.01	590.85	

				FLOWLINE THICKNESS REPORT													PS1/M INSPECTION TEAM				
Tag No.:				S1-LKUCA -FSTN-6-CAA-P-CO				Total length (m):				2200		Installation date:		01 มิ.ย. 2000		Service life (yrs):		22.66	
Pipe size (in):				6				% Inspection:				20		1st Inspection date:		02 มิ.ย. 2020		6th Inspection date:		08 มิ.ย. 2015	
Flowline No.:				CAA				No. of section (sections):				5		2nd Inspection date:		15 มิ.ย. 2021		7th Inspection date:		03 มิ.ย. 2016	
From-To:				LKU-CA		FSTN		Length of section (m):				440		3rd Inspection date:		10 มิ.ย. 2021		8th Inspection date:		05 มิ.ย. 2017	
Process:				P		Process		Length of subsection (m):				88		4th Inspection date:		22 ก.พ. 2022		9th Inspection date:		06 ส.ค. 2018	
Service:				CO		Crude oil		Total spool (spools):				201		5th Inspection date:		22 มิ.ย. 2022		10th Inspection		06 มิ.ย. 2019	
THICKNESS MEASUREMENT RESULT																					
Section	Subsection	Weld Joint	Distance (m)	CML Name	Location Desc	Nominal Thickness (mm)	Retired Thickness (mm)	Up/Down/Weld	MFL	Previous Inspection Date	Previous Thickness (mm)		Last Inspection Date	Last Thickness (mm)		SCR (mm/yr)	RL (yrs)	Temporary Repair			
											Top (0)	Bottom (180)		Top (0)	Bottom (180)						
		127	1386	D-D1-S126-W127-U	700 Before S-095-16	7.92	2.00	U		06 ส.ค. 2018	8.00	6.99	22 มิ.ย. 2022	7.84	6.99	0.00	4512.65				
		127	1386	D-D1-S127-W127-D	700 Before S-095-16	7.92	2.00	D		06 ส.ค. 2018	7.59	7.60	22 มิ.ย. 2022	7.59	7.60	0.00	5055.60				
		127	1386	D-D1-S127-W127-W	700 Before S-095-16	7.92	2.00	W TFM					22 ก.พ. 2022		7.35	0.03	203.95				
		128	1397	D-D1-S127-W128-U	700 Before S-095-14	7.92	2.00	U		06 ส.ค. 2018	7.50	7.19	22 มิ.ย. 2022	7.38	7.09	0.03	197.34				
		128	1397	D-D1-S128-W128-D	700 Before S-095-14	7.92	2.00	D		06 ส.ค. 2018	7.20	7.80	22 มิ.ย. 2022	7.20	7.64	0.01	470.27				
		128	1397	D-D1-S128-W128-W	700 Before S-095-14	7.92	2.00	W TFM					22 ก.พ. 2022		7.18	0.03	152.10				
		129	1408	D-D1-S128-W129-U	3000 After S-095-14	7.92	2.00	U		06 ส.ค. 2018	7.19	7.59	22 มิ.ย. 2022	7.19	7.59	0.00	4693.63				
		129	1408	D-D1-S129-W129-D	3000 After S-095-14	7.92	2.00	D		06 ส.ค. 2018	7.49	7.69	22 มิ.ย. 2022	7.49	7.69	0.00	4965.11				
		129	1408	D-D1-S129-W129-W	3000 After S-095-14	7.92	2.00	W TFM					22 ก.พ. 2022		7.44	0.02	246.27				
D	D2	130	1419	D-D2-S129-W130-U	1700 Before S-095-12	7.92	2.00	U		06 มิ.ย. 2019	7.09	7.59	22 มิ.ย. 2022	7.09	7.59	0.00	4080.53				
		130	1419	D-D2-S130-W130-D	1700 Before S-095-12	7.92	2.00	D		06 มิ.ย. 2019	7.30	7.29	22 มิ.ย. 2022	7.30	7.29	0.00	4240.97				
		130	1419	D-D2-S130-W130-W	1700 Before S-095-12	7.92	2.00	W TFM					22 ก.พ. 2022		7.44	0.02	246.27				
		131	1430	D-D2-S130-W131-U	2000 After S-095-10	7.92	2.00	U		06 มิ.ย. 2019	7.59	7.30	22 มิ.ย. 2022	7.59	7.30	0.02	212.45				
		131	1430	D-D2-S131-W131-D	2000 After S-095-10	7.92	2.00	D		06 มิ.ย. 2019	7.09	7.29	22 มิ.ย. 2022	7.09	7.29	0.00	4080.53				
		131	1430	D-D2-S131-W131-W	2000 After S-095-10	7.92	2.00	W TFM					22 ก.พ. 2022		7.35	0.03	203.95				
		132	1441	D-D2-S131-W132-U	2200 After S-095-08	7.92	2.00	U		06 มิ.ย. 2019	7.49	6.99	22 มิ.ย. 2022	7.49	6.99	0.00	4000.31				
		132	1441	D-D2-S132-W132-D	2200 After S-095-08	7.92	2.00	D		06 มิ.ย. 2019	7.19	7.59	22 มิ.ย. 2022	7.19	7.59	0.00	4160.75				
		132	1441	D-D2-S132-W132-W	2200 After S-095-08	7.92	2.00	W TFM					22 ก.พ. 2022		7.18	0.03	152.10				
		133	1452	D-D2-S132-W133-U	2500 After S-095-06	7.92	2.00	U		06 มิ.ย. 2019	7.49	7.29	22 มิ.ย. 2022	7.49	7.29	0.00	4240.97				
		133	1452	D-D2-S133-W133-D	2500 After S-095-06	7.92	2.00	D		06 มิ.ย. 2019	7.70	7.29	22 มิ.ย. 2022	7.70	7.29	0.00	4240.97				
		133	1452	D-D2-S133-W133-W	2500 After S-095-06	7.92	2.00	W TFM					22 ก.พ. 2022		7.71	0.01	590.85				



	<h1 style="text-align: center;">FLOWLINE THICKNESS REPORT</h1>	<p style="text-align: center;">PS1/M INSPECTION TEAM</p>
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Tag No.:	S1-LKUCA -FSTN-6-CAA-P-CO		Total length (m):	2200	Installation date:	01 มี.ย. 2000	Service life (yrs):	22.66
Pipe size (in):	6		% Inspection:	20	1st Inspection date:	02 มี.ย. 2020	6th Inspection date:	08 มี.ย. 2015
Flowline No.:	CAA		No. of section (sections):	5	2nd Inspection date:	15 มี.ย. 2021	7th Inspection date:	03 มี.ย. 2016
From-To:	LKU-CA	FSTN	Length of section (m):	440	3rd Inspection date:	10 มี.ย. 2021	8th Inspection date:	05 มี.ย. 2017
Process:	P	Process	Length of subsection (m):	88	4th Inspection date:	22 ก.พ. 2022	9th Inspection date:	06 ส.ค. 2018
Service:	CO	Crude oil	Total spool (spools):	201	5th Inspection date:	22 มี.ย. 2022	10th Inspection	06 มี.ย. 2019

## THICKNESS MEASUREMENT RESULT

[illegible]



	<h1>FLOWLINE THICKNESS REPORT</h1>	PS1/M INSPECTION TEAM
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Tag No.:	S1-LKUCA -FSTN-6-CAA-P-CO		Total length (m):	2200	Installation date:	01 มี.ย. 2000	Service life (yrs):	22.66
Pipe size (in):	6		% Inspection:	20	1st Inspection date:	02 มี.ย. 2020	6th Inspection date:	08 มี.ย. 2015
Flowline No.:	CAA		No. of section (sections):	5	2nd Inspection date:	15 มี.ย. 2021	7th Inspection date:	03 มี.ย. 2016
From-To:	LKU-CA	FSTN	Length of section (m):	440	3rd Inspection date:	10 มี.ย. 2021	8th Inspection date:	05 มี.ย. 2017
Process:	P	Process	Length of subsection (m):	88	4th Inspection date:	22 ก.พ. 2022	9th Inspection date:	06 ส.ค. 2018
Service:	CO	Crude oil	Total spool (spools):	201	5th Inspection date:	22 มี.ย. 2022	10th Inspection	06 มี.ย. 2019

## THICKNESS MEASUREMENT RESULT

[illegible]





	<h1>FLOWLINE THICKNESS REPORT</h1>	PS1/M INSPECTION TEAM
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Tag No.:	S1-LKUCA -FSTN-6-CAA-P-CO		Total length (m):	2200	Installation date:	01 ឆ.ប. 2000	Service life (yrs):	22.66
Pipe size (in):	6		% Inspection:	20	1st Inspection date:	02 ឆ.ប. 2020	6th Inspection date:	08 ឆ.ប. 2015
Flowline No.:	CAA		No. of section (sections):	5	2nd Inspection date:	15 ឆ.ប. 2021	7th Inspection date:	03 ឆ.ប. 2016
From-To:	LKU-CA	FSTN	Length of section (m):	440	3rd Inspection date:	10 ឆ.ប. 2021	8th Inspection date:	05 ឆ.ប. 2017
Process:	P	Process	Length of subsection (m):	88	4th Inspection date:	22 ក.វ. 2022	9th Inspection date:	06 ស.គ. 2018
Service:	CO	Crude oil	Total spool (spools):	201	5th Inspection date:	22 ឆ.ប. 2022	10th Inspection	06 ឆ.ប. 2019

## THICKNESS MEASUREMENT RESULT

[illegible]



	<h1>FLOWLINE THICKNESS REPORT</h1>	PS1/M INSPECTION TEAM
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Tag No.:	S1-LKUCA -FSTN-6-CAA-P-CO		Total length (m):	2200	Installation date:	01 ឆ.ប. 2000	Service life (yrs):	22.66
Pipe size (in):	6		% Inspection:	20	1st Inspection date:	02 ឆ.ប. 2020	6th Inspection date:	08 ឆ.ប. 2015
Flowline No.:	CAA		No. of section (sections):	5	2nd Inspection date:	15 ឆ.ប. 2021	7th Inspection date:	03 ឆ.ប. 2016
From-To:	LKU-CA	FSTN	Length of section (m):	440	3rd Inspection date:	10 ឆ.ប. 2021	8th Inspection date:	05 ឆ.ប. 2017
Process:	P	Process	Length of subsection (m):	88	4th Inspection date:	22 ក.វ. 2022	9th Inspection date:	06 ស.គ. 2018
Service:	CO	Crude oil	Total spool (spools):	201	5th Inspection date:	22 ឆ.ប. 2022	10th Inspection	06 ឆ.ប. 2019

## THICKNESS MEASUREMENT RESULT

[illegible]



	<h1>FLOWLINE THICKNESS REPORT</h1>	PS1/M INSPECTION TEAM
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Tag No.:	S1-LKUCA -FSTN-6-CAA-P-CO		Total length (m):	2200	Installation date:	01 ឆ.ប. 2000	Service life (yrs):	22.66
Pipe size (in):	6		% Inspection:	20	1st Inspection date:	02 ឆ.ប. 2020	6th Inspection date:	08 ឆ.ប. 2015
Flowline No.:	CAA		No. of section (sections):	5	2nd Inspection date:	15 ឆ.ប. 2021	7th Inspection date:	03 ឆ.ប. 2016
From-To:	LKU-CA	FSTN	Length of section (m):	440	3rd Inspection date:	10 ឆ.ប. 2021	8th Inspection date:	05 ឆ.ប. 2017
Process:	P	Process	Length of subsection (m):	88	4th Inspection date:	22 ក.វ. 2022	9th Inspection date:	06 ស.គ. 2018
Service:	CO	Crude oil	Total spool (spools):	201	5th Inspection date:	22 ឆ.ប. 2022	10th Inspection	06 ឆ.ប. 2019

## THICKNESS MEASUREMENT RESULT

[illegible]





	<h1 style="text-align: center;">FLOWLINE THICKNESS REPORT</h1>	<p style="text-align: center;">PS1/M INSPECTION TEAM</p>
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Tag No.:	S1-LKUCA -FSTN-6-CAA-P-CO		Total length (m):	2200	Installation date:	01 มี.ย. 2000	Service life (yrs):	22.66
Pipe size (in):	6		% Inspection:	20	1st Inspection date:	02 มี.ย. 2020	6th Inspection date:	08 มี.ย. 2015
Flowline No.:	CAA		No. of section (sections):	5	2nd Inspection date:	15 มี.ย. 2021	7th Inspection date:	03 มี.ย. 2016
From-To:	LKU-CA	FSTN	Length of section (m):	440	3rd Inspection date:	10 มี.ย. 2021	8th Inspection date:	05 มี.ย. 2017
Process:	P	Process	Length of subsection (m):	88	4th Inspection date:	22 ก.พ. 2022	9th Inspection date:	06 ส.ค. 2018
Service:	CO	Crude oil	Total spool (spools):	201	5th Inspection date:	22 มี.ย. 2022	10th Inspection	06 มี.ย. 2019

## THICKNESS MEASUREMENT RESULT

[illegible]



Tag No.:	S1-LKUCA -FSTN-6-CAA-P-CO		Total length (m):	2200	Installation date:	01 ឆ.ប. 2000	Service life (yrs):	22.66
Pipe size (in):	6		% Inspection:	20	1st Inspection date:	02 ឆ.ប. 2020	6th Inspection date:	08 ឆ.ប. 2015
Flowline No.:	CAA		No. of section (sections):	5	2nd Inspection date:	15 ឆ.ប. 2021	7th Inspection date:	03 ឆ.ប. 2016
From-To:	LKU-CA	FSTN	Length of section (m):	440	3rd Inspection date:	10 ឆ.ប. 2021	8th Inspection date:	05 ឆ.ប. 2017
Process:	P	Process	Length of subsection (m):	88	4th Inspection date:	22 ក.វ. 2022	9th Inspection date:	06 ស.គ. 2018
Service:	CO	Crude oil	Total spool (spools):	201	5th Inspection date:	22 ឆ.ប. 2022	10th Inspection	06 ឆ.ប. 2019

## THICKNESS MEASUREMENT RESULT

[illegible]



	<h1>FLOWLINE THICKNESS REPORT</h1>	PS1/M INSPECTION TEAM
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Tag No.:	S1-LKUCA -FSTN-6-CAA-P-CO		Total length (m):	2200	Installation date:	01 ឆ.ប. 2000	Service life (yrs):	22.66
Pipe size (in):	6		% Inspection:	20	1st Inspection date:	02 ឆ.ប. 2020	6th Inspection date:	08 ឆ.ប. 2015
Flowline No.:	CAA		No. of section (sections):	5	2nd Inspection date:	15 ឆ.ប. 2021	7th Inspection date:	03 ឆ.ប. 2016
From-To:	LKU-CA	FSTN	Length of section (m):	440	3rd Inspection date:	10 ឆ.ប. 2021	8th Inspection date:	05 ឆ.ប. 2017
Process:	P	Process	Length of subsection (m):	88	4th Inspection date:	22 ក.វ. 2022	9th Inspection date:	06 ឆ.គ. 2018
Service:	CO	Crude oil	Total spool (spools):	201	5th Inspection date:	22 ឆ.ប. 2022	10th Inspection	06 ឆ.ប. 2019

## THICKNESS MEASUREMENT RESULT

[illegible]

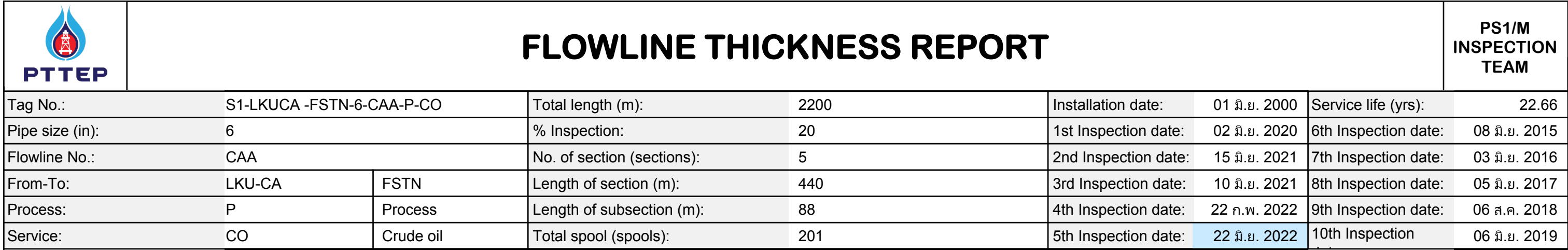


	<h1 style="text-align: center;">FLOWLINE THICKNESS REPORT</h1>	<p style="text-align: center;">PS1/M INSPECTION TEAM</p>
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Tag No.:	S1-LKUCA -FSTN-6-CAA-P-CO		Total length (m):	2200	Installation date:	01 มี.ย. 2000	Service life (yrs):	22.66
Pipe size (in):	6		% Inspection:	20	1st Inspection date:	02 มี.ย. 2020	6th Inspection date:	08 มี.ย. 2015
Flowline No.:	CAA		No. of section (sections):	5	2nd Inspection date:	15 มี.ย. 2021	7th Inspection date:	03 มี.ย. 2016
From-To:	LKU-CA	FSTN	Length of section (m):	440	3rd Inspection date:	10 มี.ย. 2021	8th Inspection date:	05 มี.ย. 2017
Process:	P	Process	Length of subsection (m):	88	4th Inspection date:	22 ก.พ. 2022	9th Inspection date:	06 ส.ค. 2018
Service:	CO	Crude oil	Total spool (spools):	201	5th Inspection date:	22 มี.ย. 2022	10th Inspection	06 มี.ย. 2019

## THICKNESS MEASUREMENT RESULT

[illegible]

[illegible]



	<div>MINIMUM REMAINING THICKNESS</div>							<div>PS1/M INSPECTION TEAM</div>
Inspection date	Section	CML Name	Previous Min thickness (mm)	Min thickness (mm)	ST_CR (mm/yr)	LT_CR (mm/yr)	RL (yrs)	Retirement date
22 มิ.ย. 2022	A1	A-A1-S12-W13-U	6.69	6.69	0.00	0.00	4241.17	31 ธ.ค. 2099
22 มิ.ย. 2022	B1	B-B1-S45-W46-U	6.69	6.71	-0.01	-0.00	15.91	16 พ.ค. 2038
22 มิ.ย. 2022	C1	C-C1-S86-W86-D	6.49	6.49	0.00	0.00	4060.18	31 ธ.ค. 2099
22 มิ.ย. 2022	D1	D-D1-S126-W127-U	6.99	6.99	0.00	0.00	4512.65	31 ธ.ค. 2099
22 มิ.ย. 2022	E1	E-E1-S160-W161-U	6.99	6.99	0.00	0.00	4512.65	31 ธ.ค. 2099
18 ก.พ. 2022	A2	A-A2-S19-W19-W		5.32	0.12	0.12	27.72	01 พ.ย. 2049
22 มิ.ย. 2022	B2	B-B2-S56-W57-U	6.39	6.39	0.00	0.00	3519.00	31 ธ.ค. 2099
22 มิ.ย. 2022	C2	C-C2-S97-W98-U	6.99	6.99	0.00	0.00	4000.31	31 ธ.ค. 2099
22 มิ.ย. 2022	D2	D-D2-S131-W132-U	6.99	6.99	0.00	0.00	4000.31	31 ธ.ค. 2099
22 มิ.ย. 2022	E2	E-E2-S166-W167-U	6.79	6.79	0.00	0.00	3839.87	31 ธ.ค. 2099
02 มิ.ย. 2020	A3	A-A3-S25-W25-D	6.90	6.90	0.00	0.02	243.90	31 ธ.ค. 2099
02 มิ.ย. 2020	B3	B-B3-S68-W68-D	6.90	6.20	0.14	0.00	29.91	23 เม.ย. 2050
02 มิ.ย. 2020	C3	C-C3-S106-W106-D	6.69	6.60	0.02	0.01	254.81	31 ธ.ค. 2099
02 มิ.ย. 2020	D3	D-D3-S137-W138-U	6.70	6.70	0.00	0.07	66.84	19 มี.ค. 2087
02 มิ.ย. 2020	E3	E-E3-S172-W173-U	6.69	6.70	-0.00	0.00	15.88	13 เม.ย. 2036
15 มิ.ย. 2021	A4	A-A4-S33-W34-U	7.40	6.46	0.19	0.15	23.87	24 เม.ย. 2045
15 มิ.ย. 2021	B4	B-B4-S71-W72-U	7.10	7.01	0.02	0.03	172.41	31 ธ.ค. 2099
15 มิ.ย. 2021	C4	C-C4-S110-W111-U	6.90	6.81	0.02	0.03	165.52	31 ธ.ค. 2099
15 มิ.ย. 2021	D4	D-D4-S143-W144-U	7.10	7.14	-0.01	0.02	320.61	31 ธ.ค. 2099
15 มิ.ย. 2021	E4	E-E4-S177-W177-D	7.00	6.97	0.01	0.04	115.35	31 ธ.ค. 2099
22 มิ.ย. 2022	A5	A-A5-S35-W36-U	6.69	6.63	0.01	0.01	389.36	31 ธ.ค. 2099
10 มิ.ย. 2021	B5	B-B5-S82-W82-W		6.43	0.07	0.07	62.50	25 พ.ย. 2083
10 มิ.ย. 2021	C5	C-C5-S116-W116-W		6.30	0.08	0.08	55.80	15 มี.ค. 2077
22 มิ.ย. 2022	D5	D-D5-S154-W154-D	7.00	7.00	0.00	0.02	249.77	31 ธ.ค. 2099
22 มิ.ย. 2022	E5	E-E5-S189-W190-U	7.00	7.00	0.00	0.01	499.54	31 ธ.ค. 2099

	<div>MINIMUM REMAINING LIFE</div>							<div>PS1/M INSPECTION TEAM</div>
Inspection date	Section	CML Name	Previous Min thickness (mm)	Min thickness (mm)	ST_CR (mm/yr)	LT_CR (mm/yr)	RL (yrs)	Retirement date
22 มิ.ย. 2022	A1	A-A1-S2-W2-D		8.23	-0.01	-0.01	21.05	04 ก.ค. 2043
22 มิ.ย. 2022	B1	B-B1-S45-W46-U	6.69	6.71	-0.01	-0.00	15.91	16 พ.ค. 2038
22 มิ.ย. 2022	C1	C-C1-S84-W85-U	10.40	9.30	0.28	0.14	25.73	09 มี.ค. 2048
11 มิ.ย. 2021	D1	D-D1-S123-W123-W		7.09	0.04	0.04	128.95	31 ธ.ค. 2099
22 มิ.ย. 2022	E1	E-E1-S159-W160-U	7.59	7.38	0.05	0.02	99.33	31 ธ.ค. 2099
18 ก.พ. 2022	A2	A-A2-S19-W19-W		5.32	0.12	0.12	27.72	01 พ.ย. 2049
22 มิ.ย. 2022	B2	B-B2-S59-W59-D	9.79	9.27	0.17	0.07	42.57	06 ม.ค. 2065
18 ก.พ. 2022	C2	C-C2-S97-W97-W	7.26	7.44	-0.26	-0.26	18.38	30 มิ.ย. 2040
27 ก.พ. 2022	D2	D-D2-S135-W135-W		7.09	0.04	0.04	133.33	31 ธ.ค. 2099
22 มิ.ย. 2022	E2	E-E2-S162-W163-U	7.40	7.40	0.00	0.00	18.24	13 ก.ย. 2040
02 มิ.ย. 2020	A3	A-A3-S22-W22-D	7.19	7.20	-0.00	0.00	17.57	21 ธ.ค. 2037
02 มิ.ย. 2020	B3	B-B3-S66-W67-U	6.69	6.70	-0.00	0.00	15.88	13 เม.ย. 2036
02 มิ.ย. 2020	C3	C-C3-S103-W103-D	6.99	7.00	-0.00	0.00	16.89	18 เม.ย. 2037
02 มิ.ย. 2020	D3	D-D3-S136-W137-U	6.79	6.80	-0.00	0.00	16.21	15 ส.ค. 2036
02 มิ.ย. 2020	E3	E-E3-S172-W173-U	6.69	6.70	-0.00	0.00	15.88	13 เม.ย. 2036
15 มิ.ย. 2021	A4	A-A4-S33-W34-U	7.40	6.46	0.19	0.15	23.87	24 เม.ย. 2045
15 มิ.ย. 2021	B4	B-B4-S70-W71-U	7.40	7.13	0.05	0.09	58.85	05 เม.ย. 2080
15 มิ.ย. 2021	C4	C-C4-S114-W115-U	7.39	7.40	-0.00	0.00	18.24	07 ก.ย. 2039
15 มิ.ย. 2021	D4	D-D4-S142-W143-U	7.30	7.62	-0.06	-0.00	18.99	04 มิ.ย. 2040
15 มิ.ย. 2021	E4	E-E4-S175-W176-U	7.30	7.61	-0.06	-0.00	18.95	23 พ.ค. 2040
22 มิ.ย. 2022	A5	A-A5-S37-W37-D	6.89	6.91	-0.00	-0.00	16.59	17 ม.ค. 2039
10 มิ.ย. 2021	B5	B-B5-S82-W82-W		6.43	0.07	0.07	62.50	25 พ.ย. 2083
10 มิ.ย. 2021	C5	C-C5-S116-W116-W		6.30	0.08	0.08	55.80	15 มี.ค. 2077
22 มิ.ย. 2022	D5	D-D5-S153-W154-U	7.20	7.20	0.00	0.06	86.59	31 ธ.ค. 2099
22 มิ.ย. 2022	E5	E-E5-S200-W200-D		10.05	-0.10	-0.10	27.20	26 ส.ค. 2049





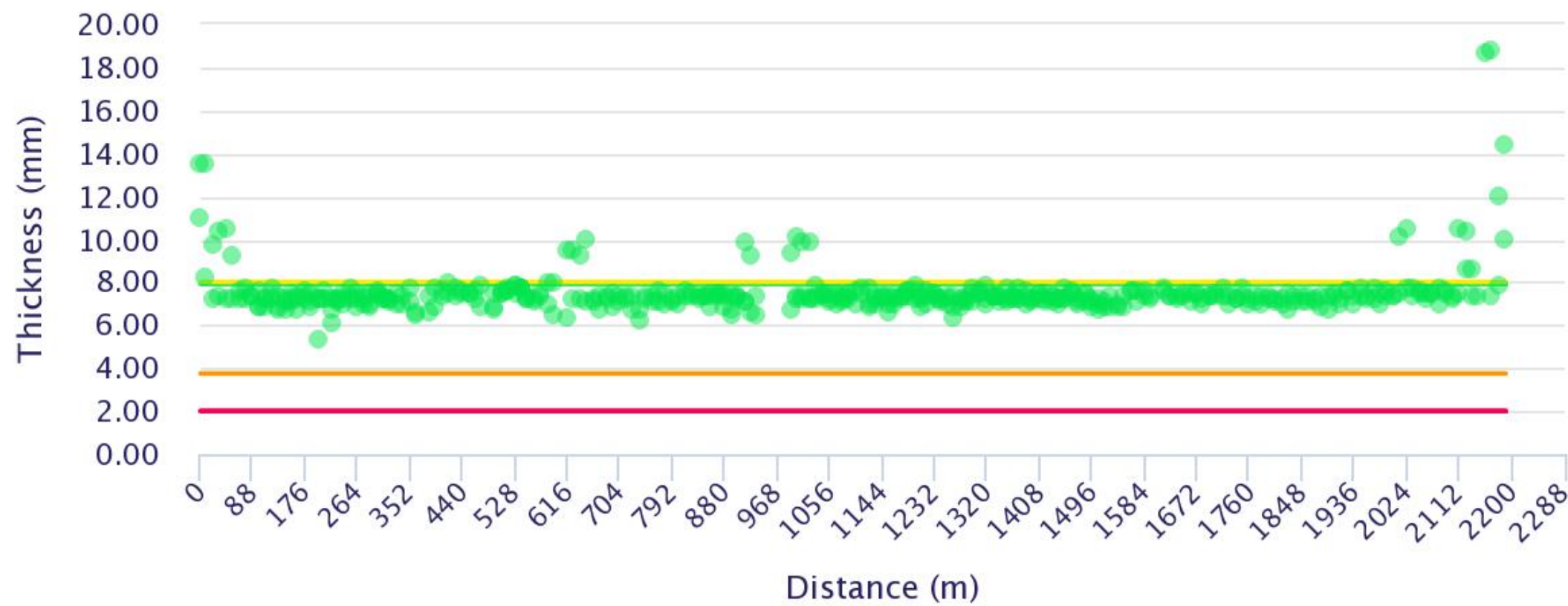
# FLOWLINE THICKNESS REPORT

PS1/M  
INSPECTION  
TEAM

Tag No.:	S1-LKUCA -FSTN-6-CAA-P-CO		Total length (m):	2200	Installation date:	01 มิ.ย. 2000
Pipe size (in):	6		% Inspection:	20	1st Inspection date:	02 มิ.ย. 2020
Flowline No.:	CAA		No. of section (sections):	5	2nd Inspection date:	15 มิ.ย. 2021
From-To:	LKU-CA	FSTN	Length of section (m):	440	3rd Inspection date:	10 มิ.ย. 2021
Process:	P	Process	Length of subsection (m):	88	4th Inspection date:	22 ก.พ. 2022
Service:	CO	Crude oil	Total spool (spools):	201	5th Inspection date::	22 มิ.ย. 2022








## THICKNESS MEASUREMENT RESULT

Distribution of Thickness along CAA



tnom      tdesign      tretired\_S1      topert      0.75topert  
● Normal      ● Medium      ● High      ● Extreme



		<h1>FLOWLINE VISUAL INSPECTION REPORT</h1>				PS1/M INSPECTION TEAM	
Inspection date: 22 มิ.ย. 2022		Damage mechanism: Ext-No anomaly found		Severity:		GOOD	
Line No: CAA		Main component : Pipe		Reporting by :		Manop N.	
Anomaly point:		WO number : 500358034		Reporting date :		04-07-2022 8:43:48 AM	
<div></div>							
<b>Finding</b> -By visual inspection, this flowline still in good condition. Photo 1. Section B2 Under block culvert from S-166-01 to S-106-47 (W.56 Wrapping) can't MFL inspection.				<b>Recommendation</b> - Plan to extend for flowline under block culvert inspection shall be done at least once a year for general visual inspection or other NDE Technique should be executed for internal corrosion detection for pipe & weld.			
Inspection date: 22 มิ.ย. 2022		Damage mechanism: Ext-No anomaly found		Severity:		GOOD	
Line No: CAA		Main component : Pipe		Reporting by :		Manop N.	
Anomaly point:		WO number : 500358034		Reporting date :		04-07-2022 8:43:49 AM	
<div></div>							
<b>Finding</b> -By visual inspection, this flowline still in good condition. Photo 2. Section D1 Under block culvert from S-095-19 to S-095-16 can't MFL inspection.				<b>Recommendation</b> - Plan to extend for flowline under block culvert inspection shall be done at least once a year for general visual inspection or other NDE Technique should be executed for internal corrosion detection for pipe & weld.			

Inspected by:	Manop N.	Date:	
API Inspector reviewed by:	Jirawat C.	Date:	11 ก.ค. 2022
PTTEP Leader reviewed:	Apichat P.	Date:	24 ก.ค. 2022

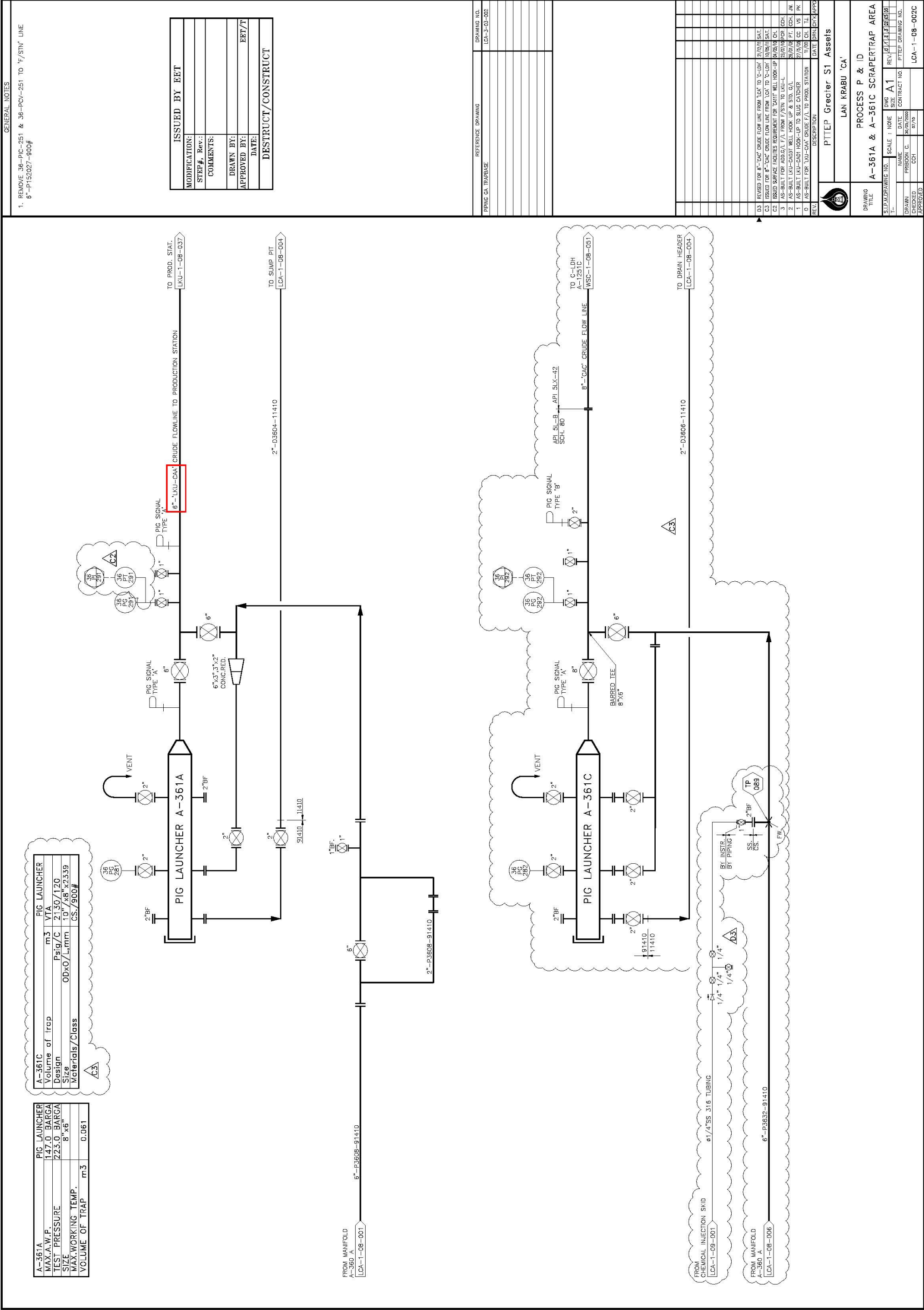




FLOWLINE P&ID

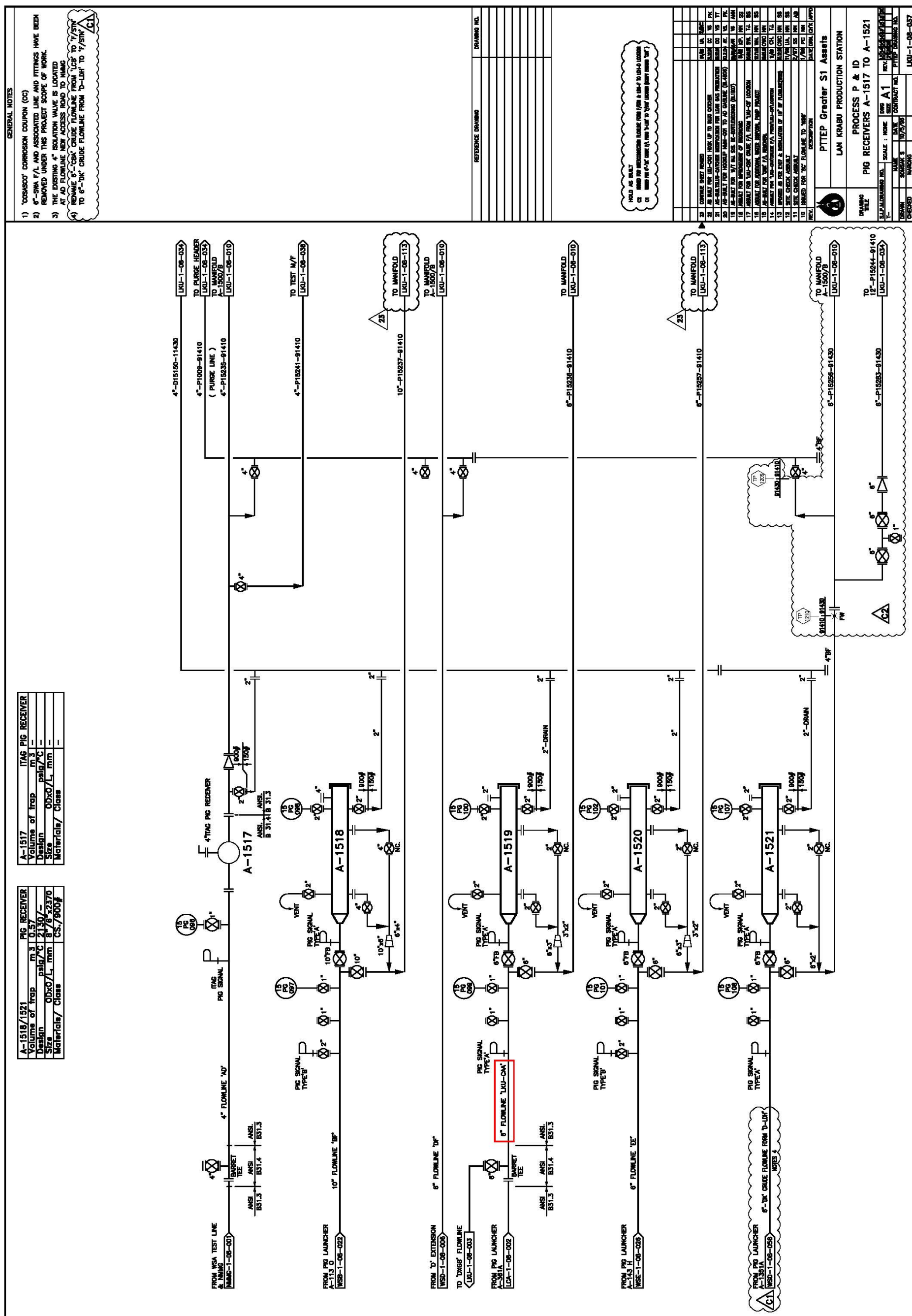
PS1/M  
INSPECTION  
TEAM

P&ID DRAWING



Inspected by:	LKU Inspection Admin	Date:	10 ก.ย. 2020
API Inspector reviewed by:	Jirawat C.	Date:	11 ก.ค. 2022
PTTEP Leader reviewed:	Apichat P.	Date:	24 ก.ค. 2022

## P&ID DRAWING



Inspected by:	LKU Inspection Admin	Date:	10 ก.ย. 2020
API Inspector reviewed by:	Jirawat C.	Date:	11 ก.ค. 2022
PTTEP Leader reviewed:	Apichat P.	Date:	24 ก.ค. 2022