

ภาคผนวก ข

เอกสารประกอบการปฏิบัติตาม
มาตรการป้องกันและแก้ไขผลกระทบสิ่งแวดล้อม

ภาคผนวก ข.1

เอกสารรับรองระบบการจัดการสิ่งแวดล้อม (ISO 14001)
และระบบการจัดการด้านอาชีวอนามัย
และความปลอดภัย (ISO 45001)

Certificate TH03/2684

The management system of

Star Petroleum Refining Public Company Limited (SPRC)

No. 1, I-3B Road, Map Ta Phut, Muang Rayong, Rayong 21150, Thailand

has been assessed and certified as meeting the requirements of

ISO 9001:2015

For the following activities

Operation of Crude Oil Refining Process and Manufacture of Asphalt Cement.



This certificate is valid from 16 January 2022 until 16 January 2025 and remains valid subject to satisfactory surveillance audits.

Issue 10. Certified since 07 November 2003.

Authorised by



SGS United Kingdom Ltd.

Rossmore Business Park, Ellesmere Port, Cheshire, CH65 3EN, UK

T +44 (0)151 350-6666 - www.sgs.com



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Certificate TH04/2685

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Star Petroleum Refining Public Company Limited (SPRC)

No. 1, I-3B Road, Map Ta Phut, Muang Rayong, Rayong 21150, Thailand

has been assessed and certified as meeting the requirements of

ISO 9001:2015

For the following activities

Operation of Crude Oil Refining Process and Manufacture of Asphalt Cement.



This certificate is valid from 16 January 2022 until 16 January 2025 and remains valid subject to satisfactory surveillance audits.

Issue 10. Certified since 16 September 2004.

Authorised by



SGS (Thailand) Ltd.

100 Nanglinchee Road Chongnonsee Yannawa, Bangkok 10120 Thailand

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Certificate TH07/2686

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The management system of

Star Petroleum Refining Public Company Limited (SPRC)

No. 1, I-3B Road, Map Ta Phut, Muang Rayong,
Rayong 21150, Thailand



has been assessed and certified as meeting the requirements of

ISO 14001:2015

For the following activities

**Operation of Crude Oil Refining Process and
Manufacture of Asphalt Cement.**

This certificate is valid from 16 January 2022 until 16 January 2025 and
remains valid subject to satisfactory surveillance audits.
Recertification audit due a minimum of 60 days before the expiration date.
Issue 8. Certified since 16 January 2007



Authorised by



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Certificate TH04/2687



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Star Petroleum Refining Public Company Limited (SPRC)

No. 1, I-3B Road, Map Ta Phut, Muang Rayong,
Rayong 21150, Thailand



has been assessed and certified as meeting the requirements of

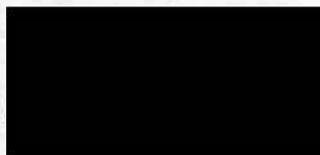
ISO 14001:2015

For the following activities

**Operation of Crude Oil Refining Process and
Manufacture of Asphalt Cement.**

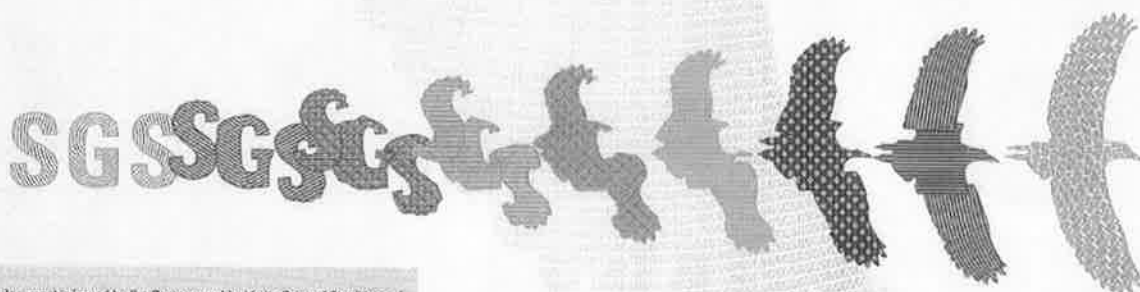
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Re certification audit due before 6 November 2024
Issue 10. Certified since 16 January 2007

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Certificate TH19/11752

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No. 1, I-3B Road, Map Ta Phut, Muang Rayong, Rayong 21150, Thailand

has been assessed and certified as meeting the requirements of
ISO 45001:2018

For the following activities

Operation of Crude Oil Refining Process and Manufacture of Asphalt Cement.



This certificate is valid from 14 January 2022 until 13 January 2025 and remains valid subject to satisfactory surveillance audits.

Issue 3, Certified since 14 January 2019.

Authorised by



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ภาคผนวก ข.2

โปรแกรมการจัดการด้านสิ่งแวดล้อม อาชีวอนามัย และความปลอดภัย (Environmental, Health and Safety Management Programmes)

2022 Environmental Objectives, Targets & Management Programs

Significant Aspect	Objective	Target	Management Program	Responsibility	Benefit / Cost Incurred	Completion Target Date (Start-Finish)	Status as of Q4
1. Legal & Other Requirement	Get effective and practical legal requirement	Provide advocacy	1. Continue to advocate/follow up draft legal: <ul style="list-style-type: none"> PCD Benzene fence line monitoring, DIW VOC Control at tank, flare and shut down & TA 	QS/21	Proactive comply and advocacy	Q1-Q4	Done, PCD Benzene fence line has no progress. DIW VOC Control regulation enacted in Government Gazette on 2 Nov 2022, effective on 2 May 2023. Under communication and preparation with relevant dept.
	Comply with MOI Notification regarding the Requirement to install Continuous Emission Monitoring system (CEMs) for reporting air emission B.E. 2565	Complete installation CEMs and report as per legal timeline	2. Review if required additional CEMs installation at any unit.	QS/21 & AS/242 (Project Manager)		Q2-Q4	Regulation effective on 10 Jun 2023. Raised up project TE-6236 and kick off meeting on 20 Jul 2022. Project to be continued in year 2023.
2. SPM Oil spill Post incident and recovery	Improve mitigation and resume reliability of SPM operations.	Get Approval for SPM Recovery.	3. Revisit EIA marine terminal project <ul style="list-style-type: none"> Review SPM mitigation Seek improvement and study EIA to be support SPM recovery 	QS/22		Q'4'22-Q1'23	In progress, under report preparation

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Significant Aspect	Objective	Target	Management Program	Responsibility	Benefit / Cost Incurred	Completion Target Date (Start-Finish)	Status as of Q4
	Provide Environmental impact assessment and restoration plan post SPM oil spill incident		4. Develop environmental impact assessment study project for further restoration plan	QS/21		Q1'22-Q'24	<ul style="list-style-type: none"> Completed Environmental impact assessment project development with CVX Consultation In implementation period Apr' 22 – Apr' 24
	Improve reliability of SPM.	Get approval from ONEP	5. Study EIA for new buoy SPM project.	QS/22		Q4	Start procurement process.
3. Emissions to Air	<ul style="list-style-type: none"> Improve determine sources complaints for prevention or mitigation Identify release and prediction during emergency case 	Proactive to control sources prior to get community complaints	6. Continue on TE3791: Fence-line Air Quality Monitoring System Installation, CPDEP Phase 3	QS/21& AS/244 (Project Manager)		Q4	<ul style="list-style-type: none"> Completed FEED package In execution phase, under bidding process. To be continued in 2023.
4. Waste Management	To seek opportunities to improve for waste management.	To support Green Mindset	7. Implement Green Procurement.	QS/22&Procurement team		Q2	Done, start implementation

Note:

1. Community Relationship and Public Affair, please refer to Social Responsibility & Community Outreach Action Plan.
2. Use of Natural Resources, please refer to Energy Roadmap & Sustainable Development (SD) Water Management Roadmap.
3. Release to Air, please refer to SD Air Quality and Climate Change

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2022 Health, Safety, ER and Security Objectives, Targets & Management Programs

Areas of Focus /Continual Improvement	Objective	Targets	Management Program	Responsibility	Benefit / Cost Incurred	Completion Target Date 2022 (Start-finish)	Status (Jan-Dec'22)
1. Safe Work Practice	Robust Safe Work Practice System	The project of e-permit system get approve for phase 2, 3 from DRB	Develop the project of e-permit system	QS/41	Improve efficiency and effectiveness of Safe Work Practice Process	Q2-Q4	
2. Training and awareness	Ensure quality and efficiency of EHS induction training	Complete the new training material of EHS induction by utilizing technology	Develop the new training material of EHS induction by utilizing the technology reduce and save time for instructor	QS/42	Reduce training downtime, improve effectiveness of training	Q3-Q4	
3. Fitness for duty (FFD)	Clear FFD expectation and ensure robust FFD implementation	Complete to review the ERT FFD criteria	Review ERT FFD criteria	QS/43	Incident and injury free during emergency response for ERT	Q2-Q4	
4. RSI	Enhance RSI awareness	Reduce number of high and medium RSI risk 50% from 2021	3.1 Refresh RSI training for SPRC family via computer base training 3.2 Set up the RSI awareness communication via with all department via department meeting	QS/43	Incident and injury free workplace	Q3-Q4	

Areas of Focus /Continual Improvement	Objective	Targets	Management Program	Responsibility	Benefit / Cost Incurred	Completion Target Date 2022 (Start-finish)	Status (Jan-Dec'22)
5. Emergency Response Preparedness Enhancement	Readiness and high reliability of firefighting equipment and emergency response	Familiar and learning on Building fire	5.1 Set up training program in Q2 & 3	QS/31 & 32	Knowledge on Building fire and how to handle with safely	Q3	Completed as plan in Q2-3
6. Emergency Response Preparedness Enhancement	Emergency readiness for SPM operating and Marine terminal	Create new Oil Spill Response Contingency Plan to cover the Marine terminal in Smart form	6.1 Conduct the oil spill tabletop for SPM and Marine terminal	QS/3 and PD/1B	Readiness of the response team and duty Rota members	Q4	Exercise oil spill at SPM On hold Because COVID 19 situation and plan to exercise again in Q4 by F2F OSRC for Marine terminal procedure completed in Q2
7. Emergency Response Preparedness Enhancement	Emergency operation center communication improvement	Linkage and improve the communication system in each emergency operation and related room (TE3786 Improve EOC room)	7.1 Propose the proposal to the DRB and get approval for phase 3 7.2 Improvement according to the scope approved	QS/31	Good communication in each location	Phase 3 in Q3	Continue in 2022 Plan to present phase 3 in end July or beginning of August and plan to complete project in Q4 and spending as plan

ภาคผนวก ข.3

นโยบายสิ่งแวดล้อม สุขภาพอนามัย และความปลอดภัย

ENVIRONMENT, HEALTH AND SAFETY POLICY

Star Petroleum Refining Public Company Limited

It is the policy of SPRC to conduct business in a socially responsible and ethical manner with the balance of environment, social and economic that protects safety and health of SPRC family, concerned stakeholders and the environment in the area which may be impacted by our operation.

SPRC is committed to organizational culture and environment where Environment, Health and Safety (EHS) are recognized as value-based and built on a mindset intolerant of any level, frequency or severity of incident and injury. We believe that all injuries can be prevented, and our goal of incident and injury free operations is achievable.

Our commitment on Operational Excellence (OE) is embodied in EHS value of building Incident and Injury Free (IIF) leadership and a caring family mindset.

This culture is reflected in SPRC Environment, Health and Safety Policy as follows:

1. Achieve EHS excellence including compliance with all applicable EHS legal, regulatory and other requirements.
2. Integrate EHS performance as a part of SPRC key performance Indicators and place the management of EHS as a prime responsibility of line management. Inspire every individual be responsible for his/her own safety and the safety of others.
3. Create Incident and Injury Free (IIF) culture, apply pollution prevention, risk-based thinking, and pro-active methods to promote personal and process safety and minimize impacts to environment and health. When unsafe situation occurs, we stop work and take action.
4. Creatively promote awareness, understanding, involvement and leadership of SPRC personnel in EHS management system and programs through relationship building, training, engagement, and consultation.
5. Build a safe, reliable, and healthy workplace and a healthier, mindful and disciplined SPRC family to drive toward incident and injury free operations, prevent injuries and process safety incidents and make long-lasting healthy lifestyle and wellness.
6. Build low carbons and resource-circulating society throughout green supply chain management to minimize Climate Changes impact, ensure efficient use of the natural resources and to deliver environmentally friendly products for sustainable development.
7. Foster caring, communication, understanding, and cooperation related to EHS issues including EHS objectives within SPRC and between SPRC, surrounding communities and business and Thai governmental bodies.
8. Review the compliance of EHS policy, management system and programs and make corrective actions where required.
9. Implement continual improvement in SPRC Environmental, Health and Safety performance to aim the sustainability.

This policy applies to all SPRC personnel and the conduct of the SPRC's business and operations by considering Life Cycle Perspective. Safety covers both personal and process safety.

Responsibility

1. The Management is responsible for providing adequate and appropriate resources to implement the EHS policy and management system.
2. All SPRC personnel shall be responsible for their own safety and safety of others and shall always make time for people to extend the "circle of influence" and spread IIF culture.
3. All SPRC personnel shall know, understand and carry out duties in accordance with EHS training and instructions and actively participate in the development and implementation of EHS programs, procedures and standards.

Procedures

1. SPRC shall ensure that the EHS policy is documented, implemented, maintained, updated, monitored and communicated to everyone in order to meet or exceed applicable EHS standards/practices which lead to the excellent performance in EHS aspects for SPRC personnel and other stakeholders.
2. SPRC shall maintain awareness and focus for all SPRC personnel on EHS standards, rules & regulations and procedures through training, promotion and communications.
3. SPRC shall ensure effective functioning of EHS Management System and always seek opportunities for continual improvements through utilization of available best practices.

Robert J. Dobrik
Chief Executive Officer

Revision No.: 05
Date: 5 Jan. 2022

นโยบายสิ่งแวดล้อม สุขภาพอนามัยและความปลอดภัย

บริษัท สตาร์ ปิโตรเลียม รีไฟน์นิ่ง จำกัด (มหาชน)

บริษัท สตาร์ ปิโตรเลียม รีไฟน์นิ่ง จำกัด (มหาชน) มีนโยบายดำเนินธุรกิจด้วยความรับผิดชอบต่อลูกค้า ความปลอดภัยสุขภาพอนามัยของสมาชิกครอบครัวบริษัทฯ ผู้มีส่วนได้เสียที่เกี่ยวข้อง ตลอดจนสิ่งแวดล้อม สังคม และเศรษฐกิจ ในพื้นที่ซึ่งอาจได้รับผลกระทบจากการดำเนินธุรกิจของบริษัทฯ

บริษัทฯ มีความมุ่งมั่นในการสร้างวัฒนธรรมองค์กรที่ยึดถือด้านสิ่งแวดล้อม สุขภาพอนามัยและความปลอดภัยเป็นเป้าหมายหลักและมีแนวคิดที่จะไม่ยอมให้มีอุบัติเหตุและการบาดเจ็บเกิดขึ้นไม่ว่าจะเป็นความรุนแรงหรือความถี่ระดับไหน บริษัทฯ มีความเชื่อว่าการบาดเจ็บสามารถป้องกันได้ และสามารถบรรลุเป้าหมายการทำงานที่ปราศจากอุบัติเหตุและการบาดเจ็บได้

คำมั่นสัญญาของบริษัทฯ ในด้านความเป็นเลิศในการปฏิบัติงานถูกรวมอยู่ในคำมั่นด้านสิ่งแวดล้อม สุขภาพอนามัยและความปลอดภัยในการสร้างแนวคิดความเป็นผู้นำด้านการงานโดยปราศจากอุบัติเหตุและการบาดเจ็บและครอบครัวแห่งความห่วงใยผู้อาวุโส

ดังนั้นจึงกำหนดให้มีนโยบายสิ่งแวดล้อม สุขภาพอนามัยและความปลอดภัยไว้ดังต่อไปนี้

1. บรรลุความเป็นเลิศด้านสิ่งแวดล้อม สุขภาพอนามัยและความปลอดภัย รวมทั้งปฏิบัติตามกฎหมาย ระเบียบข้อบังคับและมาตรฐานที่เกี่ยวข้องกับการประกอบกิจการของบริษัทฯ
2. กำหนดให้มีการปฏิบัติงานด้านสิ่งแวดล้อม สุขภาพอนามัยและความปลอดภัยเป็นหนึ่งเดียวกันในลักษณะการบูรณาการ และกำหนดให้มีการประเมินความเสี่ยงด้านสุขภาพอนามัยและสิ่งแวดล้อมเป็นประจำทุกปี เพื่อสร้างระบบการป้องกันอันตรายที่ครอบคลุมต่อความเสี่ยงขององค์กร
3. สร้างวัฒนธรรมการทำงานโดยปราศจากอุบัติเหตุและการบาดเจ็บ (HSE) ใช้วิธีการป้องกันแบบพาสซีฟ (Pollution Prevention) ใช้วิธีการแบบพื้นฐานของความเสี่ยง (Risk-based thinking) และการดำเนินการเชิงรุก (Pro-active) เพื่อส่งเสริมความปลอดภัยส่วนบุคคลและความปลอดภัยของระบบการผลิต และลดผลกระทบต่อสิ่งแวดล้อมและสุขภาพอนามัย หากมีสถานการณ์ที่ไม่ปลอดภัยเกิดขึ้น เราทุกคนมีอำนาจในการแจ้งเตือน
4. ให้ความสำคัญสร้างเสริมวัฒนธรรมความปลอดภัยขององค์กร เน้นว่าทุกคนมีหน้าที่ มีส่วนร่วมและมีความเป็นผู้นำในการลดความเสี่ยงของสุขภาพอนามัยและความปลอดภัยผ่านการสร้างความสัมพันธ์ การฝึกอบรม การสร้างขวัญกำลังใจ การให้การดูแลและการปรึกษาหารือ
5. กำหนดการส่งเสริมสุขภาพที่ทำงานมีความปลอดภัย เพื่อให้เกิดผลสูงสุดแก่สุขภาพและส่งเสริมให้ปฏิบัติตามสุขภาพอนามัยที่ดี มีสติและระมัดระวัง เพื่อป้องกันการบาดเจ็บและโรคจากการทำงาน ป้องกันการบาดเจ็บและลดการสูญเสียด้านสุขภาพและคุณภาพชีวิตได้อย่างยั่งยืน
6. สร้างสิ่งกีดขวางของเจ้าหน้าที่และหน่วยงานที่เกี่ยวข้องในการบริหาร ผ่านกระบวนการบริหารจัดการห่วงโซ่อุปทานที่เป็นมิตรต่อสิ่งแวดล้อม เพื่อลดผลกระทบจากการเปลี่ยนแปลงของสภาพภูมิอากาศ การใช้ทรัพยากรอย่างมีประสิทธิภาพ และส่งเสริมผลิตภัณฑ์ที่เป็นมิตรต่อสิ่งแวดล้อม เพื่อการพัฒนาอย่างยั่งยืน
7. เสริมสร้างความเข้าใจและความโปร่งใสในการสื่อสารความเสี่ยงและความเสี่ยงด้านสุขภาพอนามัย และระหว่างบริษัทฯ กับชุมชนใกล้เคียงองค์กรที่เกี่ยวข้องและหน่วยงานของรัฐบาล ทางด้านสิ่งแวดล้อม สุขภาพอนามัยและความปลอดภัย ทั้งนี้ครอบคลุมถึงวัตถุประสงค์และเป้าหมายที่กำหนดไว้
8. จัดให้มีการทบทวนนโยบาย ระบบการจัดการ โครงการด้านสิ่งแวดล้อม สุขภาพอนามัยและความปลอดภัย และดำเนินการปรับปรุงแก้ไข
9. พัฒนาการดำเนินงานด้านสิ่งแวดล้อม สุขภาพอนามัยและความปลอดภัยอย่างต่อเนื่องเพื่อความยั่งยืน

นโยบายสิ่งแวดล้อม สุขภาพอนามัยและความปลอดภัยมีเจตนารมณ์ในการปฏิบัติงานของบุคลากรทุกคน ในทุกๆ กิจกรรมของบริษัทฯ และคำมั่นแน่วแน่ที่จะบรรลุวัตถุประสงค์ด้านความปลอดภัยในทุกระดับขององค์กร

หน้าที่ความรับผิดชอบ

1. ผู้บริหารมีหน้าที่ในการจัดสรรทรัพยากรที่เหมาะสม และเพียงพอต่อการดำเนินการตามนโยบายและระบบบริหารจัดการด้านสิ่งแวดล้อม สุขภาพอนามัยและความปลอดภัย
2. บุคลากรทุกคนของบริษัทฯ ต้องรับผิดชอบต่อการปฏิบัติตามนโยบายและวัตถุประสงค์ด้านสิ่งแวดล้อม สุขภาพอนามัยและความปลอดภัย
3. บุคลากรทุกคนของบริษัทฯ มีหน้าที่ในการรับรู้ เข้าใจและปฏิบัติตามข้อกำหนดด้านความปลอดภัยและสุขภาพอนามัยในการปฏิบัติงานและปฏิบัติตามมาตรฐานระเบียบปฏิบัติงานและโครงการต่าง ๆ ในด้านสิ่งแวดล้อม สุขภาพอนามัยและความปลอดภัย

การนำไปปฏิบัติ

1. บริษัทฯ ต้องดำเนินการเพื่อให้นโยบายสิ่งแวดล้อม สุขภาพอนามัยและความปลอดภัยมีการจัดทำและปฏิบัติตามเป็นลายลักษณ์อักษร มีการนำไปปฏิบัติ ดำเนินไป ปรับปรุงแก้ไข ติดตามตรวจสอบและมีการสื่อสารไปยังผู้เกี่ยวข้องทุกคน เพื่อให้ได้ผลการดำเนินงานด้านสิ่งแวดล้อม สุขภาพอนามัยและความปลอดภัยตามมาตรฐานและวัตถุประสงค์ที่กำหนดไว้ ซึ่งจะทำให้ทุกคนเป็นเลิศของการทำงานด้านสิ่งแวดล้อม สุขภาพอนามัยและความปลอดภัยสำหรับบุคลากรและผู้บริหารได้ของบริษัทฯ
2. บริษัทฯ ต้องคำนึงถึงความตระหนักและใส่ใจสำหรับบุคลากรของบริษัทฯ ทุกคนในเรื่องของมาตรฐาน กฎระเบียบข้อบังคับและระเบียบปฏิบัติงานด้านสิ่งแวดล้อม สุขภาพอนามัยและความปลอดภัย ผ่านทางการฝึกอบรม การส่งเสริมประชาสัมพันธ์ การสื่อสาร
3. บริษัทฯ ต้องดำเนินการเพื่อให้มั่นใจว่าระบบบริหารจัดการด้านสิ่งแวดล้อม สุขภาพอนามัยและความปลอดภัยมีการดำเนินงานอย่างมีประสิทธิภาพ และแสวงหาโอกาสในการปรับปรุงระบบอย่างต่อเนื่อง โดยการนำเอามาตรฐานและวิธีการปฏิบัติมาให้ได้และได้รับการยอมรับมาใช้

โรเบิร์ต โจเซฟ โดบรีค
ประธานเจ้าหน้าที่บริหาร

ปรับปรุงแก้ไขครั้งที่: 5
วันที่ 5 มกราคม 2565

PRODUCT QUALITY POLICY

Star Petroleum Refining Public Company Limited

It is the policy of SPRC to provide quality products which meet specifications required by law, other applicable standards and customer's expectations.

Ensuring product integrity is critical to satisfying customer needs and expectations for quality and value in SPRC's products. This is vital to insure SPRC products' reputation, quality image and maintenance industry trust.

It is reflected in SPRC Product Quality Policy as follows:

- Provide customers with products and services which meet agreed specifications and performance requirements as well as comply with all applicable product quality laws and regulations and other requirements every time.
- Provide products which are safe and effective for their intended use when handled and used according to recommended guidelines and procedures.
- Working within an Incident and Injury Free culture, apply the continual Quality Management process to secure SPRC's competitive edge with the aim of being best in class and to continue to provide customers satisfaction.
- Stimulate innovation, involvement and co-operation at all levels of the organization to enhance the development of products quality and integrity.
- Implement continual improvement in quality performance and measure appropriate performance indicators resulting in meeting of the agreed specifications and performance requirement of the products in order to gain competitive advantage, enhance shareholder value, and exceed customer expectations.

This policy applies to all SPRC personnel and the conduct of the SPRC's business and operations and shall include all SPRC products sold by SPRC through direct sales and/or off-take agreements.



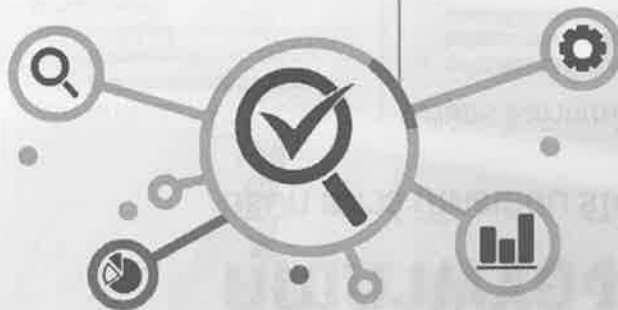
Responsibility

The Management is responsible for the integrity of SPRC products that it manufactures and sells. The Management is also responsible to provide adequate and appropriate resources to implement the Product Quality Policy and related management system and ensuring that SPRC personnel understand the roles and responsibilities toward the product quality.

All SPRC personnel shall know, understand, and carry out duties to achieve the Product Quality specifications.

Procedures

1. SPRC products shall comply with all applicable legal and business requirements/standards.
2. Products which SPRC manufactures, and sells are tested in accredited laboratories.
3. SPRC shall foster a climate in which innovation and initiative are encouraged and shall demonstrate commitment to continual improvement by recognizing and rewarding SPRC personnel accordingly.
4. SPRC shall incorporate House of Quality to actively promote and facilitate communication and cooperation within and across functions in order to improve product quality, supply reliability, services and work processes.
5. Performance against those standards will be monitored and feedback regularly.



Robert J. Dobrik
Chief Executive Officer

Revision No.: 4
Date: 1 June 2022

นโยบาย คุณภาพของผลิตภัณฑ์

บริษัท สตาร์ ปิโตรเลียม รีไฟน์นิ่ง จำกัด (มหาชน)

บริษัท สตาร์ ปิโตรเลียม รีไฟน์นิ่ง จำกัด (มหาชน) เป็นนโยบายที่ผลิตและจัดจำหน่ายผลิตภัณฑ์ที่มีคุณภาพ ตรงตามข้อกำหนดของกฎหมาย มาตรฐานต่างๆ ที่มีผลบังคับใช้ต่อผลิตภัณฑ์และตรงตามความต้องการของลูกค้า

การทำให้เกิดความเชื่อมั่นต่อคุณภาพของผลิตภัณฑ์ถือเป็นสิ่งสำคัญในการตอบสนองความต้องการและความคาดหวังของลูกค้าในเรื่องของคุณภาพและคุณค่าผลิตภัณฑ์ของบริษัทฯ นี่ถือเป็นส่วนสำคัญที่สุดที่จะรับประกันชื่อเสียงภาพลักษณ์ที่ดีต่อผลิตภัณฑ์ของบริษัทฯ ตลอดจนรักษาความเชื่อมั่นและความไว้วางใจจากคู่ค้าสหกรณ์ที่มีต่อบริษัทฯ

บริษัทฯ จึงกำหนดให้มีนโยบายคุณภาพของผลิตภัณฑ์ไว้ดังต่อไปนี้

- จัดหาสินค้าและบริการให้ตรงตามความต้องการและข้อกำหนดที่ได้ตกลงกับคู่ค้ารวมถึงคุณภาพของสินค้าและบริการนั้นจะต้องได้มาตรฐานตามข้อกำหนดของกฎหมายและมาตรฐานต่างๆ ที่มีผลบังคับใช้ต่อผลิตภัณฑ์ในด้านคุณภาพตลอดเวลา
- ดำเนินการผลิตผลิตภัณฑ์ที่ปลอดภัยและมีประสิทธิภาพให้เป็นไปตามข้อกำหนดของผลิตภัณฑ์ที่ได้ระบุไว้ในระเบียบปฏิบัติงาน
- ปฏิบัติงานภายใต้วัฒนธรรมการทำงานโดยปราศจากอุบัติเหตุและการบาดเจ็บ ใช้กระบวนการบริหารคุณภาพทั่วทั้งองค์กรที่ทำให้บริษัทฯ รักษาความได้เปรียบในการแข่งขัน เพื่อเป็นผู้นำในธุรกิจ และสามารถตอบสนองความพึงพอใจของลูกค้าได้อย่างต่อเนื่อง
- กระตุ้นพนักงานทุกระดับของบริษัทฯ ให้เกิดนวัตกรรม ความร่วมมือและการมีส่วนร่วมเพื่อเสริมสร้างการพัฒนาคุณภาพและความสมบูรณ์พร้อมของผลิตภัณฑ์
- ดำเนินงานในเรื่องการปรับปรุงคุณภาพอย่างต่อเนื่องและการพัฒนาตัวชี้วัดผลการดำเนินงานที่บริหารตามข้อกำหนดของผลิตภัณฑ์และความต้องการที่ตกลงกัน เพื่อที่จะรักษาความได้เปรียบในการแข่งขันทางธุรกิจ เพิ่มมูลค่าให้กับผู้ถือหุ้นและตอบสนองต่อความคาดหวังของลูกค้า

นโยบายคุณภาพของผลิตภัณฑ์นี้มีขอบเขตรอบคลุมถึงบุคลากรทุกคนของบริษัทฯ การดำเนินการและการเฝ้าระวังบริษัทฯ ตลอดจนผลิตภัณฑ์ทุกชนิดของบริษัทฯ ทั้งที่จัดจำหน่ายโดยทั่วไปและจัดจำหน่ายผ่านทางผู้ถือหุ้น



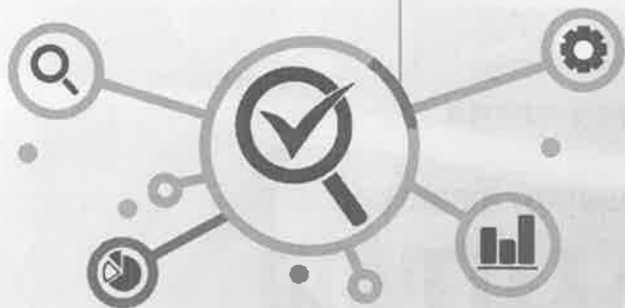
หน้าที่ความรับผิดชอบ

ผู้บริหารมีหน้าที่รับผิดชอบต่อความสมบูรณ์พร้อมของผลิตภัณฑ์ที่ผลิตและจัดจำหน่ายของบริษัทฯ นอกจากนี้ยังมีหน้าที่ในการจัดสรรทรัพยากรที่เหมาะสม และเพียงพอต่อการดำเนินการตามนโยบายคุณภาพของผลิตภัณฑ์และระบบบริหารจัดการด้านคุณภาพ ตลอดจนทำให้เกิดความมั่นใจว่าบุคลากรของบริษัทฯ เข้าใจถึงบทบาทหน้าที่ของตนเองที่มีต่อคุณภาพของผลิตภัณฑ์

บุคลากรทุกคนของบริษัทฯ มีหน้าที่ในการรับรู้ เข้าใจและปฏิบัติตามให้ถูกต้องตามขั้นตอนเพื่อให้ผลิตภัณฑ์มีคุณภาพตามที่กำหนด

การนำไปปฏิบัติ

1. ผลิตภัณฑ์ของบริษัทฯ จะต้องมีความตรงตามข้อกำหนดด้านกฎหมายตลอดจนมาตรฐานต่างๆ ที่มีผลบังคับใช้ต่อผลิตภัณฑ์
2. ผลิตภัณฑ์ของบริษัทฯ ที่ผลิตและจัดจำหน่ายจะต้องได้รับการทดสอบและรับรองคุณภาพจากห้องปฏิบัติการที่ได้รับการรับรองและเชื่อถือได้
3. บริษัทฯ สนับสนุนอำนาจในการดำเนินการให้เกิดนวัตกรรมและความคิดริเริ่มสร้างสรรค์ และบริษัทฯ มีความมุ่งมั่นที่จะทำให้เกิดการปรับปรุงคุณภาพของผลิตภัณฑ์อย่างต่อเนื่องโดยการขึ้นแบบใหม่ให้รางวัลแก่บุคลากรของบริษัทฯ ที่มีส่วนร่วม
4. บริษัทฯ ใช้กระบวนการของ "House of Quality" ในการส่งเสริมให้เกิดการสื่อสารและการประสานงานที่มีประสิทธิภาพภายในของบริษัทฯ เพื่อให้มีการปรับปรุงคุณภาพของผลิตภัณฑ์ การให้บริการ รวมถึงกระบวนการทำงานอย่างยั่งยืน
5. ผลการดำเนินงานที่ไม่เป็นไปตามมาตรฐานจะถูกติดตามและแก้ไขอย่างเป็นประจำ



ไธเบิร์ต ใจชีพ โดบริค
ประธานเจ้าหน้าที่บริหาร

ปรับปรุงแก้ไขครั้งที่: 4
วันที่ 1 มิถุนายน 2565



Policy 400
Environment, Health and Safety

**Prepared
by:**

Angkana Panyaopas
Manager QEHS (QS)

Krisda Chaikul
Manager Process Safety (PS)

Reviewed and Approved by:

Timothy A. Potter
Chief Executive Officer (CE)

Distribution List

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00	TQM Coordinator – QS/1	EDMS

Amendment List

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1. Policy

It is the policy of SPRC to conduct business in a socially responsible and ethical manner that protects safety and health of SPRC family, concerned stakeholders and the environment in the area which may be impacted by our operation.

SPRC is committed to organizational culture and environment where Environment, Health and Safety (EHS) are recognized as value-based and built on a mindset intolerant of any level, frequency or severity of incident and injury. We believe that all injuries can be prevented and our goal of incident and injury free operations is achievable.

Our commitment on Operational Excellence (OE) is embodied in EHS value of building Incident and Injury Free (IIF) leadership and a caring family mindset.

This culture is reflected in SPRC Environment, Health and Safety Policy as follows:

1. Achieve EHS excellence including compliance with all applicable EHS legal, regulatory and other requirements.
2. Integrate EHS performance as a part of SPRC key performance Indicators and place the management of EHS as a prime responsibility of line management. Inspire every individual be responsible for his/her own safety and the safety of others.
3. Create Incident and Injury Free (IIF) culture, apply pollution prevention, risk-based thinking and pro-active methods to promote personal and process safety and minimize impacts to environment and health. When unsafe situation occur we stop work and take action.
4. Creatively promote awareness, understanding, involvement and leadership of SPRC personnel in EHS management system and programs through relationship building, training, engagement and consultation.
5. Build a safe, reliable and healthy workplace and a healthier, mindful and disciplined SPRC family to drive toward incident and injury free operations, prevent injuries and process safety incidents and make long-lasting healthy lifestyle and wellness.
6. Foster caring, communication, understanding and cooperation related to EHS issues including EHS objectives within SPRC and between SPRC, surrounding communities and business and Thai governmental bodies.
7. Review the compliance of EHS policy, management system and programs and make corrective actions where required.

8. Implement continual improvement in SPRC Environmental, Health and Safety performance to aim the sustainability.

2. Scope

This policy applies to all SPRC personnel and the conduct of the SPRC's business and operations by considering Life Cycle Perspective. Safety covers both personal and process safety.

3. Responsibility

1. The Management is responsible for providing adequate and appropriate resources to implement the EHS policy and management system.
2. All SPRC personnel shall be responsible for their own safety and safety of others and shall always make time for people to extend the "circle of influence" and spread IIF culture.
3. All SPRC personnel shall know, understand and carry out duties in accordance with EHS training and instructions and actively participate in the development and implementation of EHS programs, procedures and standards.

4. Procedures

1. SPRC shall ensure that the EHS policy is documented, implemented, maintained, updated, monitored and communicated to everyone in order to meet or exceed applicable EHS standards/practices which lead to the excellent performance in EHS aspects for SPRC personnel and other stakeholders.
2. SPRC shall maintain awareness and focus for all SPRC personnel on EHS standards, rules & regulations and procedures through training, promotion and communications.
3. SPRC shall ensure effective functioning of EHS Management System and always seek opportunities for continual improvements through utilization of available best practices.

ภาคผนวก ข.4

ตำแนห่งสื่อนำส่งรายงานผลการปฏิบัติตาม
มาตรการป้องกันและแก้ไขผลกระทบสิ่งแวดล้อม
และมาตรการติดตามตรวจสอบผลกระทบสิ่งแวดล้อม
ต่อหน่วยงานอนุญาต



STAR PETROLEUM REFINING PUBLIC COMPANY LIMITED

บริษัท สตาร์ ปิโตรเลียม รีไฟน์นิ่ง จำกัด (มหาชน)

เลขทะเบียนนิติบุคคล 0107555000155

SPRC-QS-OUT-22-1453

วันที่ 25 กรกฎาคม พ.ศ. 2565

เรื่อง ขอนำส่งรายงานผลการปฏิบัติตามมาตรการป้องกันและแก้ไขผลกระทบสิ่งแวดล้อม และมาตรการติดตามตรวจสอบผลกระทบสิ่งแวดล้อม โครงการท่าเทียบเรือ บริษัท สตาร์ ปิโตรเลียม รีไฟน์นิ่ง จำกัด (มหาชน) ครั้งที่ 1/2565 ระหว่างเดือนมกราคม ถึงมิถุนายน พ.ศ. 2565

เรียน อธิบดีกรมเจ้าท่า

สิ่งที่ส่งมาด้วย รายงานผลการปฏิบัติตามมาตรการป้องกันและแก้ไขผลกระทบสิ่งแวดล้อม และมาตรการติดตามตรวจสอบผลกระทบสิ่งแวดล้อม โครงการท่าเทียบเรือ บริษัท สตาร์ ปิโตรเลียม รีไฟน์นิ่ง จำกัด (มหาชน) จำนวน 3 เล่ม และ CD-ROM จำนวน 4 แผ่น

ตามที่ บริษัท สตาร์ ปิโตรเลียม รีไฟน์นิ่ง จำกัด (มหาชน) ได้รับความเห็นชอบในรายงานการเปลี่ยนแปลงรายละเอียดโครงการในรายงานการประเมินผลกระทบสิ่งแวดล้อม โครงการท่าเทียบเรือ (ครั้งที่ 4) (EIA) ตามหนังสือ ที่ ออก 5102.3.1/1266 ลงวันที่ 7 พฤษภาคม พ.ศ. 2562 ซึ่งโครงการตั้งอยู่ในนิคมอุตสาหกรรมมาบตาพุด ตำบลมาบตาพุด อำเภอเมืองระยอง จังหวัดระยอง เลขทะเบียนโรงงาน น. 49-1/2537-ญนพ.

เพื่อให้เป็นไปตามประกาศกระทรวงทรัพยากรธรรมชาติและสิ่งแวดล้อม เรื่อง หลักเกณฑ์ และวิธีการจัดทำรายงานผลการปฏิบัติตามมาตรการที่กำหนดไว้ในรายงานการประเมินผลกระทบสิ่งแวดล้อม ซึ่งผู้ดำเนินการ หรือผู้ขออนุญาต จะต้องจัดทำเมื่อได้รับอนุญาตให้ดำเนินโครงการหรือกิจการแล้ว พ.ศ.2561 ทางบริษัท สตาร์ ปิโตรเลียม รีไฟน์นิ่ง จำกัด (มหาชน) จึงได้ขอนำส่งรายงานผลการปฏิบัติตามมาตรการป้องกันและแก้ไขผลกระทบสิ่งแวดล้อม และมาตรการติดตามตรวจสอบผลกระทบสิ่งแวดล้อม โครงการท่าเทียบเรือ ครั้งที่ 1/2565 ระหว่างเดือนมกราคม ถึงมิถุนายน พ.ศ. 2565 ดังรายละเอียดตามสิ่งที่ส่งมาด้วย เพื่อให้หน่วยงานของท่านพิจารณาและดำเนินการตามขั้นตอนต่อไป

หากท่านมีข้อเสนอแนะหรือต้องการข้อมูลเพิ่มเติมประการใด ขอความกรุณาติดต่อนางนิภา นิมมานเศรษฐกุล ผู้เชี่ยวชาญด้านสิ่งแวดล้อม หมายเลขโทรศัพท์ 038-699-313

จึงเรียนมาเพื่อโปรดทราบ

ขอแสดงความนับถือ

ผู้จัดการฝ่ายบริหารระบบความปลอดภัย
คุณภาพสิ่งแวดล้อม และอาชีวอนามัย

๒๗ ก.ค. ๒๕๖๕

กรมเจ้าท่า
สายเซ็นผู้รับ.....
โทร. ๐-๒๒๓๓-๐๓๐๐-๘ ต่อ ๓๔๙ (สายตรง)



STAR PETROLEUM REFINING PUBLIC COMPANY LIMITED

บริษัท สตาร์ ปิโตรเลียม รีไฟน์นิ่ง จำกัด (มหาชน)

เลขทะเบียนนิติบุคคล 0107555000155

SPRC-QS-OUT-22-1453

วันที่ 25 กรกฎาคม พ.ศ. 2565

เรื่อง ขอนำส่งรายงานผลการปฏิบัติตามมาตรการป้องกันและแก้ไขผลกระทบสิ่งแวดล้อม และมาตรการติดตามตรวจสอบผลกระทบสิ่งแวดล้อม โครงการท่าเทียบเรือ บริษัท สตาร์ ปิโตรเลียม รีไฟน์นิ่ง จำกัด (มหาชน) ครั้งที่ 1/2565 ระหว่างเดือนมกราคม ถึงมิถุนายน พ.ศ. 2565

เรียน ผู้อำนวยการสำนักงานท่าเรืออุตสาหกรรมมาบตาพุด

สิ่งที่ส่งมาด้วย รายงานผลการปฏิบัติตามมาตรการป้องกันและแก้ไขผลกระทบสิ่งแวดล้อม และมาตรการติดตามตรวจสอบผลกระทบสิ่งแวดล้อม โครงการท่าเทียบเรือ บริษัท สตาร์ ปิโตรเลียม รีไฟน์นิ่ง จำกัด (มหาชน) จำนวน 1 เล่ม และ CD-ROM จำนวน 1 แผ่น

ตามที่ บริษัท สตาร์ ปิโตรเลียม รีไฟน์นิ่ง จำกัด (มหาชน) ได้รับความเห็นชอบในรายงานการเปลี่ยนแปลงรายละเอียดโครงการในรายงานการประเมินผลกระทบสิ่งแวดล้อม โครงการท่าเทียบเรือ (ครั้งที่ 4) (EIA) ตามหนังสือ ที่ ออก 5102.3.1/1266 ลงวันที่ 7 พฤษภาคม พ.ศ. 2562 ซึ่งโครงการตั้งอยู่ในนิคมอุตสาหกรรมมาบตาพุด ตำบลมาบตาพุด อำเภอเมืองระยอง จังหวัดระยอง เลขทะเบียนโรงงาน น. 49-1/2537-ญนพ.

เพื่อให้เป็นไปตามประกาศกระทรวงทรัพยากรธรรมชาติและสิ่งแวดล้อม เรื่อง หลักเกณฑ์ และวิธีการจัดทำรายงานผลการปฏิบัติตามมาตรการที่กำหนดไว้ในรายงานการประเมินผลกระทบสิ่งแวดล้อม ซึ่งผู้ดำเนินการ หรือผู้ขออนุญาต จะต้องจัดทำเมื่อได้รับอนุญาตให้ดำเนินโครงการหรือกิจการแล้ว พ.ศ.2561 ทางบริษัท สตาร์ ปิโตรเลียม รีไฟน์นิ่ง จำกัด (มหาชน) จึงได้ขอนำส่งรายงานผลการปฏิบัติตามมาตรการป้องกันและแก้ไขผลกระทบสิ่งแวดล้อม และมาตรการติดตามตรวจสอบผลกระทบสิ่งแวดล้อม โครงการท่าเทียบเรือ ครั้งที่ 1/2565 ระหว่างเดือนมกราคม ถึงมิถุนายน พ.ศ. 2565 ดังรายละเอียดตามสิ่งที่ส่งมาด้วย เพื่อให้หน่วยงานของท่านพิจารณาและดำเนินการตามขั้นตอนต่อไป

หากท่านมีข้อเสนอแนะหรือต้องการข้อมูลเพิ่มเติมประการใด ขอความกรุณาติดต่อนางนิภา นิยมานเศรษฐกุล ผู้เชี่ยวชาญด้านสิ่งแวดล้อม หมายเลขโทรศัพท์ 038-699-313

จึงเรียนมาเพื่อโปรดทราบ

ขอแสดงความนับถือ

ผู้จัดการฝ่ายบริหารระบบความปลอดภัย

คุณภาพสิ่งแวดล้อม และอาชีวอนามัย

บ.แล้ว
22 ก.ค. 2565
[Signature]

ภาคผนวก ข.5

ระเบียบปฏิบัติ เรื่อง การตรวจสอบเครื่องจักรและอุปกรณ์ประจำเดือน
และตัวอย่างบันทึกการตรวจสอบเครื่องจักรและอุปกรณ์

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1. Plant 67 Check List

1.1 Purpose

This Check List is to be completed monthly by the designated shift to ensure that the General Condition of Plant 67 are maintained in good condition.

1.2 Summary

This General Condition Monthly Check List for the Plant 67 must be completed each month, all items on the list must be checked and the appropriate Yes/No column completed. Any responses in the 'No' column must be supported by entering findings in the 'Comments' column and by entering the Work Request MR number to indicate that any actions required to correct deficiencies have been initiated.

It is the Senior Operator responsibility to ensure that the Shift Check List is completed as scheduled.

The check list must be signed by the Area Operator(s) carrying out the checks, Senior Operator must then sign to indicate that he has reviewed the check list and taken any necessary actions required i.e. Senior Operator informed, work request entered, recorded in turnover, appropriate people informed of deficiencies etc.

**2. Plant 67 General Condition Monthly Checklist****Plant 67 SUPPORT FACILITY**

Month: _____

Year: _____

Location	Description	Yes	No	Comments	MR No.
Sanitary System	Hypochlorite tank level OK				
	Acid feed pump OK				
	Air blower working				
	Sludge level OK				
	Fire extinguisher in place				
	Enough Hypochlorite available				
	Empty Hypochlorite containers removed				
	Discharge pipe clear of debris				
	Discharge channel clean				
LPG Flare	Clean, safe & well maintained				
	Pressure Gauges OK				
	Meter sun shade in good condition				
	Warning signs in place				
	Lighting OK				
	Raw water supply OK				
	Utility air point in good condition				
	Block valves greased & exercised				
Nitrogen Meter Skid	Utility hose in place				
	Clean, safe & well maintained				
	Pressure gauges OK				
	Cage locked				
Sub Station	Clean, safe & well maintained				
	Lighting OK				
	CO2 Extinguisher				
	Air conditioning OK				
	Doors closed				



Location	Description	Yes	No	Comments	MR No.
Emergency Generator House	Engine control switch in auto				
	Alarm panel clear				
	Lamp test OK				
	Fuel tank level OK				
	Lighting OK				
	Sprinkler inlet valve open				
	Fire hose connection covers on				
Mini Lab	Clean, safe & well maintained				
	Air conditioning working				
	Vent fan working				
	Water supply OK				
	Drainage OK				
	Testing equipment clean & stored				
	Fire extinguishers in place				
MCB Lift Station	Clean, safe & well maintained				
	Inspection hatch cover in place				
	Pumps run OK				
	Pumps in auto				
48" Crude Line	Clean, safe & well maintained				
	Sample points clean				
	Pressure gauges OK				
	Drain plugs in place				
	Block valves greased & exercised				
Shoreline Valve Area	Access platform clear				
	Clean, safe & well maintained				
	Line identification OK				
	Deck drain clean				
Shoreline Valve Area	Firemain block valve open				
	Block valves greased & exercised				
	MOV fire protection covers in place				
	Drain plugs in place				
	Walkways clear				
	Clean, safe & well maintained				



Location	Description	Yes	No	Comments	MR No.
Oil Spill Boom Area	Oil spill boom covered				
	Deployment gate unobstructed				
	Oil spill container access OK				
	Full Lube oil drums on pallets.				
	Full dye drums on pallets				
	Empty drums removed				
	Nitrogen bottles secure in stand				
	Safety shower & eye wash OK				
	Clean, safe & well maintained				

Hose Maintenance Area & Sump	Adjustable slide gate closed				
	Pump run OK				
	Pump in auto				
	Pressure gauge OK				
	Outfall valve closed				
	Sump level OK				
	Sump contents clean & free of debris				
	Hose roller channel clean				
	Raw water supply OK				
	Utility air point in good condition				
	Block valves greased & exercised				
	Clean, safe & well maintained				

Excise Lift & Utility Station	Inspection hatch cover in place				
	Pump run OK				
	Discharge valve open				
	Pump in auto control				
	Raw water supply OK				
	Utility air point in good condition				
	Block valves greased & exercised				
	Clean, safe & well maintained				

Inspected by Operator: _____ Date: _____

Checked by Senior Operator: _____ Date: _____

Movement/Dispatches			
<div style="display: flex; justify-content: space-between; align-items: center;"> <div> <h2 style="margin: 0;">Area 6 Shift Checklist Folders</h2> </div> </div>			
Prepared by:	Sawai Paena	Number:	HC-OT-PD-6043
Approved by:	Opas Waiyasatja	Revision:	1.1
Low	Medium	High	

HC-OT-PD-6043 Area 6 Shift Checklist Folders		
REFERENCE: Work Instruction Number HC-WI-PD-6122		
<p>Shift checklist folders have been issued. They contain the quarterly, monthly and weekly checks to be carried out by each shift. These checks will be rotated amongst the shifts every three (3) month basis.</p> <p>Until advised, each shift will be responsible for the checks as detailed below by use the handheld device and all data will record in @ptitude Analyst (SKF Cloud).</p>		
Area	Checklist	Type
W1	Fender	Monthly
	Loading Arms	Quarterly
	Rotating Equipment	Quarterly
W2	Fender	Monthly
	Loading Arms	Quarterly
	Rotating Equipment	Quarterly
	Asphalt Tanks	Monthly
W3	Crude Line	Monthly
	Emergency Generator	Monthly
	ESD System	Quarterly
W4	Rotating Equipment	Quarterly
	Safety Shower	Monthly
	FFE Bar Code	Monthly
	Fire Monitors	Monthly
	Radios	Monthly
	PSV	2 Years
	Valves LC/LO	Quarterly
Shift	Fire Pump	Weekly
	Oil Spill Respond Drill (Record in Drive:L)	Monthly
	Operator Round	Shift

Marine Shift-Routine Checklist												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
W1	Shift A			Shift D			Shift C			Shift B		
W2	Shift B			Shift A			Shift D			Shift C		
W3	Shift C			Shift B			Shift A			Shift D		
W4	Shift D			Shift C			Shift B			Shift A		
Oil Spill Exercise	Shift A	Shift B	Shift C	Shift D	Shift A	Shift B	Shift C	Shift D	Shift A	Shift B	Shift C	Shift D

Equipment Tag	Check List	Check List Description	Alarm Status	Inspection result	Unit	Date/Time	Report By
LPG Flare	Alarm Status	No Alarm In Control Panel?	-	No Alarm	Single Selection	2022-12-21 23:40:01.000	tewaratp
LPG Flare	Alarm Status	No Alarm In Control Panel?	-	No Alarm	Single Selection	2022-12-25 12:05:43.000	tewaratp
LPG Flare	Alarm Status	No Alarm In Control Panel?	-	No Alarm	Single Selection	2022-12-24 10:24:27.000	tewaratp
LPG Flare	Alarm Status	No Alarm In Control Panel?	-	No Alarm	Single Selection	2022-12-24 23:35:55.000	tewaratp
LPG Flare	Alarm Status	No Alarm In Control Panel?	-	No Alarm	Single Selection	2022-12-27 09:25:06.000	tewaratp
LPG Flare	Alarm Status	No Alarm In Control Panel?	-	No Alarm	Single Selection	2022-12-26 16:14:38.000	tewaratp
LPG Flare	Alarm Status	No Alarm In Control Panel?	-	No Alarm	Single Selection	2022-12-27 04:59:28.000	tewaratp
LPG Flare	Alarm Status	No Alarm In Control Panel?	-	No Alarm	Single Selection	2022-12-27 18:23:19.000	tewaratp
LPG Flare	Alarm Status	No Alarm In Control Panel?	-	No Alarm	Single Selection	2022-12-29 00:57:46.000	tewaratp
LPG Flare	Alarm Status	No Alarm In Control Panel?	-	No Alarm	Single Selection	2022-12-30 12:25:27.000	tewaratp
LPG Flare	Alarm Status	No Alarm In Control Panel?	-	No Alarm	Single Selection	2022-12-28 15:53:48.000	tewaratp
LPG Flare	Alarm Status	No Alarm In Control Panel?	-	No Alarm	Single Selection	2022-12-31 00:35:01.000	tewaratp
LPG Flare	All Instrument	Condition Check	-	Normal.	Single Selection	2022-12-27 18:23:21.000	tewaratp

ภาคผนวก ข.6

ระเบียบปฏิบัติ เรื่อง การขนถ่ายวัตถุดิบและผลิตภัณฑ์

Movement/Dispatches		
SPRC Plant 66 Ship Loading		
Prepared by: Natthasak Mahachanawong	Number: HC-WI-PD-6020	
Approved by: Opas Waiyasatja	Revision: 2.	
Low	Medium	High

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Movement/Dispatches		
SPRC Plant 66 Crude Oil Import via Terminal Berth3		
Prepared by: Wichian Khumtor	Number: HC-WI-PD-6014	
Approved by: Opas Waiyasatja	Revision: 2.	
Low	Medium	High

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Movement/Dispatches		
 Plant 66 Asphalt Ship Loading		
Prepared by: Wichian Khumtor	Number: HC-WI-PD-6016	
Approved by: Opas Waiyasatja	Revision: 2.	
Low	Medium	High

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Movement/Dispatches		
 Plant 66 High Speed Diesel Ship Loading		
Prepared by: Sawai Paena	Number: HC-WI-PD-6050	
Approved by: Opas Waiyasatja	Revision: 4.	
Low	Medium	High

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Movement/Dispatches			
 Plant 66 LPG and Mixed C4 Ship Loading.			
Prepared by:	Wichian Khumtor	Number:	HC-WI-PD-6051
Approved by:	Opas Waiyasatja	Revision:	3.4
Low		Medium	
		High	

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Movement/Dispatches			
 Plant 66 Fuel Oil Ship Loading			
Prepared by:	Natthasak Mahachanawong	Number:	HC-WI-PD-6052
Approved by:	Opas Waiyasatja	Revision:	3.
Low		Medium	
		High	

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Movement/Dispatches		
 Plant 66 Mogas Ship Loading		
Prepared by: Sawai Paena	Number: HC-WI-PD-6055	
Approved by: Opas Waiyasatja	Revision: 3.	
Low	Medium	High

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Date: 07 December 2022

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Movement/Dispatches		
 Plant 66 Jet A-1 and Kerosene Ship Loading		
Prepared by: Natthasak Mahachanawong	Number: HC-WI-PD-6082	
Approved by: Opas Waiyasatja	Revision: 5.	
Low	Medium	High

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Date: 20 February 2018

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This is a controlled document and must be used within 7 days of printing 19 January, 2023

ภาคผนวก ข.7

แบบรายงานปริมาณสารอินทรีย์ระเหยง่ายจากแหล่งกำเนิด (รว.๓/๑)



STAR PETROLEUM REFINING PUBLIC COMPANY LIMITED

บริษัท สตาร์ ปิโตรเลียม รีไฟน์นิ่ง จำกัด (มหาชน)

เลขทะเบียนนิติบุคคล 0107555000155

SPRC-QS-OUT 23-1485

10 มกราคม 2566

เรื่อง ขอนำส่งรายงานผลการตรวจวัดการรั่วซึมของสารอินทรีย์ระเหยง่ายจากอุปกรณ์และการซ่อมแซม
อุปกรณ์ในท่าเทียบเรือ

เรียน ผู้อำนวยการสำนักงานท่าเรืออุตสาหกรรมมาบตาพุด

อ้างถึง หนังสือการนิคมอุตสาหกรรมแห่งประเทศไทย ที่ อก 5106.1.2/ว 3922 ลงวันที่ 20 ธันวาคม 2565

สิ่งที่ส่งมาด้วย แบบรายงานผลการตรวจวัดการรั่วซึมของสารอินทรีย์ระเหยง่ายจากอุปกรณ์และการ
ซ่อมแซมอุปกรณ์ในโรงงานอุตสาหกรรม ประจำปี 2565 ครั้งที่ 2

ตามหนังสือที่อ้างถึง การนิคมอุตสาหกรรมแห่งประเทศไทย ให้บริษัท สตาร์ ปิโตรเลียม รีไฟน์นิ่ง
จำกัด (มหาชน) จัดส่งแบบรายงานผลการตรวจวัดการรั่วซึมของสารอินทรีย์ระเหยง่ายจากอุปกรณ์และการ
ซ่อมแซมอุปกรณ์ในโรงงานอุตสาหกรรม นั้น

บริษัทฯ ขอนำส่งรายงานฯ ดังกล่าว (ท่าเทียบเรือ) ตามสิ่งที่ส่งมาด้วย หากต้องการข้อมูลเพิ่มเติม
ประการใด กรุณาประสานงานกับนางนิภา นิยมานเศรษฐกุล ผู้เชี่ยวชาญด้านสิ่งแวดล้อม โทร. 038-699313
โทรสาร 038-699999

จึงเรียนมาเพื่อโปรดพิจารณา

ขอแสดงความนับถือ



ผู้จัดการฝ่ายบริหารระบบความปลอดภัย

คุณภาพสิ่งแวดล้อม และอาชีวอนามัย

แบบรายงานผลการตรวจวัดการรั่วซึมของสารอินทรีย์ระเหยจากอุปกรณ์
และการซ่อมแซมอุปกรณ์ในโรงงานอุตสาหกรรม

(๑ แบบรายงานต่อ ๑ โรงงาน)

ประจำปี พ.ศ. 2565..... ครั้งที่ 2.....

(Complete)

ประจำช่วงเดือน กรกฎาคม..... พ.ศ. 2565..... ถึง ธันวาคม..... พ.ศ. 2565.....

รายละเอียดเกี่ยวกับโรงงาน

ชื่อโรงงาน ทำเทียมเรือ บริษัท สตาร์ ปิโตรเลียม รีไฟน์นิ่ง จำกัด (มหาชน) ทะเบียนโรงงานเลขที่ น.49-1/2537-ฉบพ.

สถานที่ตั้งโรงงาน เลขที่ 1 ถนน ไอ-3บี นิคมอุตสาหกรรมมาบตาพุด ตำบลมาบตาพุด อำเภอเมือง จังหวัดระยอง

ปริมาณสารอินทรีย์ระเหยรวมที่มีหรือใช้ในกระบวนการผลิต 6,627,170 ตันต่อปี

ประเภทอุปกรณ์	สถานะ สารอินทรีย์ ระเหย	จำนวนอุปกรณ์ ทั้งหมดของโรงงาน		จำนวนอุปกรณ์ ที่ต้องตรวจวัดการรั่วซึม ในรอบการรายงานครั้งนี้			ปริมาณสารอินทรีย์ ระเหยรวมในรูป มีเทนที่รั่วซึม จากอุปกรณ์ ที่ตรวจวัด การรั่วซึมทั้งหมด ในรอบการรายงาน ครั้งนี้ (กิโลกรัม)
		จำนวนอุปกรณ์ ที่ต้องตรวจวัด การรั่วซึม (จุด)	จำนวนอุปกรณ์ ที่ได้รับ การยกเว้น ไม่ต้องตรวจวัด การรั่วซึม (จุด)	จำนวนอุปกรณ์ ที่ตรวจวัด การรั่วซึม ทั้งหมด (จุด)	จำนวนอุปกรณ์ ที่มีผลการ ตรวจวัดเกิน จากเกณฑ์ การควบคุม การรั่วซึม (จุด)	จำนวนอุปกรณ์ ที่ได้รับการ ซ่อมแซมให้ อยู่ในเกณฑ์ การควบคุม การรั่วซึม (จุด)	
วาล์ว (Valves)	แก๊ส	93	176	44	0	0	1.52
	ของเหลว	451	870	320	0	0	11.02
ปั๊ม (Pumps)	ของเหลว	12	0	7	0	0	0.74
อุปกรณ์ลดความดัน (Pressure Relief Devices)	แก๊ส	0	0	0	0	0	0
	ของเหลว	0	0	0	0	0	0
เครื่องอัดอากาศ (Compressors)	ทั้งหมด	0	0	0	0	0	0
ข้อต่อหรือหน้าแปลน (Connectors or Flanges)	ทั้งหมด	1,949	519	1,500	0	0	2.05
ท่อส่งปลายเปิด (Open-Ended Lines)	ทั้งหมด	4	5	4	0	0	0.04
จุดเก็บตัวอย่าง สารเคมี (Sampling Connections)	ทั้งหมด	7	0	7	0	0	0.12
อุปกรณ์ที่ใช้กวน หรือผสมของเหลว (Agitators or Mixers)	ทั้งหมด	0	0	0	0	0	0

(ลงชื่อ)

ผู้จัดการสิ่งแวดล้อมหรือผู้ได้รับอนุญาตประกอบกิจการโรงงาน

SPRC Marine Terminal VOC Inventory

									Calculation Method
		2016	2017	2018	2019	2020	2021	2022	
1	Fugitive Emission	0.041	0.008	0.008	0.04	0.048	0.039	0.053	Protocol for Equipment Leak Estimates, 1995, EPA-453/R-95-017, EPA Correlation Approach
2	Combustion	0	0	0	0	0	0	0	No combustion sources
3	Flare	0.01	0.01	0.005	0.005	0.005	0.005	0.005	Calculation by applying Emission Factor EPA AP-42
4	Ship Loading/Unloading	299	270	268.56	252.57	258.02	250.73	263.02	Calculation by applying Emission Factor EPA AP-42
5	Storage Tank	0	0	0	0	0	0	0	No storage tank
6	Wastewater Treatment	0	0	0	0	0	0	0	No Wastewater Treatment Plant
7	Others i.e., shutdown, T&I, spill	0	0	0	0	0	0	0	
	Total (T/Y)	299	269.5	269	252.6	258.1	250.8	263.1	

ภาคผนวก ข.8

แผนการตรวจสอบและบำรุงรักษาระบบควบคุมไอระเหย
จากท่อระบายของถังเก็บก๊าซยางมะตอย

BEC Monthly Schedule (ODR)

Area	Month											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
W1	A6-BEC-FENDER-W1	A6-BEC-FENDER-W1	A6-BEC-FENDER-W1	A6-BEC-FENDER-W1	A6-BEC-FENDER-W1	A6-BEC-FENDER-W1	A6-BEC-FENDER-W1	A6-BEC-FENDER-W1	A6-BEC-FENDER-W1	A6-BEC-FENDER-W1	A6-BEC-FENDER-W1	A6-BEC-FENDER-W1
	A6-BEC-ROT-W1-1(6M)	A6-BEC-ROT-W1-2(6M)	A6-BEC-ROT-W1-3(6M)	A6-BEC-ROT-W1-4(6M)	A6-BEC-ROT-W1-5(6M)	A6-BEC-ROT-W1-6(6M)	A6-BEC-ROT-W1-1(6M)	A6-BEC-ROT-W1-2(6M)	A6-BEC-ROT-W1-3(6M)	A6-BEC-ROT-W1-4(6M)	A6-BEC-ROT-W1-5(6M)	A6-BEC-ROT-W1-6(6M)
	A6-BEC-LOAD.ARM-W1			A6-BEC-LOAD.ARM-W1			A6-BEC-LOAD.ARM-W1			A6-BEC-LOAD.ARM-W1		
		A6-BEC-AE-W1			A6-BEC-AE-W1			A6-BEC-AE-W1			A6-BEC-AE-W1	
W2	A6-BEC-FENDER-W2	A6-BEC-FENDER-W2	A6-BEC-FENDER-W2	A6-BEC-FENDER-W2	A6-BEC-FENDER-W2	A6-BEC-FENDER-W2	A6-BEC-FENDER-W2	A6-BEC-FENDER-W2	A6-BEC-FENDER-W2	A6-BEC-FENDER-W2	A6-BEC-FENDER-W2	A6-BEC-FENDER-W2
	A6-BEC-LOAD.ARM-W2			A6-BEC-LOAD.ARM-W2			A6-BEC-LOAD.ARM-W2			A6-BEC-LOAD.ARM-W2		
	A6-BEC-ROT-W2-1(6M)	A6-BEC-ROT-W2-2(6M)					A6-BEC-ROT-W2-1(6M)	A6-BEC-ROT-W2-2(6M)				
	A6-BEC-ROT-W2-5(3M)	A6-BEC-ROT-W2-3(6M)	A6-BEC-ROT-W2-4(3M)	A6-BEC-ROT-W2-5(3M)	A6-BEC-ROT-W2-3(6M)	A6-BEC-ROT-W2-4(3M)	A6-BEC-ROT-W2-5(3M)	A6-BEC-ROT-W2-3(6M)	A6-BEC-ROT-W2-4(3M)	A6-BEC-ROT-W2-5(3M)	A6-BEC-ROT-W2-3(6M)	A6-BEC-ROT-W2-4(3M)
		A6-BEC-TANK-W2	A6-BEC-Asphalt.Odor-W2		A6-BEC-TANK-W2	A6-BEC-Asphalt.Odor-W2		A6-BEC-TANK-W2	A6-BEC-Asphalt.Odor-W2		A6-BEC-TANK-W2	A6-BEC-Asphalt.Odor-W2
W3	A6-BEC-LINE-W3	A6-BEC-LINE-W3	A6-BEC-LINE-W3	A6-BEC-LINE-W3	A6-BEC-LINE-W3	A6-BEC-LINE-W3	A6-BEC-LINE-W3	A6-BEC-LINE-W3	A6-BEC-LINE-W3	A6-BEC-LINE-W3	A6-BEC-LINE-W3	A6-BEC-LINE-W3
	A6-BEC-EMER.GEN-W3	A6-BEC-EMER.GEN-W3	A6-BEC-EMER.GEN-W3	A6-BEC-EMER.GEN-W3	A6-BEC-EMER.GEN-W3	A6-BEC-EMER.GEN-W3	A6-BEC-EMER.GEN-W3	A6-BEC-EMER.GEN-W3	A6-BEC-EMER.GEN-W3	A6-BEC-EMER.GEN-W3	A6-BEC-EMER.GEN-W3	A6-BEC-EMER.GEN-W3
	A6-BEC-ESD-B.1-2-W3	A6-BEC-ESD-B.3-5	A6-BEC-ESD-LPG.P-W3	A6-BEC-ESD-TUG.B-W3	A6-BEC-ESD-B.1-2	A6-BEC-ESD-B.3-5-W3	A6-BEC-ESD-LPG.P-W3	A6-BEC-ESD-TUG.B	A6-BEC-ESD-B.1-2-W3	A6-BEC-ESD-B.3-5-W3	A6-BEC-ESD-LPG.P	A6-BEC-ESD-TUG.B-W3
	A6-BEC-ROT-W3-1(6M)						A6-BEC-ROT-W3-1(6M)					A6-BEC-ESD-YEARLY-W3
	A6-BEC-ROT-W3-2(3M)	A6-BEC-ROT-W3-3(6M)	A6-BEC-ROT-W3-4(3M)	A6-BEC-ROT-W3-2(3M)	A6-BEC-ROT-W3-3(6M)	A6-BEC-ROT-W3-4(3M)	A6-BEC-ROT-W3-2(3M)	A6-BEC-ROT-W3-3(6M)	A6-BEC-ROT-W3-4(3M)	A6-BEC-ROT-W3-2(3M)	A6-BEC-ROT-W3-3(6M)	A6-BEC-ROT-W3-4(3M)
			A6-BEC-ROT-W3-5(6M)	A6-BEC-ROT-W3-6(6M)	A6-BEC-ROT-W3-7(6M)				A6-BEC-ROT-W3-6(6M)	A6-BEC-ROT-W3-7(6M)	A6-BEC-ROT-W3-8(6M)	A6-BEC-ROT-W3-9(6M)
W4	A6-BEC-SHOWER-W4	A6-BEC-SHOWER-W4	A6-BEC-SHOWER-W4	A6-BEC-SHOWER-W4	A6-BEC-SHOWER-W4	A6-BEC-SHOWER-W4	A6-BEC-SHOWER-W4	A6-BEC-SHOWER-W4	A6-BEC-SHOWER-W4	A6-BEC-SHOWER-W4	A6-BEC-SHOWER-W4	A6-BEC-SHOWER-W4
	A6-BEC-FFE-W4	A6-BEC-FFE-W4	A6-BEC-FFE-W4	A6-BEC-FFE-W4	A6-BEC-FFE-W4	A6-BEC-FFE-W4	A6-BEC-FFE-W4	A6-BEC-FFE-W4	A6-BEC-FFE-W4	A6-BEC-FFE-W4	A6-BEC-FFE-W4	A6-BEC-FFE-W4
	A6-BEC-FIRE.MON-W4	A6-BEC-FIRE.MON	A6-BEC-FIRE.MON-W4-1	A6-BEC-FIRE.MON-W4	A6-BEC-FIRE.MON	A6-BEC-FIRE.MON-W4-1	A6-BEC-FIRE.MON-W4	A6-BEC-FIRE.MON	A6-BEC-FIRE.MON-W4-1	A6-BEC-FIRE.MON-W4	A6-BEC-FIRE.MON	A6-BEC-FIRE.MON-W4-1
	A6-BEC-FIRE.MON-W4-2	A6-BEC-FIRE.MON	A6-BEC-FIRE.MON-W4-2	A6-BEC-FIRE.MON-W4-2	A6-BEC-FIRE.MON	A6-BEC-FIRE.MON-W4-2	A6-BEC-FIRE.MON-W4-2	A6-BEC-FIRE.MON	A6-BEC-FIRE.MON-W4-2	A6-BEC-FIRE.MON	A6-BEC-FIRE.MON	A6-BEC-FIRE.MON-W4-2
	A6-BEC-RADIO-W4	A6-BEC-RADIO-W4	A6-BEC-RADIO-W4	A6-BEC-RADIO-W4	A6-BEC-RADIO-W4	A6-BEC-RADIO-W4	A6-BEC-RADIO-W4	A6-BEC-RADIO-W4	A6-BEC-RADIO-W4	A6-BEC-RADIO-W4	A6-BEC-RADIO-W4	A6-BEC-RADIO-W4
	A6-W4-BEC-PSV-1			A6-W4-BEC-PSV-2			A6-W4-BEC-PSV-3			A6-W4-BEC-PSV-4		
	Valve LC/LO 1,2,3			Valve LC/LO 1,2,3			Valve LC/LO 1,2,3			Valve LC/LO 1,2,3		
Oil Spill	Shift A	Shift B	Shift C	Shift D	Shift A	Shift B	Shift C	Shift D	Shift A	Shift B	Shift C	Shift D

Shift A
Shift B
Shift C
Shift D

Fire pump	A6-BEC-FIRE.PUMP	Weekly test every Thursday
Operator round	A6-OR-WF-W1	Every Shift/12 hours at 06:15
	A6-OR-WF-W2	Every Shift/12 hours at 06:15
	A6-OR-WF-W3	Every Shift/12 hours at 06:15

Equipment Tag	Check List	Inspection result	Unit	Notes (Task Carry Over)	Date/Time	Report By
67C203	Overall Condition	Normal.	Single Selection		2022-03-20 14:36:40.000	sarayutj
67C203	Overall Condition	Normal.	Single Selection		2022-06-19 16:31:16.000	sarayutj
67C203	Overall Condition	Normal.	Single Selection		2022-09-20 21:41:31.000	sarayutj
67C203	Overall Condition	Normal.	Single Selection		2022-12-21 10:50:48.000	sarayutj
67C203	Drain valve	Close	Single Selection	Odor system is off service.	2022-03-20 14:36:38.000	sarayutj
67C203	Drain valve	Close	Single Selection	Odor system is off service.	2022-09-20 21:41:29.000	sarayutj
67C203	Drain valve	Close	Single Selection	Odor system is off service.	2022-12-21 10:50:39.000	sarayutj
67C203	Drain valve	Close	Single Selection	Odor system is off service.	2022-06-19 16:31:12.000	sarayutj
67C204	Overall Condition	Normal.	Single Selection		2022-03-20 14:36:44.000	sarayutj
67C204	Overall Condition	Normal.	Single Selection		2022-06-19 16:31:23.000	sarayutj
67C204	Overall Condition	Normal.	Single Selection		2022-09-20 21:41:34.000	sarayutj
67C204	Overall Condition	Normal.	Single Selection		2022-12-21 10:50:57.000	sarayutj
67C204	Drain valve	Close	Single Selection		2022-06-19 16:31:18.000	sarayutj
67C204	Drain valve	Close	Single Selection		2022-03-20 14:36:42.000	sarayutj
67C204	Drain valve	Close	Single Selection		2022-09-20 21:41:32.000	sarayutj
67C204	Drain valve	Close	Single Selection		2022-12-21 10:50:54.000	sarayutj
67C205	Overall Condition	Normal.	Single Selection		2022-03-20 14:36:45.000	sarayutj
67C205	Overall Condition	Normal.	Single Selection		2022-09-20 21:41:36.000	sarayutj
67C205	Overall Condition	Normal.	Single Selection		2022-12-21 10:51:01.000	sarayutj
67C205	Overall Condition	Normal.	Single Selection		2022-06-19 16:31:24.000	sarayutj
67AI100	Overall Condition	Normal.	Single Selection		2022-12-21 10:51:05.000	sarayutj
67AI100	Overall Condition	Normal.	Single Selection		2022-09-20 21:41:38.000	sarayutj
67AI100	Overall Condition	Normal.	Single Selection		2022-06-19 16:31:27.000	sarayutj
67AI100	Overall Condition	Normal.	Single Selection		2022-03-20 14:36:46.000	sarayutj
67AI101	Overall Condition	Normal.	Single Selection		2022-06-19 16:31:28.000	sarayutj
67AI101	Overall Condition	Normal.	Single Selection		2022-09-20 21:41:39.000	sarayutj
67AI101	Overall Condition	Normal.	Single Selection		2022-12-21 10:51:08.000	sarayutj
67AI101	Overall Condition	Normal.	Single Selection		2022-03-20 14:36:47.000	sarayutj
67S104	Drain valve	Open	Single Selection		2022-03-20 14:37:01.000	sarayutj
67S104	Drain valve	Open	Single Selection		2022-12-21 10:51:42.000	sarayutj

Equipment Tag	Check List	Inspection result	Unit	Notes (Task Carry Over)	Date/Time	Report By
67S104	Drain valve	Open	Single Selection		2022-09-20 21:41:48.000	sarayutj
67S104	Drain valve	Open	Single Selection		2022-06-19 17:18:38.000	sarayutj
67S104	Drain valve	Close	Single Selection		2022-06-19 16:31:32.000	sarayutj
67S104	Overall Condition	Normal.	Single Selection		2022-06-19 16:31:36.000	sarayutj
67S104	Overall Condition	Normal.	Single Selection		2022-12-21 10:51:45.000	sarayutj
67S104	Overall Condition	Normal.	Single Selection		2022-03-20 14:37:41.000	sarayutj
67S104	Overall Condition	Normal.	Single Selection		2022-09-20 21:41:58.000	sarayutj

ภาคผนวก ข.9

การเปลี่ยนแผ่นกรองหรือสารดูดซับของระบบควบคุมไอระเหย
จากท่อระบายของถังเก็บก๊าซยางมะตอย

SPRC Asphalt Tank Smell Control Service Filter Media Replacement

Chuwong S.
Date: 11 Nov 2022

Confidential – do not disclose to the 3rd party
“Partner of Customer’s Success”

www.u-processchem.com

Original maintenance cycle

Item	Description	Duration	Month											
	Maintenance Frequency	Month	1	2	3	4	5	6	7	8	9	10	11	12
1	Primary Treatment Unit Media Cleaning (reusable)	3												
2	Secondary Treatment Unit Media Renewal													
	2.1 Section 1	2												
	2.1 Section 2	4												
	2.1 Section 3	4												
3	Final Polishing Treatment Unit Media Renewal	6												

The Service and replacement of each media cost are bundled as follow.

1. Cleaning service and reuse – U-ProChem service to clean at THB per time
2. Full Set of Secondary Treatment Media (6 sets) Replacement cost = THB. The filter media may exhaust unequally which is unnecessary to change all and based on actual condition.
3. Dry Scrubbing Media Replacement cost = THB per time (Full Set). Typical change can be partly at the frontend part.

Note: The above cleaning frequency estimation could be changed depending on the actual loading. It is unnecessary to replace or clean all parts depending on the condition based of media performance.

Estimated maintenance cycle

Run 1 tank

Item	Description	Duration	Month											
			1	2	3	4	5	6	7	8	9	10	11	12
1	Maintenance Frequency	Month												
	Primary Treatment Unit Media Cleaning (reusable)	12												
2	Secondary Treatment Unit Media Renewal													
	2.1 Section 1	12												
	2.1 Section 2	12												
	2.1 Section 3	12												
3	Final Polishing Treatment Unit Media Renewal	6												
Estimated Waste Amount (Ton)								1.5						6

Run 2 tank

Item	Description	Duration	Month											
			1	2	3	4	5	6	7	8	9	10	11	12
1	Maintenance Frequency	Month												
	Primary Treatment Unit Media Cleaning (reusable)	6												
2	Secondary Treatment Unit Media Renewal													
	2.1 Section 1	6												
	2.1 Section 2	6												
	2.1 Section 3	6												
3	Final Polishing Treatment Unit Media Renewal	3												
Estimated Waste Amount (Ton)					1.5			6			1.5			6

ภาคผนวก ข.10

เอกสารตรวจสอบระบบท่อส่งน้ำเสียจากท่าเทียบเรือ

OFF - PLOT PIPING MODULE REPORT

SECTION A

Equipment: OPM96 – 014: OFFPLOT, BALLAST PIPELINE INSPECTION

Inspector Name: Pansak K./Attanon P.

Date of inspection: 22 July 2022

Type: Scheduled OSI 2022

Reason for Inspection: External inspection.

SUMMARY:

General condition of 12" ballast water line (96 BW -15201-B15) route from Marine Product Pier running thru IEAT I-8 road was visual inspected, found in good condition. Pipeline external minor chalk of paint. No repair work requires at this period. Pipe welds, vent/drain nozzles appeared in good condition observed. Overall pipeline still fit for service at the design condition. The average corrosion rate on 12" ballast water line was found to be < 0.10 mm/yr. Giving remaining lifetime of 9,204 years.

COMPONENTS:

Pipe: Pipeline external minor chalk of paint. No repair work requires at this period. Pipe welds, vent/drain nozzles appeared in good condition observed. Overall pipeline still fit for service at the design condition.

Supports: Sound condition

Paint: Minor chalking of paint. No repair work requires at this period.

Insulation: N/A

RECOMMENDATION:

Nil

ACTION PARTY

-

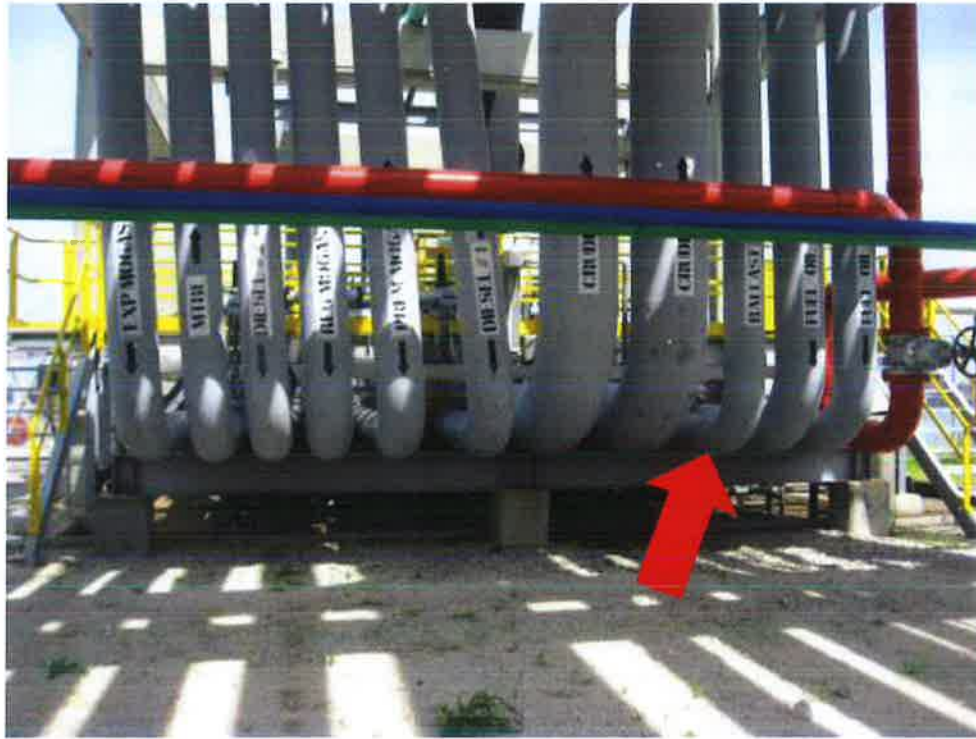


Photo1: 12" Ballast line from Marine Product Pier to shoreline



Photo2: Ballast line still in good condition observed

12" ballast water line (96 BW -15201-B15) Evaluation:

Nominal thickness: 6.35 mm

Minimum measured thickness Point reading: 6.34 mm

Thickness criteria: 2.80 mm

Corrosion rate:

$$= (t_{nom} - t_{mm})/\text{service life}$$

$$= 6.35 - 6.34/2022-1996$$

$$= 0.0003846 \text{ mm/yr.}$$

Remaining life by corrosion (years):

$$= 6.34 - 2.80/0.0003846$$

$$= 9,204 \text{ Years.}$$

ภาคผนวก ข.11

รายการอุปกรณ์กำจัดน้ำมันหกรั่วไหล และการตรวจสอบสภาพอุปกรณ์

รายการอุปกรณ์ขจัดคราบน้ำมัน

Oil Spill Response Main Equipment				Description	Quantity	Types	Location
1) Boats	1 Unit	SPM Boat Offshore Boom Deployment with Dispersant Spray System	SPM/Tug Berth	2) Power Packs	2 Set	Ro-Vac (Vacuum Skimmer)	OSR 20 ft Containers
	2 Unit	Small Tugs Assist booms/spraying	Jetty		3 Set	55 kw Multi-Purpose Diesel/Hydraulic Power Pack with Air Blower	SPM Boat, OSR W.H.
	2 Unit	Utility Boat (Line Boat). Assist booms.	Jetty		2 Set	5.2 kw Multi-Purpose Diesel/Hydraulic Power Pack with Air Blower	OSR 20 ft Containers
	1 Unit	Inflatable Runabout Boat	Tug Berth		2 Set	4.5 kw Diesel/Hydraulic Power Pack with built-in Sprints Pump	OSR W.H.
2) Booms	1050 M	Ro-Boom 1300, Offshore (in five containers)	SPM Boat, OSR W.H.	5) Temporary Oil Storage	1 Set	SPM Boat Slop Tank - approx. 120 m3	SPM Boat
	600M	Ro-Boom 1000, Inshore (in two containers)	OSR W.H.		4 Unit	Fast Tank 10 m3 (collapsible shore tank)	OSR W.H.
	400M	CS Foam Filled Harbor Boom	MCB Pollution Yard		1 Unit	ISO Tank 20 m3 (20-ft steel decanting tank)	North product pier
	280M	Ro-Boom 800, Beach Boom (in various length sections)	OSR W.H.		1 Set	RO- Tank 25 m3 (towed rubber tank)	OSR W.H.
3) Skimmers	1 Set	Desai 250 Terminator (Offshore Weir Skimmer)	SPM Boat	6) Dispersant Spray System	Boat Spraying	1 x SPM Boat Spray Boom	SPM Boat
	1 Set	Koome 30K (Inshore Weir Skimmer)	OSR W.H.			2 x Small Tugs Spray Boom	Jetty Tugs
	1 Set	Koome 12K (Calm Water Weir Skimmer)	OSR W.H.		1 Set	Portable Dispersant Spray System (Cokepress)	OSR W.H.
	1 Set	Desai Mini-Max (Inshore Weir Skimmer)	OSR W.H.	7) Dispersant	2500 Liter	Shell VDC, Type III Concentrate - SPM Boat	SPM Boat
	1 Set	Ro-Mop OM 260 (Inshore Mop Skimmer)	OSR W.H.		8000 Liter	Shell VDC Silicone NS Type III Concentrate	OSR W.H.
	2 Set	Ro-Mop OM 240 (Inshore Mop Skimmer)	OSR W.H., OSR 20 ft Container	8) Equipment Transport	1 Unit	Towed Trailer (for small auxiliary equipment)	OSR W.H.
	1 Set	Ro-Mop OM 140 (Calm Water Mop Skimmer)	OSR W.H.	9) Ancillary Equipment	1 Set	See List Below	OSR W.H., OSR Towed Trailer

OIL SPILL EQUIPMENT LIST								
Item	Tag No.	Main Parts & Accessories	Location (Before oil spill)	Cost Share	Type	Question (L3 20 characters)	Question (L3 32characters)	Inspection
4	Sorbent sheet SEL 100	SEL 100	Pollution Warehouse	SPRC	Static	Check quantity		Normal : as specific quantity
						check overall condition		Abnormal : Please note
								Normal : Good condition, no damaged
5	Sorbent roll SEL R19	SEL R19	Pollution Warehouse	SPRC	Static	Check quantity		Abnormal : Please note
								Normal : as specific quantity
						check overall condition		Abnormal : Please note
								Normal : Good condition, no damaged
								Abnormal : Please note
LIGHTING EQUIPMENT								
1	94B169	Nite Lite Flood Light	Pollution Warehouse	SPRC	Rotating	check diesel fuel oil level		Normal : meet limit level
						check lub oil level		Abnormal : refill
								Normal : meet limit level
						run engine 5 minutes		Abnormal : refill
								Normal : Running smoothly
						winch test		Abnormal : Please note
								Normal : Running smoothly
						check overall condition		Abnormal : Please note
								Normal : Good condition and ready for used
								Abnormal : Please note

OIL SPILL EQUIPMENT BEC FOR ODR

Item	g No.(L2 20 character	Main Parts & Accessories (L2 32characters)	Location (Before oil spill)	Cost Share	Type	Question (L3 20 characters)	Question (L3 32characters)	Inspection	Schedule
DISPERSANT SPRAYER									
1	65K121	ALFEDO DISPERSANT SPRAYER	SPM Uniwise Rayong	Share	Rotating	assemble all parts of unit		Normal : Assembly in normal condition	Jan, Apr, Jul, Oct
								Abnormal : Please note	
						water spray test 15 minutes		Normal : Running smoothly in good pressure	
								Abnormal : Please note	
						check connection hose condition		Normal : Good condition no leakage	
								Abnormal : Please note	
						check overall condition		Normal : Good condition and ready for used	
								Abnormal : Please note	
2	65K126	ALFEDO DISPERSANT SPRAYER	SPM RS38	Share	Rotating	assemble all parts of unit		Normal : Assembly in normal condition	Feb, May, Aug, Nov
								Abnormal : Please note	
						water spray test 15 minutes		Normal : Running smoothly in good pressure	
								Abnormal : Please note	
						check connection hose condition		Normal : Good condition no leakage	
								Abnormal : Please note	
						check overall condition		Normal : Good condition and ready for used	
								Abnormal : Please note	
3	65K114	VIKOSPRAY	SPM RS38	Share	Rotating	assemble all parts of unit		Normal : Assembly in normal condition	Mar, Jun, Sep, Dec
								Abnormal : Please note	
						water spray test 15 minutes		Normal : Running smoothly in good pressure	
								Abnormal : Please note	
						check connection hose condition		Normal : Good condition no leakage	
								Abnormal : Please note	
						check overall condition		Normal : Good condition and ready for used	
								Abnormal : Please note	
DISPERSANT SPRAYER									
1	Dispersant	Backpack sprayer	Pollution Warehouse	SPRC	Static	Operation test		Normal : Running smoothly	Mar, Jun, Sep, Dec
								Abnormal : Please note	
						check overall condition		Normal : Good condition, no leakage	
								Abnormal : Please note	

Item	ag No.(L2 20 characters	Main Parts & Accessories (L2 32characters)	Location	Cost Share	Type	Question (L3 20 characters)	Question (L3 32characters)	Inspection	Schedule
SKIMMER + PUMP									
1	65K108	TERMINATOR - Weir Skimmer	SPM Uniwise Rayong	Share	Rotating	run 5 mins using Powerpack		Normal : Running smoothly	Jan, Jul
								Abnormal : Please note	
						check connection hose condition		Normal : Good condition no leakage	
								Abnormal : Please note	
						check overall condition		Normal : Good condition and ready for used	
								Abnormal : Please note	
2	65K109	Control Unit for 65K108	SPM Uniwise Rayong	Share	Rotating	run 5 mins using Powerpack		Normal : Running smoothly	Feb, Aug
								Abnormal : Please note	
						check connection hose condition		Normal : Good condition no leakage	
								Abnormal : Please note	
						check overall condition		Normal : Good condition and ready for used	
								Abnormal : Please note	
3	65K111	KOMARA 30K - Disc Skimmer	Pollution Warehouse	Share	Rotating	run 5 mins using Powerpack		Normal : Running smoothly	Mar, Sep
								Abnormal : Please note	
						check connection hose condition		Normal : Good condition no leakage	
								Abnormal : Please note	
						check overall condition		Normal : Good condition and ready for used	
								Abnormal : Please note	
4	65K113	KOMARA 12K - Disc Skimmer	Pollution Warehouse	Share	Rotating	run 5 mins using Powerpack		Normal : Running smoothly	Apr, Oct
								Abnormal : Please note	
						check connection hose condition		Normal : Good condition no leakage	
								Abnormal : Please note	
						check overall condition		Normal : Good condition and ready for used	
								Abnormal : Please note	
5	65K112B	RO-MOP OM 260H	Pollution Warehouse	Share	Rotating	run 5 mins using Powerpack		Normal : Running smoothly	May, Nov
								Abnormal : Please note	
						check connection hose condition		Normal : Good condition no leakage	
								Abnormal : Please note	
						check overall condition		Normal : Good condition and ready for used	
								Abnormal : Please note	
6	65K112A	RO-MOP OM140H	Pollution Warehouse	Share	Rotating	run 5 mins using Powerpack		Normal : Running smoothly	Jun, Dec
								Abnormal : Please note	
						check connection hose condition		Normal : Good condition no leakage	
								Abnormal : Please note	
						check overall condition		Normal : Good condition and ready for used	
								Abnormal : Please note	
SKIMMER + PUMP									
1	65G101A	SPATE PUMP 75C	Pollution Warehouse	Share	Rotating	water run using 4.5 kw Powerpack		Normal : Running smoothly	Feb, Aug
								Abnormal : Please note	
						check connection hose condition		Normal : Good condition no leakage	
								Abnormal : Please note	
						check overall condition		Normal : Good condition and ready for used	
								Abnormal : Please note	
2	65G101B	SPATE PUMP 75C	Pollution Warehouse	Share	Rotating	water run using 4.5 kw Powerpack		Normal : Running smoothly	Mar, Sep
								Abnormal : Please note	
						check connection hose condition		Normal : Good condition no leakage	
								Abnormal : Please note	
						check overall condition		Normal : Good condition and ready for used	
								Abnormal : Please note	
3	65G101C	SPATE PUMP 75C	Pollution Warehouse	Share	Rotating	water run using 4.5 kw Powerpack		Normal : Running smoothly	Apr, Oct
								Abnormal : Please note	
						check connection hose condition		Normal : Good condition no leakage	
								Abnormal : Please note	
						check overall condition		Normal : Good condition and ready for used	
								Abnormal : Please note	

OIL SPILL EQUIPMENT BEC FOR ODR

Item	ag No.(L2 20 character	Main Parts & Accessories (L2 32characters)	Location	Cost Share	Type	Question (L3 20 characters)	Question (L3 32characters)	Inspection	Schedule
BOOM									
1	65K104	RO-BOOM 1000 - 300 m	SPM Uniwise Rayong	Share	Rotating	roll out 10-15 m	using 55 kw Powerpack	Normal : Running smoothly	Feb
								Abnormal : Please note	
						check connection hose condition		Normal : Good condition no leakage	
								Abnormal : Please note	
						check overall condition		Normal : Good condition and ready for used	
								Abnormal : Please note	
2	65K105	RO-BOOM 1000 - 300 m	SPM RS38	Share	Rotating	roll out 10-15 m	using 55 kw Powerpack	Normal : Running smoothly	Mar
								Abnormal : Please note	
						check connection hose condition		Normal : Good condition no leakage	
								Abnormal : Please note	
						check overall condition		Normal : Good condition and ready for used	
								Abnormal : Please note	
3	65K101	LAMOR HDB 1300 - 250 m	SPM RS38	Share	Rotating	roll out 10-15 m	using 55 kw Powerpack	Normal : Running smoothly	Apr
								Abnormal : Please note	
						check connection hose condition		Normal : Good condition no leakage	
								Abnormal : Please note	
						check overall condition		Normal : Good condition and ready for used	
								Abnormal : Please note	
4	65K102	RO-BOOM 1300 - 250 m w	Pollution Warehouse	Share	Rotating	roll out 10-15 m	using 55 kw Powerpack	Normal : Running smoothly	May
								Abnormal : Please note	
						check connection hose condition		Normal : Good condition no leakage	
								Abnormal : Please note	
						check overall condition		Normal : Good condition and ready for used	
								Abnormal : Please note	
5	65K103	LAMOR HDB 1300 - 250 m	Pollution Warehouse	Share	Rotating	roll out 10-15 m	using 55 kw Powerpack	Normal : Running smoothly	Jun
								Abnormal : Please note	
						check connection hose condition		Normal : Good condition no leakage	
								Abnormal : Please note	
						check overall condition		Normal : Good condition and ready for used	
								Abnormal : Please note	
6	65K106A	RO-BOOM BEACH 800	Pollution Warehouse	Share	Rotating	random one section	fill all chambers with air	Normal : Boom in pressurize, no leakage	Jul
								Abnormal : Please note	
						check connection hose condition		Normal : Good condition no leakage	
								Abnormal : Please note	
						check overall condition		Normal : Good condition and ready for used	
								Abnormal : Please note	
7	65K106B	RO-BOOM BEACH 800	Pollution Warehouse	Share	Rotating	random one section	fill all chambers with air	Normal : Boom in pressurize, no leakage	Aug
								Abnormal : Please note	
						check connection hose condition		Normal : Good condition no leakage	
								Abnormal : Please note	
						check overall condition		Normal : Good condition and ready for used	
								Abnormal : Please note	
8	65K106C	RO-BOOM BEACH 800	Pollution Warehouse	Share	Rotating	random one section	fill all chambers with air	Normal : Boom in pressurize, no leakage	Sep
								Abnormal : Please note	
						check connection hose condition		Normal : Good condition no leakage	
								Abnormal : Please note	
						check overall condition		Normal : Good condition and ready for used	
								Abnormal : Please note	
OIL STORAGE									
1	65D101	RO-TANK - 25 m3	Pollution Warehouse	Share	Static	assemble the tank		Normal : Assembly in normal condition	Oct
								Abnormal : Please note	
						check overall condition		Normal : Good condition, no leakage	
								Abnormal : Please note	
2	65D103	FAST TANK - 2 x 10 m3	Pollution Warehouse	SPRC	Static	assemble the tank		Normal : Assembly in normal condition	Nov
								Abnormal : Please note	
						check overall condition		Normal : Good condition, no leakage	
								Abnormal : Please note	

ภาคผนวก ข.12

กฎความปลอดภัยในการทำงาน


EHS-MS		
 Environment, Health and Safety (EHS) Rules and Regulations		
Prepared by: Jeerapa Arunpathip	Number: EHS-OT-QS-0005	
Approved by: Timothy A Potter	Revision: 05	
Low	Medium	High

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Purpose

The purpose of this procedure is to outline our expected standards and safe work practices for all personnel who work in SPRC with the objective that no one get hurt either on or off the job.

System Information


Summary These EHS Rules and Regulations shall apply to all personnel who are working at SPRC.

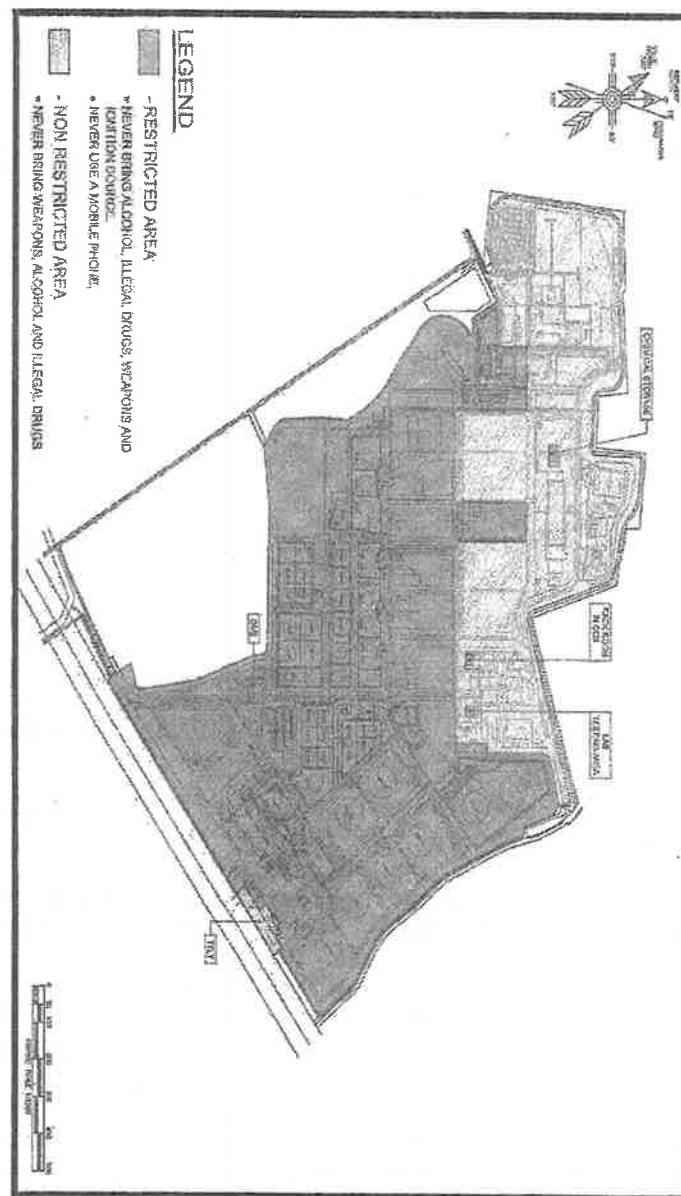
Roles and Responsibilities Everyone is responsible for their own safety and by following these Rules and Regulations will help ensure that everyone works safely both inside and outside of SPRC.



Precautions

Prerequisites

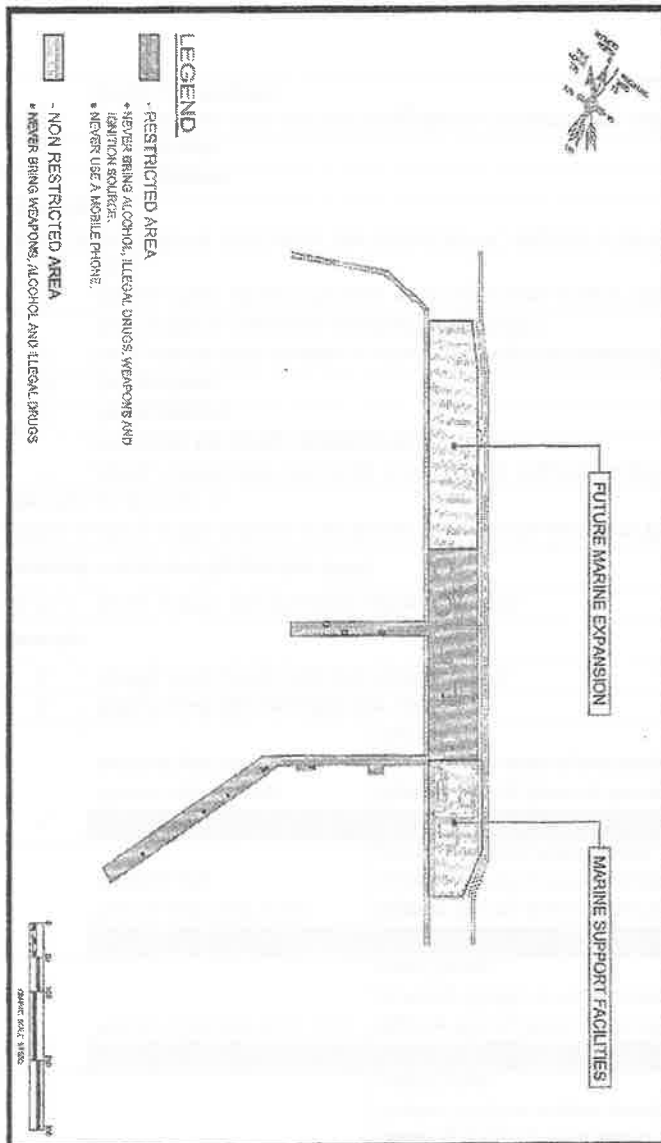
Detailed Activities

Who	Step	Action	Check
1. EHS Rules and Regulations			
1.1 The Golden Rules of Safety			
The Golden Rules of Safety has been developed to provide guidance to SPRC family to help avoid behaviors that can lead to incident or injury.			
There are 7 Golden Rules of Safety:			
ALL	1.	Never come to work when under the influence of alcohol or drugs (0% mg alcohol or negative test for illegal drugs).	
ALL	2.	Never bring alcohol, illegal drugs, weapons or ignition sources to the site	
ALL	3.	Never use a mobile phone in restricted areas.	
ALL	4.	Never smoke outside designated smoking areas.	
ALL	5.	Never engage in fighting or threatening behavior.	
ALL	6.	Never steal property from SPRC premises.	
ALL	7.	Never remove a scaffold board, handrail, or move or modify any scaffolding components.	
<div>  WARNING </div> Any person found not complying with the Golden Rules of Safety will be subject to disciplinary action, which may include: <ul style="list-style-type: none"> Unpaid suspension from work. No longer being allowed to work on SPRC premises. Termination of employment or contract. 			


Area classification for the golden rules of Safety: Refinery

Who	Step	Action	Check				
1.2 General EHS Rules and Regulations							
1.2.1 Access to Office Complex							
VST	1.2.1.1	Contact Security Guard at the Main Gate.					
VST	1.2.1.2	Contact Receptionist at main lobby, Administration Building.					
RCT	1.2.1.3	Contact the host of visitor.					
SPS	1.2.1.4	Escort the visitor at all times.					
1.2.2 Access to the Refinery / Marine Areas							
 NOTE		A safety briefing shall be conducted for the visitor by the SPRC personnel who is the host of the visit before conducting any business.					
SPS	1.2.2.1	SPRC personnel who are the host of visitor shall:					
SPS	1.	Escort the visitor to register at the Refinery Entrance Building (REB), Tank Truck Loading Terminal (TTLT) gate or Marine gate to receive an access card.					
VST	2.	<table><tr><th>IF</th><th>THEN</th></tr><tr><td>Plan to visit process areas</td><td>Sign in the log book at the Central Control Building (CCB), to receive permission from Area Owner.</td></tr></table>	IF	THEN	Plan to visit process areas	Sign in the log book at the Central Control Building (CCB), to receive permission from Area Owner.	
IF	THEN						
Plan to visit process areas	Sign in the log book at the Central Control Building (CCB), to receive permission from Area Owner.						
VST	3.	<table><tr><th>IF</th><th>THEN</th></tr><tr><td>Plan to visit tank farm area</td><td>Sign in the log book at the Oil Movement Building (OMB), to receive permission from Area Owner.</td></tr></table>	IF	THEN	Plan to visit tank farm area	Sign in the log book at the Oil Movement Building (OMB), to receive permission from Area Owner.	
IF	THEN						
Plan to visit tank farm area	Sign in the log book at the Oil Movement Building (OMB), to receive permission from Area Owner.						
VST	4.	<table><tr><th>IF</th><th>THEN</th></tr><tr><td>Plan to visit tank truck loading area</td><td>Sign in the log book at the Tank Truck Loading Terminal (TTLT) Building, to receive permission from Area Owner.</td></tr></table>	IF	THEN	Plan to visit tank truck loading area	Sign in the log book at the Tank Truck Loading Terminal (TTLT) Building, to receive permission from Area Owner.	
IF	THEN						
Plan to visit tank truck loading area	Sign in the log book at the Tank Truck Loading Terminal (TTLT) Building, to receive permission from Area Owner.						
VST	5.	<table><tr><th>IF</th><th>THEN</th></tr><tr><td>Plan to visit marine terminal pier area</td><td>Sign in the log book at the marine terminal pier gate, to receive permission from Area Owner.</td></tr></table>	IF	THEN	Plan to visit marine terminal pier area	Sign in the log book at the marine terminal pier gate, to receive permission from Area Owner.	
IF	THEN						
Plan to visit marine terminal pier area	Sign in the log book at the marine terminal pier gate, to receive permission from Area Owner.						
VST	6.	Return and sign out after the visit.					
SPS	7.	Notify Area Owner that you have returned.					
VST	8.	Return to the REB, TTLT or Marine gate and return access card.					
NAP	1.2.2.2	SPRC personnel and contractors who are not authorized to enter the Process, Tank Farm, TTLT and Marine Terminal Pier Areas shall:					
 NOTE		Authorized person mean Production Unit staff (indicator start with PN and PD) and other SPRC personnel or contractors who get approval permit to work from the area owner.					

Area classification for the golden rules of Safety: Marine



Who	Step	Action	Check
NAP	1.	IF	THEN
		Plan to visit process areas	Sign in the log book at the Central Control Building (CCB) or Centralized Operation Shelter (COS) to receive permission from Area Owner.
NAP	2.	IF	THEN
		Plan to visit tank farm area	Sign in the log book at the Oil Movement Building (OMB), to receive permission from Area Owner.
NAP	3.	IF	THEN
		Plan to visit tank truck loading area	Sign in the log book at the Tank Truck Loading Terminal (TTLT) Building, to receive permission from Area Owner.
NAP	4.	IF	THEN
		Plan to visit marine terminal pier area	Sign in the log book at the marine terminal pier gate, to receive permission from Area Owner.
NAP	5.	Return and sign out after the visit.	
NAP	6.	Notify Area Owner that you have returned.	

1.2.3 Security








ALL 1.2.3.1 **Carry** a SPRC identification badge at all time.

1.2.4 Personal Protective Equipment (PPE)




ALL	When working in the Refinery and Marine Terminal, the minimum PPE required to be worn at all times is:	
ALL	1	Safety helmet with chin strap. (Chin strap is required to be in use whenever the safety helmet is worn.)
ALL	2	Safety glasses
ALL	3	Safety shoes
ALL	4	Long sleeve shirt, trousers or coveralls using Fire Retardant Cloth (i.e., NOMEX). See areas required in Appendix: 1
ALL	5	Gloves. Wear gloves whenever entering process area or tank bund wall area.
ALL	When working in the Laboratory, the minimum PPE required to be worn at all times is:	
ALL	1	Safety glasses
ALL	2	Safety shoes
ALL	3	Long sleeves gown suit and long sleeves trousers using Fire Retardant Cloth (i.e., NOMEX)

Who	Step	Action	Check
ALL	When working in the Maintenance Workshop, the minimum PPE required to be worn at all times is:		
ALL	1	Safety glasses	
ALL	2	Safety shoes	
ALL	3	Long sleeves gown suit and long sleeves trousers using Fire Retardant Cloth (i.e., NOMEX)	
ALL	4	Gloves. The type of gloves shall be suitable for protection against relevant hazards (i.e. cutting protection gloves, chemical protection gloves, electrical protection gloves, heat resistance gloves etc.)	
ALL	PPE to be worn or used in specific working conditions and environment is:		
ALL	1	Hearing protection (ear plugs or ear muffs) are required when entering or working in: <ul style="list-style-type: none">• Process areas (i.e., hearing protection areas usually defined by warning signs),• A noise generating environment e.g. grinding, fiber metal cutting, jack hammer, high pressure water,• Octane testing room.	
ALL	2	Respiratory Protection Equipment, goggles and face shield shall be used for specific jobs or in any work environment where such hazards are identified, or as specified in the Permit To Work.	
ALL	3	Safety helmet with chin strap when an overhead crane is in use at the workshop area.	
ALL	PPE to be worn in rest tent which installed restricted area is:		
ALL	1	Safety glasses	
ALL	2	Safety shoes	
ALL	3	Long sleeves gown suit and long sleeves trousers using Fire Retardant Cloth (i.e., NOMEX)	

Who	Step	Action	Check
1.2.5 Safe Work Practice			
ALL	1.2.5.1	Follow the instruction of Safe Work Practices such as <u>Permit to Work</u> , <u>Confined Space Entry</u> , <u>Isolation of Equipment</u> , <u>Work at Height</u> , <u>Excavation</u> , <u>Electrical</u> , <u>Crane and Lifting Works</u> .	
1.2.6 Carry Personal Gas Monitor			
ALL	When entering Process areas, Tank Farms and Marine Terminal Piers:		
OPS	1.2.6.1	Carry a personal 4 gas monitor for all Operation Personnel (i.e. Operators, Shift Supervisors, Operation Coordinators) - one monitor <u>per person</u> .	
NOP	1.2.6.2	Carry a personal 4 gas monitor by at least one person in a group that is working at the same job/ equipment/ area. The workers must be adjacent in a manner that clear communications can be done.	
1.2.7 Use of Portable Radio			
ALL	1.2.7.1	Carry radios in the approved leather pouch.	
ALL	1.2.7.2	Use approved belt or strap.	
ALL	1.2.7.3	Use remote speaker.	

Who	Step	Action	Check
1.2.8 Motor Vehicle Safety			
 CAUTION		Do not allow any vehicle to enter restricted areas without an access pass issued by Security	
 CAUTION		Do not allow any person to ride on the bed of a truck without a proper seat, guard and roof.	
 CAUTION		Do not allow gasoline driven vehicles / engine to enter the restricted areas	
 NOTE		A gasoline engine used for grass cutting is allowed in the PD operating area	
ALL	1.	Wear seatbelts.	
ALL	2.	Follow the traffic signs.	
ALL	3.	Follow the speed limit for the following areas: <ul style="list-style-type: none"> Refinery Not Exceed 30 km/hr Administration complex Not Exceed 40 km/hr 	
ALL	4.	IF Diesel driven vehicles/engine is required to enter an Operating Unit or Hazardous Areas.	THEN Request and get permit from the unit operation personnel prior to entering the unit.
ALL	5.	IF In case of an emergency.	THEN 1. Stop the vehicle 2. Switch off the engine 3. Evacuate to assembly point
 CAUTION		Do not use a mobile phone while driving. In case of an important call e.g. duty call, the driver must park the vehicle in a safe manner before using the phone.	
ALL	6.	IF Driving company vehicle or personal vehicle for company business.	THEN Switch off the mobile phone.
ALL	7.	Switch off the company-issued mobile phone before driving any vehicle. The on-call duty team members and emergency response personnel attending to an emergency situation are allowed to leave the mobile phone on while driving company vehicles or personal vehicle for company business.	
 NOTE			
 CAUTION		Use of radio while driving must for listening only.	
ALL	8.	IF Need to have a conversation via radio while driving.	THEN Park the vehicle at safe location first.

Who	Step	Action	Check
1.2.9 Parking of Vehicles in the Refinery			
CAUTION Do not park vehicles in a way that obstructs the flow of traffic.			
ALL	1.2.9.1	Park at a minimum distance of 5 meters from the following: <ul style="list-style-type: none"> • Fire hydrants • Emergency showers • Emergency equipment painted red 	
ALL	1.2.9.2	Parking vehicles in a restricted area must follow the steps below:	
ALL	1.	Turn off the engine.	
ALL	2.	Leave the key in the ignition.	
ALL	3.	Leave the driver's door unlocked.	
1.2.10 Bicycles / Tricycle Safety			
CAUTION Do not use air instruments to inflate bicycle / tricycle tires.			
ALL	1.2.10.1	Verify that bicycles and tricycles are equipped with chain guards and brakes.	
ALL	1.2.10.2	Verify that chain guards and brakes are inspected and maintained in good and safe condition.	
ALL	1.2.10.3	Ride Bicycle/Tricycle under the main pipe rack in process areas.	
ALL	1.2.10.4	Park bicycle at the designated parking racks/area.	
ALL	1.2.10.5	Park bicycle/tricycle in any area: <ul style="list-style-type: none"> • At least 5 meters away from Fire Fighting Equipment • 2 meters away from any equipment • Do not cause any obstruction to operations 	
1.2.11 Photography Control			
CAUTION Do not take photos or videos at SPRC facilities unless authorized.			
ALL	1.2.11.1	Taking photos or videos in restricted areas:	
ALL	a.	Apply for a Photography Permit to get approval from SPRC Management for a Photography Badge.	
ALL	b.	Apply for a Hot Work Permit to get approval from authorized area personnel to take photos or videos.	
NSE	1.2.11.2	Taking photos or video in non-restricted area	
NSE	a.	Request and get approval from SPRC sponsor.	
NOTE Shift operator area owners do not require a permit to work for taking photos or videos if the area is confirmed as hydrocarbon free by gas testing.			
NOTE Refer to areas required for photography in Appendix 2.			

Who	Step	Action	Check
1.2.12 Equipment Operation			
 WARNING		Do not operate any equipment, valves or switches without authorization or permission from the area owner.	
1.2.13 Personnel Safety During Process Unit Commissioning, Shutdown and Start-up			
 WARNING		Do not allow all non-essential personnel access to process unit during Commissioning, Shutdown or Start-up period.	
1.2.14 Repetitive Stress Injury (RSI) Prevention			
ALL	1.2.14.1	Stop working with computer when RSI break program pop up on screen	
ALL	1.2.14.2	Follow RSI break program exercise as pop up on screen	
1.2.15 Short Service Employee (SSE)			
SSE	1.2.15.1	Identify SSE with the green SSE sticker during SSE period (6 months)	
SPS	1.2.15.2	Assign mentor for each SSE	
SPS	1.2.15.3	Look after and share work knowledge, skill, experience and safe work practice with SSE	
1.2.16 Incident/Near Miss Reporting			
ALL	1.2.16.1	Report all incidents or near misses to the relevant Supervisor or Manager immediately.	
1.2.17 Oil/Chemical Spill Handling			
 WARNING		Do not drain any kind of oils, chemicals or paints into a drain or sewer. If in doubt, consult a SPRC operator or a SPRC Environmental Specialist.	
ALL	1.2.15.2	IF Oil or chemicals spills	THEN 1. Notify area owner immediately 2. Stop leak (if safe to handle) 3. Clean the area
1.2.18 Housekeeping			
ALL	1.2.15.1	Maintain good housekeeping throughout the workplace and relevant facilities.	

Who	Step	Action	Check
Disciplinary Action for General EHS Rules and Regulations			
When any person sees a deviation from these EHS Rules and Regulations, they should immediately:			
<div>⚠ CAUTION</div> <ul style="list-style-type: none"> Tell – Specify what their concern for their safety is. Ask – If they see this concern and what they would do differently to be safe. Tell – Thank you and get their commitment to correct the unsafe behavior or condition. 			
<div>⚠ WARNING</div> <p>In case the person who violated the EHS Rules and Regulations disagrees to correct their behavior, report to their supervisor. The supervisor may take appropriate coaching and other actions, including using the SPRC Employee Accountability Assessment (EAA) process.</p>			

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Appendix

1. Fire Retardant Cloth Identified Areas

Locations	Required Area	Not Required Area
Refinery	1. Process Areas 2. Tank Farm 3. Cleaning Yards 4. Sulphur Palletized Area 5. Waste Areas 6. Laboratory Operating Room 7. Metering Skids H2 / N2 8. Workshop 9. Chemical Warehouse 10. JGC Warehouse 11. Tank Truck Loading Terminal (TTLT)	1. Administration Building Complex 2. Refinery Main Road (Inside Car) 3. Central Control Building (CCB) 4. Clinics 5. Refinery Entrance Building (REB) 6. Workshop / Warehouse Offices 7. Contractor Office Cabin 8. Contractor Yard 9. Oil Movement Building (OMB) 10. Tank Truck Loading Terminal (TTLT) Building 11. Fire Station Building 12. Centralized Operation Shelter (COS) 13. Construction Buildings
Marine	1. Marine Terminal Pier* 2. Single Port Mooring (SPM)	1. Marine Control Building (MCB) 2. Excise Building



NOTE

*: Ship Crew, Ship Visitors who walk along the pier to ship are not required to wear Fire Retardant Cloth.

2. Photography Control Areas

Locations	Restricted Area	Non Restricted Area
Refinery	1. Process Areas 2. Tank Farm Areas 3. Central Control Room at CCB 4. Laboratory Room 5. Tank Truck Loading Terminal (TTLT) 6. Security Control Room at REB 7. Server Room at Administration Building 8. Technical Department Central File Rooms at Administration Building	1. Administration Building Area 2. Warehouse & Workshop Area 3. Employee Recreation Center (ERC) Area 4. Tank Truck Loading Terminal (TTLT) Building
Marine	1. Marine Terminal Pier 2. Single Port Mooring (SPM)	1. Marine Control Building (MCB) 2. Excise Building

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Definitions

Abbreviations

ALL	All SPRC personnel including SPRC employees, contractors, visitors, vendors and other parties who are doing business in SPRC premises.
VST	Visitor
RCT	Receptionist at Administration Building
SPS	SPRC Sponsor
NAP	SPRC Personnel and Contractors who are non-authorized persons to enter the restricted areas
OPS	Operations Personnel
NOP	Non-Operations Personnel
NSE	Non-SPRC Employee
SSE	Short Service Employee



References

Amendment List

Below is a list of changes between the previous and the current revision of this document.

Step/Section	Reason for change
Step 3/Section 1.2	Update minimum PPE in rest tent which located inside restricted area

Distribution List

Copy No.	Controller/Holder	Location
00	Electronic Controller	SmartProcedure

ภาคผนวก ข.13

การจัดการกากของเสีย


Environment		
 Soild Waste Handling and Disposal Guideline		
Prepared by: Varoonnapa Chaingam	Number: EHS-WI-QS-1006	
Approved by: Pongkorn Chochuwong	Revision: 1.	
Low	Medium	High

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Purpose

The purpose of this work instruction is to define process and responsibilities associated with maintaining a waste management system and to ensure that alltypes of wastes generated from SPRC sites are properly classified, handled and safely disposed of in compliance with Thai legislation, Shareholders and International agreements, together with monitoring according to regulation of the waste management process.

SPRC waste management focus to contribute for sustainable development by avoidance of disposal of waste to landfill and minimize the amount of waste generated to recover/recycle/reuse wastes where possible, disposing the remainder in a safe and environmentally responsible and acceptable manner.

This document is classified as an information use/adherence category (IU), the review frequency is 5 years cycle. Next review is October 2025.

System Information

Summary

This procedure covers solid waste management and disposal guideline for all types of wastes, except radiation waste, untreated wastewater to ETP unit, from generation on SPRC premises (including Refinery Areas, Marine Terminal, Tank Truck Loading terminal (TTLT), Administration Building and Other support facilities to its final disposal, either internally or externally.) Solid waste covers liquid, slurry, powder and solid phase. The physical characteristics are as follows:

- Mass or Pieces e.g., metal scrap, unused material, GT filter, amine filter, etc.
- Dry Friable Granular e.g., spent catalyst, spent absorbent, sulfur, bio sludge, coke, etc.
- Powder e.g., incinerator ash, spent RFCCU catalyst, etc.
- Wet Non Pumpable e.g., asphalt, bottom tank sludge, etc.
- Liquid Pumpable e.g., oily sludge, contaminated chemical, obsolete chemical, etc.

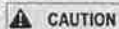
This procedure is applicable to all activities and all personnel working in and for SPRC, whether they are directly employed by SPRC or indirectly via approved contractors.

Roles and Responsibility

Deviation from the procedure must be stopped and informed a line supervisor or line manager, concerned people for a solution prior to executing this procedure.

1. **Waste generator owns the waste (Production Units, Maintenance, Contractor, etc.):**
 - Segregate and Classify characteristic of waste
 - Provide MSDS and containment of waste such as steel drum 200 L, ensure good condition containment and ready moving. Complete a Hazardous Waste Disposal permit (HWDPP) and Waste Disposal permit and attach MSDS (If require) via the Electronic request form
 - Put the waste in designated container and affix a label on the container(s) or group of small containers.
 - Coordinate with Maintenance Support Services Team regarding the number and placement of the waste containers.
 - Notify Environmental Specialist or Maintenance Support Service team about the waste and getting approval for disposing of the waste
 - Control budget and expense on waste disposal.

2. **Environmental Specialist:**
 - Request permission for offsite waste transportation & disposal and export permit from authority.
 - Approve the method of waste disposal & waste disposal request (E-form).
 - Verify Off site waste disposal contractor compliance.
 - Verify accounting invoices before approval.
 - Maintain the list of the approved contractors.
 - Submit monthly and annually waste management reports to regulatory agencies.
 - Give a technical advice on waste handling and disposal.
 - Track waste documentations.
 - Coordinate with Waste disposal Contractor to provide waste containers e.g., Luggage box, Roll off box , truck and tanker truck.
 - Be the registered Waste Management System Controller refer to notification of MOI.



All waste disposal permits shall be approved by DIW before transport waste to offsite disposal facilities.

3. **Maintenance Support Services:**
 - Provide On-site waste transportation.
 - Consolidate waste manifests from contractor and send to Environmental specialist.
 - Arrange the Central Waste Storage Area and check waste inventory for every month , to ensure no waste has been stored **longer than 90 days**.
 - Perform a monthly audit at central waste area to ensure waste containers are in good condition and safe.
 - Provide a Material Gate Pass in the case waste is sent for offsite disposal.
 - Move waste from the location of **waste generator within 10 days** after the waste disposal request (E-form) has been approved by the Environmental Specialist.
 - Be a registered Waste Management system Operator refer to Notification of MOI.

4. **Process Engineer:**
 - Coordinate with procurement and contractor for reclamation spent catalyst e.g. spent Platformer catalyst, spent Hydro treating catalyst.
 - Coordinate with **the Environmental Specialist to obtain relevant permits for spent catalyst exporting.**
 - Label the spent catalyst container and coordinate with Procurement for storage and Shipping.
 - Coordinate with Environmental specialist to manage solid waste from plan shutdown production unit.
 - Provide waste containers steel drum (200 liters) for storing waste such as spent catalyst waste contained some pyrophoric material



All kind of spent catalysts (include spent catalyst sample but exclude active catalyst sample from RFCCU and Platformer) shall apply an export permit to comply with relevant regulations and other requirement e.g. Basel protocol, Hazardous Material act B.E. 2535 and Factory Act B.E. 2535.

5. **SPRC contractor sponsor:**
 - Complete **the Material Gate Pass for Materials**, which is used for waste (including waste water to be disposed offsite) tracking and inventory. A copy of waste manifest must be submitted to Environmental Specialist.
 - Supervise contractors for waste handling, tracking and inventory.
 - Ensure contractor responsible for any waste they generate at the refinery as contract agreement under Environmental Specialist's supervision.

6. Contractors:

- Segregate and classify wastes from routine waste, provide the specific waste area for temporary storing and have a notice board for communication.
- Keep waste in storage area tidy.
- Consult with SPRC sponsor and Environmental Specialist on offsite waste transportation and report a quantity of disposal waste.
- Ensure waste disposal permit in place before offsite transportation.

7. Administration Assistants:

- Collect used dry-cell batteries then coordinate with the Environmental specialist or Maintenance Support Services for disposal

8. Procurement Support: for export waste


- Ensure waste permit compliance before exporting.
- Provide export information, copy of Bill of Lading (B/L) and related document to Environment Specialist for stock cutting of exporting waste process.

Precautions [List any applicable precautions which must be observed while executing this procedure]

Prerequisites [List any applicable prerequisites which must be met before executing this procedure]

Detailed Activities

Who	Step	Action
1. Solid Waste Classification and Characterization		
		<p>Environmental Specialist maintains a waste list of common and recurring refinery waste including their recommended disposal method. (EHS-OT-QS-1004 Hazardous and Non Hazardous Waste List.doc Physical separation of the waste and well-segregating hazardous and non-hazardous waste will help to properly control cost of disposal and encourage of avoiding disposal to landfill.</p> <p>The main waste classifications are:</p> <ol style="list-style-type: none"> 1. Hazardous waste for offsite disposal <ul style="list-style-type: none"> • Spent catalyst e.g. Hydro treating spent catalyst, spent RFCCU. • General Hazardous waste e.g. bio sludge, asphalt, bottom tank sludge, contaminated chemical. • Infectious waste. 2. Non-hazardous waste for offsite disposal <ul style="list-style-type: none"> • General Non Hazardous waste e.g. GT filter, RO membrane Garbage and trash. • Recyclable waste e.g. metal scrap, paper scrap , wood scrap
1.1 Hazardous Waste for Offsite Disposal		
	1.1.1	<p>Spent Catalysts</p> <p>Spent catalysts, regeneration catalyst or reclamation spent catalysts, shall be disposed of by the MOI accredited treatment facility.</p> <p>Spent catalysts have generally generated during system shutdowns, except RFCCU spent catalyst generate during normal operation. Most of catalysts are in solid form.</p>
	1.1.2	<p>General Hazardous waste</p> <p>A hazardous waste and is defined by the Appendix 2 of the Notification of Ministry of industry on waste disposal B.E. 2548</p> <p>Waste generator should consult with Environmental Specialist for specific hazardous waste characteristics. Generally, hazardous wastes are characterized by the following properties:</p> <ul style="list-style-type: none"> • Ignitable (liquid; flash point < 60 ≥°C, flammable and compressed gas) • Corrosive (pH≤2 or pH ≥12.5) • Reactive (pyrophoric / burns in air) • Toxic (human health hazard) • Leachate <p>Example of hazardous wastes e.g. bio-sludge, oily sludge, Laboratory waste, oil contaminated wastes, insulation and refractory waste. They are sent to accredited offsite disposal / treatment facility.</p>

Who	Step	Action
	1.1.3	Infectious waste Infectious waste defined by the Public Health Ministry, Regulation of Infectious waste disposal B.E. 2545. These waste is generated from Site Clinic. They have been disposal by infection waste incineration at hospital incineration.
1.2 Non- hazardous Waste for Offsite Disposal		
		Non-hazardous wastes are defined by the notification of MOI on waste disposal B.E.2548. These wastes are mainly non-contaminated civil waste and used copper slag that uncontaminated a hazardous chemical. They shall send to accredited offsite disposal / treatment facility.
	1.2.1	Garbage and Trash Garbage and trash from offices, kitchens and cafeteria are collected separately in bins placed in convenient locations throughout the refinery. Bins are to be clearly labeled "Garbage and Trash" in English and in Thai. This waste is removed by the Map Ta Phut Municipality or other government approved waste disposal service.
	1.2.2	Recyclable Waste Recyclable waste is paper, scrap metals, scrap plastics, used equipment, excess construction materials, wood, clean empty drums and containers, and other similar materials. These materials are sent to the Central Waste Storage Area for further management and proper cleaning, then will be sold out or donated to local communities/agencies. Procurement, Process Engineering and Operations shall ensure waste containers minimization by using alternative containers such as semi-bulk or Iso-container. Waste generator shall ensure chemical in drums is empty.
 NOTE Refer Notification of Department of Industrial Work B.E. 2561, Exception to submit permission for Non- Hazardous waste e.g recyclable waste, construction waste		
END OF TASK		

Who	Step	Action				
2. Solid Waste Containers, Storage and Disposal Methods						
2.1 For Routine Wastes						
	2.1.1	Office waste, Recyclable waste and General Hazardous waste				
		Waste Type	Type of Waste Container	Frequency of Waste Collection	Storage Location	Disposal Methods
		Oily contaminate d materials(Co ntaminated rag, PPE, Cartridge filer	Red bin	Daily from Monday to Friday	Central Waste Storage Area	Recycling in the cement Factory
		Garbage and trash	Blue bin	Daily from Monday to Friday	Behind Canteen	Sanitary Landfill
		Waste Paper, Plastic bottle, Glass bottle, Can	Yellow bin	Daily from Monday to Friday	Central Waste Storage Area	Recycling
		Scrap Metal waste, Stainless steel ,Cable wire	N/A	As request or move to central waste area directly	Central Waste Storage Area	Recycling

Who	Step	Action				
	2.1.2	Hazardous waste from process				
		Waste Type	Type of Waste Container	Frequency of Waste Collection	Storage Location	Disposal Methods
		Spent FCC Catalyst	Contractor container	Once a week or as request	RFCCU direct to offsite waste disposal	Recycling in the Cement Factory
		Bio-sludge	Contractor container	As request	ETP direct to offsite waste disposal	Recycling in the Cement Factory
		Empty Contaminated Container	Contractor container	As request	Central Waste Storage Area (Shall have covers to prevent spill of residue and smell generated.	Recycling
		Insulation	Contractor container	As request	Central Waste Storage Area (Shall keep in plastic bag and tie it tight to prevent spill)	Recycling in the Cement Factory
		Infectious Waste	Special bin	As request	Clinic	Incineration at Hospital

Who	Step	Action				
	2.2	For Non Routine Wastes				
		Waste Type	Type of Waste Container	Frequency of Waste Collection	Storage	Waste Disposal Methods
		Hazardous waste	Drum 200 Liter or Contractor container	As per request	Central Waste Storage Area	Hazardous Waste Landfill or Cement Factory
		Non-hazardous waste	Drum 200 Liter or Contractor container	As per request	Central Waste Storage Area	Non Hazardous Waste Landfill or Cement Factory
		Spent Catalyst	Drum 200 Liter or Contractor container	As per request	Central Waste Storage Area	Hazardous Waste Landfill or Recycling at the reclaim metal facility at oversea
		Construction waste	Contractor container	As per request	Segregate and prevent mixing with routine waste	Offsite waste disposal/ sale to recycle factory
<p>All waste containers (bin) shall have covers and fully close to protect from rain water, animal and insect for odor and hygiene control.</p> <p>CAUTION Waste containers (bin) conditions shall be water proof containers, no leak and no severe corrosion on surface.</p> <p>Ensure no wastes stored in Central Waste Storage Area longer than 90 days.</p>						

Who	Step	Action
2.3 Special Waste Handling and Caution		
	2.3.1	General Caution The collected container is required a segregation and warning sign. Storage must not create to secondary environmental problem such as odor nuisance or groundwater contamination. Any run off from the storage yard must be treated as contaminated water. Store liquid waste in closed containers on a site surrounded by a bund wall, with drainage to a sewage system.
	2.3.2	Pyrophoric materials and other combustible materials handling When storing waste is unavoidable, special precautions (such as wetting) should be applied for pyrophoric materials and other combustible materials. Waste waiting for disposal must be stored in a dedicated area enclosed in an environmentally safe manner.
	2.3.3	Asbestos Waste handling All asbestos disposal containers must be labeled accordingly and keep wet it the double layer of plastic bag. The asbestos will be disposed as a Hazardous waste. It will be disposed by offsite waste disposal contractor
		Keep the asbestos waste in wet condition and wear respirator mask when handling with them to prevent harm with respiration system. WARNING Waste containers (bin) conditions shall be water proof containers, no leak and no severe corrosion on surface.
	2.3.4	Hazardous (used battery and used dragger tube) Waste storing Used battery, light and used dragger tube which contains toxic heavy metal shall be stored in separate bins. These wastes are sent to accredited offsite disposal / treatment facility.

Who	Step	Action
	2.3.5	Mercury (Hg) Contaminated waste Handling and Disposal The wastes contained Hg ≥ 20 mg/kg are classified as Hazardous Waste, list is as follows: <ul style="list-style-type: none">Spent MRU absorbentHg Contaminated materials e.g., tray, tube bundle, pipeline, etc. Spent MRU absorbent waste shall be kept in leak proof containers with plastic liner, sealed cover and labeling. It shall be sent to recycle and dispose in authorized facilities in Thailand or oversea. If oversea disposal, the Maritime Transportation of Dangerous Goods and Basel Permit shall be complied with. For handling and disposal of Hg contaminated materials e.g., tray, tube bundle, pipeline, etc., please see the workflow. MRU filter, PPE, oily sludge, bio-sludge, chemical or wastewater from cleaning contaminated materials, etc. is potentially hazardous wastes. They are analyzed and sent to dispose in authorized facilities in Thailand.
Hg Contaminated Materials Disposal Workflow		
WG	2.3.5.1	Seal with Plastic sheets until no mercury(Hg)vapor detected
WG	2.3.5.2	Affix tracking Number of Equipment
WG	2.3.5.3	Apply Asset Disposal Request
WP	2.3.5.4	Verify Hg in Surfaced Material
ES	2.3.5.5	IF
WP		Is it Hazardous? (Hg on surfaced ≥ 20 mg/kg)
WP		
ES		
		THEN
		Request DIW waste Disposal Permit
		Clean until Hg< 20 mg/kg
		Sell as scrap
		Proceed Record & Peport to DIW
		DIW Industrial Waste
		Manifest&Disposal Report
WP	2.3.5.6	IF
		Is it Hazardous? (Hg on surfaced ≤ 20 mg/kg)
ES		
		THEN
		Sell as scrap
		Proceed Record&Report to DIW
		DIW Industrial Waste
		Manifest&Disposal Report
END OF TASK		

Who	Step	Action
3. Solid Waste handling Procedure		
	3.1	Solid Waste Handling for Routine Wastes Workflow
WG	3.1.1	Segregate and store waste in Bin
MSST	3.1.2	Collect waste from full container and move to dedicated waste storage area
MSST	3.1.3	Coordinate with offsite waste disposal contractor and municipality officer
MSST	3.1.4	Complete the material gate pass for waste moving out
MSST	3.1.5	Collect waste manifest from the contractor and send to Envi. Specialist.
MSST	3.1.6	Move out waste from site
ES	3.1.7	Record waste tracking manifest and quantity

Who	Step	Action
	3.2	Solid Waste handling For Non Routine Waste Workflow
WG	3.2.1	Request waste container and waste lable (Steel drum 200 L) EHS-FO-QS-1006 Hazardous waste label EHS-FO-QS-1008 Waste label
WG	3.2.2	Affix waste lable on all containers and fill information e.g. waste type, property and plan name.
WG	3.2.3	Segregate and store waste in proper container
WG	3.2.4	Ensure all waste will be stored only in leak proof and sealed container.
WG	3.2.5	Create HWDP/WDP workflow via E-form EHS-FO-QS-1005 Hazardous& Non- Hazardous waste disposal permit form
ES	3.2.6	Review and approve waste disposal method
WG	3.2.7	Fill waste permit number on lable
WG	3.2.8	Coordinate with maintenance support team to move waste from area
WG	3.2.9	Coordinate with offsite waste disposal contractor
MSST	3.2.10	Prepare material gate pass for waste moving out
MSST	3.2.11	Move out waste form site
MSST	3.2.12	Collect waste manifest and send to Envi. specialist.
ES	3.2.13	Record waste type, Manifest and quantity
END OF TASK		


Who	Step	Action
4. Waste Tracking and Inventory System		
		<p>The following information is needed for the solid waste tracking and inventory:</p> <ul style="list-style-type: none"> • Waste generator plant names • Waste characterizations • Waste classifications • Waste quantities • Waste disposal methods • Names of disposal contractors refer to AVL process • SPRC Waste disposal permit from authorities • Waste Manifest • Waste Transportation and Disposal Cost. • Waste disposal Inventory • Waste inventory at the Central Waste area
END OF TASK		

Who	Step	Action
5. Write Off or Asset disposal		
		<p>Materials or asset cannot be disposed of unless asset disposal was approved by relevant manager. Approval authorities for asset disposal or write off are specified under the Manual of Delegated Authority (MODA).</p> <p>The approval process is initiated by the department in charge of the asset completing the following fields on the Asset Disposal Request form (Refer to Asset Disposal Procedure), and sending a signed hard copy to the Approver via the Corporate Services Department:</p> <p>For more details, please refer to Asset Disposal Procedure of the Corporate Services Department.</p>
END OF TASK		

Who	Step	Action
6. Offsite Solid Waste Disposal Contractor Selection		
		<p>Environmental Specialist qualifies offsite contractors, and maintains the list of the approved contractors. The following criteria are used to evaluate each contractor:</p> <ul style="list-style-type: none"> • Contractor disposal method • Contractor financial and insurance reports • Contractor transportation equipment • Contractor facilities • Contractor training, quality and safety program, and record • Contractor experience • Periodic re-evaluation • Contractor obtains all necessary permits and licenses from the Thai authorities for the work. <p>Actual guidelines for approving contractors are given in the Environmental Contractors Evaluation Checklist.</p> <p>Off Site Solid Waste Disposal Contractor Audit</p> <p>In order to track SPRC Waste and minimize the potential problems associated with using offsite contractors to handle and dispose of SPRC waste at an offsite (non-SPRC controlled) facility, the approved offsite waste disposal facilities are scheduled to be audit by Environmental Specialist at least once a year or review an environmental performance report e.g. Sustainable report, in case the disposal facility has been certified by ISO 14000 instead of actual site auditing.</p>
END OF TASK		

Who	Step	Action
7. Emergency Response Plan		
		<p>In case of spill / release from primary containment, please refer to Hazardous Material Release, Emergency Response plan and Pre-Fire plan.</p> <ul style="list-style-type: none"> • EHS-OT-QS-3117 Pre-Incident Plan Central Waste Area (Spill) • EHS-OT-QS-3118 Pre-Incident Plan PN Central Waste Area (Fire)
END OF TASK		

Who	Step	Action	
8. Spent Catalyst & Chemical Wastes Export.			
	Export Workflow		
WG	8.1	Fill in the Export Request Form Section I and submit form with Required documents to Enviromental specialist. AM-FO-AS-309:Export Request Form	
ES	8.2	IF	THEN
ES		Require Basel Permit	8.2.1 Submit for Basel Permit from DIW Basel Convention
ES			8.2.2 Submit for Export Permit from DIW Exprot Hazardous Substance Request Form/Hazardous Substanxe Export Permit
ES			8.2.3 Request for offsite waste dispsal permit from DIW (Sor-Kor 2)
ES			8.2.4 Send relevant permits to Procurement for further process
PMST			8.2.5 Provide waste exporting plan and quantity and related document to Environmental specilaist 5 working days in advance for notifying DIW.
ES			8.2.6 Notify DIW on waste delivering plan and quantity for cutting stock process before delivering.
PMST			8.2.7 Provide copy Bill of loading(B/L)and related document to Environmental specilist for final reprot of stock cutting.

Who	Step	Action	
		IF	THEN
ES	8.3	Not Require Basel Permit	8.3.1 Submit for Export Permit from DIW Export Hazardous Substance Request Form/Hazardous Substance Export Permit 8.3.2 Request for offsite waste disposal permit from DIW (Sor-Kor 2) 8.3.3 Send relevant permits to Procurement for further process 8.3.4 Provide waste exporting plan and quantity and related document to Environmental specialist 5 working days in advance for notifying DIW. 8.3.5 Notify DIW on waste delivering plan and quantity for cutting stock process before delivering. 8.3.6 Provide copy Bill of loading(B/L)and related document to Environmental specialist for final report of stock cutting.
ES			
ES			
PMST			
ES			
PMST			
<div>  NOTE </div> All kind of spent catalysts (include spent catalyst sample but exclude active catalyst sample from RFCCU and Platformer) shall apply an export permit to comply with relevant regulations and other requirement e.g. Basel protocol, Hazardous Material act B.E. 2535 and Factory Act B.E. 2535.			
END OF TASK			

Who	Step	Action
9. Measurement and Verification		
	The following leading and lagging indicators will be measured and tracked to determine the effectiveness of Waste Management Process.	
	9.1	Leading Indicator <ul style="list-style-type: none"> Number of SAA or V&V and 100% closed out finding from improper waste handling. Waste contractor audit once a year and 100% closed out finding.
	9.2	Lagging Indicator <ul style="list-style-type: none"> Number of incidents related to spill or smell complaint from waste handling. Number of Non-Compliance from waste management.
END OF TASK		

Who	Step	Action
10. Continual Improvement		
	Waste management can improve efficiencies in reducing waste and improving recycling with well segregated to minimize waste generation and identifying markets of waste processor for waste recycling and reuse.	
END OF TASK		

Appendix

Definitions

[List any applicable definitions associated with this procedure]

References

The following sources were used for this document:

- Caltex Petroleum Corporation, Environment Health & Safety Principles, EHS 0191, June 1993
- Notification of MOI on. Waste disposal B.E. 2548 , date 27 December 2005
- MOI Ministerial Proclamation no. 1/2541 dated May 1998
- Asset Disposal Procedures in Corporate Services Department
- Public Health Ministry, Regulation of Infectious waste disposal B.E. 2545
- Evaluation Guidelines for Environmental Contractors procedure.
- Notification of Ministry of industry on Identified size and type of factory method to control waste emission or etc that impact with environmental identified qualification of pollution controller B.E. 2545
- Notification of Ministry of industry, date 27 December B.E. 2547 on Manifest of Hazardous Waste system.
- Notification of Ministry of industry ,date 17 December B.E. 2547 on criteria and method of waste report by using Intranet system
- Ministerial regulation of MOI B.E. 2437,Refer to Hazardous Material Act B.E. 2535, effective date 17 November 2537
- Notification of Ministry of industrial on " inform information of producer ,exporter importer and hazardous material holder", effective date on 9 May B.E. 2543
- Notification of the MOI No. 2 dated 1st February B.E. 2555 (2012) on Identification of Factories Types, Size, Pollution Control System and Qualification of Pollution Control Facilities Supervisor/Operator Certification
- BASEL Convention of the Control of trans boundary movement of Hazardous waste and their waste under the Department of Industrial work (DIW) control

Amendment List

Below is a list of changes between the previous and the current revision of this document.

Amendment List before transfer to Smart Procedure.

Revision	Date	Page/Section	Reason	By
0	06-Oct-08	All	First release	QS/1
1	1-Jun-09	All	Review and delete terms that mention PUS	QS/22
		P.3/3	Waste management responsibility.	
			revise and add the responsibility of construction project contractor	
		P.8-9,10/5	Solid waste Container, storage and Disposal Methods.	
			5.1 correct a frequency of waste collection of spent FCCU and Bio-sludge	
			5.2 add waste type for construction waste Items	
			5.3 waste storage handling and special caution	
			5.3.4 Add mercury (Hg) absorbent waste disposal and handling	
		P.12-13/6	Solid Waste Handling Guideline	
			5.1 add additional record	
			5.2 update the request waste disposal via E-form	
2	15-Mar-12	P.3-4/3	Add a responsibility of Environmental specialist and maintenance support team. They shall move waste within 10 days after get an approval waste disposal permit (e-form) Refer to Car -EHS-11-008.	QS/22
		P.4-5/3	Revise a responsibility of process Engineer and add responsibility of Administration assistant	QS/22
		P.11/5.3	Review the asbestos handling	QS/22
		P.17/9	Add the alternative of Waste contractor performance auditing method "Environmental report reviewing, (e.g. SD report)" to instead of yearly site visit and auditing for the facility has been certified ISO14000.	QS/22
		P.21/12	Update list of refer documents.	QS/22
3	17-Oct-12	P.2/2	Revise Scope by adding physical characteristics of solid waste	QS/21
		P.4/3	Revised responsibility of Process Engineer caution on active catalyst sample from RFCCU and Platformer and add Procurement Responsibility for exporting waste.	
		P.19/11	Revise Chemical and catalyst export process refer to the spent catalyst incident investigation.	

4	22-Dec-14	All	Change SPRC logo	Varoonnapa C. (QS/22)
5	5-Feb-15	P.3-4/3	Revise responsibilities of Waste generator, Environmental Specialist and Maintenance Support Services. 1. Adding type of containment of Waste generator responsibilities. 2. Change responsibility between Environmental Specialist and Maintenance Support Services by adding to be coordinator with Waste Disposal Contractor to provide containment in scope of Environmental specialist	Varoonnapa C. (QS/22)
		P.13/9	Add new permit form in non- routine wastes workflow.	
6	20-Apr-16	P. 11/5.3	Revised Mercury (Hg) Contaminated waste Handling and Disposal	Nipa N. (QS/21)
7	7-Oct-20	All	Reviewed and embed 3Rs concept to be guideline.	Varoonnap C.(QS/22)

Amendment List Smart Procedure

Version	Date	Page/Section	Description	By
01	16-Nov-20	All	Transforming to the smart Procedure	Varoonnapa C.

No changes specified in the current Revision of this Procedure.

Distribution List

Copy No.	Controller/Holder	Location
00	Electronic Controller	SmartProcedures

**หนังสือแจ้งผลการพิจารณาอนุญาต
ให้นำสิ่งปฏิกูลหรือวัสดุที่ไม่ใช้แล้วออกนอกบริเวณโรงงาน**



หนังสือแจ้งผลการพิจารณา
การขออนุญาตให้นำสิ่งปฏิกูลหรือวัสดุที่ไม่ใช้แล้วออกนอกบริเวณโรงงาน
กรมโรงงานอุตสาหกรรม

เลขที่ อก.6501-13126
หนังสือฉบับนี้ออกให้เพื่แจ้งผลการพิจารณาของ
บริษัท สดาร์ ปีโตรเลียม จำกัด (มหาชน)
ทะเบียนโรงงานเลขที่ น.49-1/2537-ญนพ.
โดยมีรายละเอียดผลการพิจารณา ดังนี้

ลำดับที่	รหัสวัสดุที่ไม่ใช่แล้ว	ชื่อวัสดุที่ไม่ใช่แล้ว	ปริมาณ (ตัน)	วิธีการกำจัด	ทะเบียนโรงงานผู้รับดำเนินการ	ผลการพิจารณา	เหตุผล
1	05 01 06	oily sludge	500	041	3-101-2/44สน	อนุญาต	
2	05 01 06	oily sludge	500	041	3-101-3/44สน	อนุญาต	
			500	042	3-106-71/53สน	อนุญาต	
3	15 02 02	Industrial Oily Debris	100	042	3-106-71/53สน	อนุญาต	
4	15 02 02	Activated Carbon	100	042	3-106-71/53สน	อนุญาต	
5	15 02 02	Activated carbon	50	041	3-101-3/44สน	อนุญาต	
6	16 07 08	Oily tank cleaning	200	042	3-106-71/53สน	อนุญาต	
7	16 07 08	Oily Sludge	2000	042	น.105-1/2545-ญนพ.	อนุญาต	

รายการที่ได้รับอนุญาตมีผลบังคับใช้ตั้งแต่วันที่ 17 ตุลาคม 2565 ถึงวันที่ 16 ตุลาคม 2566

ออกให้ ณ วันที่ 8 กันยายน 2565

โดยกรมโรงงานอุตสาหกรรม

หนังสือแจ้งผลการพิจารณาฉบับนี้ออกโดยใช้ระบบอิเล็กทรอนิกส์



บันทึกการเปลี่ยนแปลง แก้ไข และยกเลิก รายละเอียดในหนังสือแจ้งผลการพิจารณา
การขออนุญาตให้นำสิ่งปฏิกูลหรือวัสดุที่ไม่ใช้แล้วออกนอกบริเวณโรงงาน

เลขที่ อก.6501-13126
ของ บริษัท สดาร์ ปีโตรเลียม จำกัด (มหาชน)
ทะเบียนโรงงานเลขที่ น.49-1/2537-ญนพ.

เลขรับที่	รับ/เดือน/ปี	สาระสำคัญของการเปลี่ยนแปลงในหนังสือแจ้งผลการพิจารณา	ผลการพิจารณา	เหตุผล
53807/2565	27/9/65	ขอเพิ่มรายการวัสดุที่ไม่ใช่แล้ว รหัสวัสดุที่ไม่ใช่แล้ว 16 08 04 Spent RFCCU Catalyst(Non) โดยมีผู้รับดำเนินการคือ 3-101-2/44สน ปริมาณ 2000 ตัน วิธีการกำจัด 044	อนุญาต	
53807/2565	27/9/65	ขอเพิ่มรายการวัสดุที่ไม่ใช่แล้ว รหัสวัสดุที่ไม่ใช่แล้ว 16 08 04 Spent RFCCU Catalyst(Non) โดยมีผู้รับดำเนินการคือ 3-106-71/53สน ปริมาณ 500 ตัน วิธีการกำจัด 044	อนุญาต	
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54351/2565	7/10/65	ขอเพิ่มรายการวัสดุที่ไม่ใช่แล้ว รหัสวัสดุที่ไม่ใช่แล้ว 16 08 07 Spent Catalyst โดยมีผู้รับดำเนินการคือ 3-101-2/44สน ปริมาณ 300 ตัน วิธีการกำจัด 044	อนุญาต	
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54351/2565	7/10/65	ขอเพิ่มรายการวัสดุที่ไม่ใช่แล้ว รหัสวัสดุที่ไม่ใช่แล้ว 05 01 09 Dry Basin Sludge โดยมีผู้รับดำเนินการคือ 3-106-71/53สน ปริมาณ 500 ตัน วิธีการกำจัด 044	อนุญาต	
54351/2565	7/10/65	ขอเพิ่มรายการวัสดุที่ไม่ใช่แล้ว รหัสวัสดุที่ไม่ใช่แล้ว 05 01 09 Dry Basin Sludge โดยมีผู้รับดำเนินการคือ 3-101-3/44สน ปริมาณ 500 ตัน วิธีการกำจัด 076	อนุญาต	
61712/2565	21/10/65	ขอเพิ่มรายการวัสดุที่ไม่ใช่แล้ว รหัสวัสดุที่ไม่ใช่แล้ว 17 02 03 Rubber hose โดยมีผู้รับดำเนินการคือ 3-101-2/40สน ปริมาณ 20 ตัน วิธีการกำจัด 071	อนุญาต	
61722/2565	21/10/65	ขอเพิ่มรายการวัสดุที่ไม่ใช่แล้ว รหัสวัสดุที่ไม่ใช่แล้ว 05 01 06 Waste oily Sludge โดยมีผู้รับดำเนินการคือ 3-106-8/49สน ปริมาณ 500 ตัน วิธีการกำจัด 042	อนุญาต	
63134/2565	1/11/65	ขอเพิ่มรายการวัสดุที่ไม่ใช่แล้ว รหัสวัสดุที่ไม่ใช่แล้ว 15 02 02 Oily Sand โดยมีผู้รับดำเนินการคือ 3-106-71/53สน ปริมาณ 200 ตัน วิธีการกำจัด 044	อนุญาต	
63084/2565	4/11/65	ขอเพิ่มรายการวัสดุที่ไม่ใช่แล้ว รหัสวัสดุที่ไม่ใช่แล้ว 15 02 03 Air Filter Form Gas Turbine โดยมีผู้รับดำเนินการคือ 3-101-2/40สน ปริมาณ 30 ตัน วิธีการกำจัด 071	อนุญาต	
63090/2565	6/11/65	ขอเพิ่มรายการวัสดุที่ไม่ใช่แล้ว รหัสวัสดุที่ไม่ใช่แล้ว 15 02 03 RO Membrane โดยมีผู้รับดำเนินการคือ 3-101-2/40สน ปริมาณ 30 ตัน วิธีการกำจัด 071	อนุญาต	
63090/2565	6/11/65	ขอเพิ่มรายการวัสดุที่ไม่ใช่แล้ว รหัสวัสดุที่ไม่ใช่แล้ว 05 01 16 Sulfur Waste โดยมีผู้รับดำเนินการคือ 3-101-2/40สน ปริมาณ 100 ตัน วิธีการกำจัด 071	อนุญาต	
61923/2565	8/11/65	ขอเพิ่มรายการวัสดุที่ไม่ใช่แล้ว รหัสวัสดุที่ไม่ใช่แล้ว 15 01 10 Contaminated Container โดยมีผู้รับดำเนินการคือ น.105-1/2545-ญนพ. ปริมาณ 100 ตัน วิธีการกำจัด 049	อนุญาต	
61923/2565	8/11/65	ขอเพิ่มรายการวัสดุที่ไม่ใช่แล้ว รหัสวัสดุที่ไม่ใช่แล้ว 16 02 15 Electronic Waste	เอกสารไม่เพียงพอ	99(1)

		โดยมีผู้รับดำเนินการคือ น.105-1/2545-ญพข. ปริมาณ 100 ตัน วิธีการกำจัด 049	พอ	
61923/2565	8/11/65	ขอเพิ่มรายการวัสดุที่ไม่ใช่แล้ว รหัสวัสดุที่ไม่ใช่แล้ว 16 02 15 Fluorescent Lamp โดยมีผู้รับดำเนินการคือ น.105-1/2545-ญพข. ปริมาณ 20 ตัน วิธีการกำจัด 049	อนุญาต	99(2)
61923/2565	8/11/65	ขอเพิ่มรายการวัสดุที่ไม่ใช่แล้ว รหัสวัสดุที่ไม่ใช่แล้ว 16 06 01 Used Battery โดยมีผู้รับดำเนินการคือ 3-106-46/62รย ปริมาณ 35 ตัน วิธีการกำจัด 021	อนุญาต	
67345/2565	27/11/65	ขอเพิ่มรายการวัสดุที่ไม่ใช่แล้ว รหัสวัสดุที่ไม่ใช่แล้ว 15 01 10 Empty Contaminated Lab Bottle โดยมีผู้รับดำเนินการคือ จ3-101-2/40สน ปริมาณ 100 ตัน วิธีการกำจัด 073	อนุญาต	
67345/2565	27/11/65	ขอเพิ่มรายการวัสดุที่ไม่ใช่แล้ว รหัสวัสดุที่ไม่ใช่แล้ว 16 05 06 Chemical Expired โดยมีผู้รับดำเนินการคือ 3-106-8/49สน ปริมาณ 50 ตัน วิธีการกำจัด 042	ไม่อนุญาต	04
67345/2565	27/11/65	ขอเพิ่มรายการวัสดุที่ไม่ใช่แล้ว รหัสวัสดุที่ไม่ใช่แล้ว 16 05 08 Asphalt โดยมีผู้รับดำเนินการคือ 3-106-8/49สน ปริมาณ 50 ตัน วิธีการกำจัด 042	อนุญาต	
66808/2565	1/12/65	ขอเพิ่มรายการวัสดุที่ไม่ใช่แล้ว รหัสวัสดุที่ไม่ใช่แล้ว 16 02 13 Electronic waste โดยมีผู้รับดำเนินการคือ น.105-1/2545-ญพข. ปริมาณ 100 ตัน วิธีการกำจัด 049	อนุญาต	

วิธีการกำจัด

- 011 คัดแยกประเภทเพื่อจำหน่ายต่อ
- 021 กัดกับในภาชนะบรรจุ
- 031 เป็นวัตถุอันตราย
- 032 สกัดด้วยน้ำเพื่อสกัด
- 033 ส่งกลับผู้ขายเพื่อนำกลับไปบรรจุใหม่หรือใช้ซ้ำ
- 039 นำกลับมาใช้ซ้ำด้วยวิธีอื่นๆ
- 041 เป็นเชื้อเพลิงทดแทน
- 042 ทำเชื้อเพลิงผสม
- 043 เหมเพื่อเอทาลังงาน
- 044 เป็นวัตถุอันตรายในเตาเผาปูนซีเมนต์
- 049 นำกลับมาใช้ประโยชน์ด้วยวิธีอื่นๆ
- 051 เข้ากระบวนการนำตัวทำละลายกลับมาใหม่
- 052 เข้ากระบวนการนำโลหะกลับมาใหม่
- 053 เข้ากระบวนการคืนสภาพกรด/ด่าง
- 054 เข้ากระบวนการคืนสภาพตัวเร่งปฏิกิริยา
- 059 นำสิ่งปฏิกูลหรือวัสดุที่ไม่ใช่แล้วอื่นๆกลับเข้ามาใหม่
- 061 ปาบัดด้วยวิธีชีวภาพ
- 062 ปาบัดด้วยวิธีทางเคมี
- 063 ปาบัดด้วยวิธีทางกายภาพ

เหตุผลที่ไม่อนุญาต

- 01 ผู้รับดำเนินการไม่ได้รับอนุญาตให้ ปาบัด/กำจัดนำกลับไปยังประโยชน์ใหม่
- 02 วิธีการปาบัด/กำจัดนำกลับไปยังประโยชน์ใหม่ ไม่เหมาะสม
- 03 ผู้รับดำเนินการได้รับคำสั่งปรับปรุงตามมาตรา 37 หรือเหตุประกอบการตามมาตรา 39 ตามพระราชบัญญัติโรงงาน
- 04 ผู้รับดำเนินการ ไม่ยินยอมรับปาบัด/กำจัดนำกลับไปยังประโยชน์ใหม่
- 05 ไม่สามารถอธิบายอนุญาตฯ ผ่านสื่ออิเล็กทรอนิกส์ได้
- 06 ผู้ให้บริการยังไม่ได้แจ้งประกอบการกิจการ โรงงาน หรือไม่ได้แจ้งประกอบภายในส่วนขาย
- 07 ไม่เข้าพาดังของอนุญาตตามประกาศกระทรวงอุตสาหกรรม เรื่องการกำจัดสิ่งปฏิกูลหรือวัสดุที่ไม่ใช่แล้ว พ.ศ. 2548

เหตุผลกรณีอื่นๆ

- ๑๑ อื่นๆ ระบุ...(1) จากรูปถ่ายเป็นรูปกราฟ ใช้รหัส 160213 (2) อนุญาตเฉพาะหลอดที่ยังไม่แตกเท่านั้น..

หมายเหตุ

- 1. กรณีไม่อนุญาต หากท่านไม่เห็นด้วย สามารถแจ้งเป็นหนังสือพร้อมเหตุผลไปยังอธิบดีกรมโรงงานอุตสาหกรรม ภายใน 15 วัน นับตั้งแต่วันที่ได้รับแจ้งคำสั่งทางการปกครองนี้
- 2. หากท่านสนใจดำเนินการถึงปฏิกูลหรือวัสดุที่ไม่ใช่แล้วออกนอกบริเวณ โรงงาน โดยไม่ได้รับอนุญาต ถือเป็นความผิดตามมาตรา 45 แห่งพระราชบัญญัติโรงงาน พ.ศ.2535 ต้องระวางโทษปรับไม่เกิน 2 แสนบาท

- 064 ปาบัดด้วยวิธีทางเคมีและฟิสิกส์
- 065 ปาบัดน้ำเสียด้วยวิธีทางเคมีกายภาพ
- 066 เพื่าระบบบำบัดน้ำเสียรวม
- 067 ปรับเสถียรด้วยวิธีทางเคมี
- 068 ปรับเสถียร/รีไซเคิลเคมีโดยใช้ปูนซีเมนต์หรือวัสดุ pozzolanic
- 069 วิธีบำบัดอื่นๆ เพื่อลดค่าความเป็นอันตราย
- 071 ผังลดตามหลักสุขาภิบาล เฉพาะของเสียไม่อันตรายเท่านั้น
- 072 ผังลดอย่างปลอดภัย
- 073 ผังลดอย่างปลอดภัย เมื่อทำการปรับเสถียรหรือทำให้เป็นก้อนแข็งแล้ว
- 074 เมาทำลายในเตาเผาขยะทั่วไป
- 075 เมาทำลายในเตาเผาเฉพาะสำหรับของเสียอันตราย
- 076 เมาทำลายร่วมในเตาเผาปูนซีเมนต์
- 077 จัดตั้งกอง ใต้ดิน หรือชั้นดินใต้ทะเล แนนถกสธอนุญาตจากหน่วยงานอื่น
- 079 กำจัดด้วยวิธีอื่นๆ
- 081 รวบรวมและตั้งกองนอกประเทศ
- 082 งบประมาณหรือที่ผ่าน เฉพาะของเสียไม่อันตรายเท่านั้น
- 083 หมักทำปุ๋ยหรือเป็นสารปรับปรุงคุณภาพดิน เฉพาะของเสียไม่อันตรายเท่านั้น
- 084 ทำอาหารสัตว์ เฉพาะของเสียไม่อันตรายเท่านั้น

เหตุผลที่ไม่สามารถพิจารณาได้ เนื่องจากขาดเอกสาร หรือเอกสารไม่สมบูรณ์ ดังนี้

- 11 ส่วนใบอนุญาตประกอบการกิจการ โรงงานของผู้รับดำเนินการ และหรือผู้ถือกำเนิดวัสดุที่ไม่ใช่แล้ว
- 12 ส่วนหนังสือรับรองจดทะเบียนนิติบุคคลของผู้รับดำเนินการ และหรือผู้ถือกำเนิดวัสดุที่ไม่ใช่แล้ว
- 13 สัญญาหรือหนังสือยินยอมการรับบริการระหว่างผู้รับดำเนินการและผู้ถือกำเนิดวัสดุที่ไม่ใช่แล้ว
- 14 หนังสือการประกันความรับผิดชอบ (Liability) ระหว่างผู้รับดำเนินการและผู้ถือกำเนิดวัสดุที่ไม่ใช่แล้ว
- 15 หนังสือมอบอำนาจให้ผู้หนึ่งผู้ใดกระทำการใดๆ แทนกรรมการผู้มีอำนาจหรือคณะกรรมการของผู้รับดำเนินการ และหรือผู้ถือกำเนิดวัสดุที่ไม่ใช่แล้ว
- 16 ผลวิเคราะห์ค่าความเข้มข้นทั้งหมดของแข็งแขวน (total concentration : mg/kg)
- 17 ผลวิเคราะห์ด้วยวิธีการสกัดสาร (waste extraction test : mg/l)
- 18 รายละเอียดกระบวนการผลิตพร้อมแสดงจุดที่เกิดของเสีย
- 19 รายละเอียดกระบวนการนำของเสียมาบำบัดนำกลับมาใช้ประโยชน์ใหม่
- 20 ส่วนใบอนุญาตส่งของวัตถุอันตราย (๖๒.6)
- 21 หนังสือรับรองจากกรมวิชาการเกษตรในการทำปุ๋ยหรือสารปรับปรุงคุณภาพดิน
- 22 รหัสของสิ่งปฏิกูลหรือวัสดุที่ไม่ใช่แล้วไม่ถูกต้อง
- 23 รหัสของวิธีการกำจัดไม่ถูกต้อง
- 24 การลงนามของกรรมการผู้มีอำนาจในคำขอ/สัญญาขอ. ไม่ครบถ้วนตามเงื่อนไขในหนังสือรับรองการจดทะเบียนนิติบุคคล
- 25 เอกสารข้อมูลความปลอดภัย

สรุปรายการประเภทกากของเสียตามหนังสืออนุญาตให้ป่าสิ่งปฏิกูลหรือวัสดุที่ไม่ใช่แล้วออกนอกบริเวณโรงงาน(สก.2)
ประกอบกรปฏิบัติตามมาตรการป้องกันและแก้ไขผลกระทบสิ่งแวดล้อม ด้านการจัดการกากของเสีย (ก.ค.-ร.ค. 65)

No.	รายการประเภทกากของเสียที่ได้ขออนุญาตให้ป่าสิ่งปฏิกูลออกนอกบริเวณโรงงาน	เหตุผลการไม่อนุญาต	หมายเหตุ
1	Oily Sand	ผู้รับดำเนินการไม่ยินยอมรับมาบด/กำจัดหรือนำไปใช้ในบ่	ดำเนินการยื่นขออนุญาตใหม่ และได้รับการอนุญาตแล้ว
2	Electronic Waste	เอกสารไม่เพียงพอ	ดำเนินการยื่นขออนุญาตใหม่ และได้รับการอนุญาตแล้ว
3	Chemical Expried	เอกสารไม่เพียงพอ	ดำเนินการยื่นขออนุญาตใหม่ และอยู่ในช่วงรอการพิจารณา

**สรุปปริมาณกากของเสีย
ระหว่างเดือนกรกฎาคม ถึงธันวาคม พ.ศ.2565**

ขยะมูลฝอย




ลำดับที่	ชื่อสิ่งปฏิกูลและขยะมูลฝอย	Jul	Aug	Sep	Oct	Nov	Dec	Total	วิธีการกำจัด	ผู้รับดำเนินการ
1	ขยะมูลฝอย (Kg)	200	200	400	200	200	200	1,400	ฝังกลบ	เทศบาลเมืองมาบตาพุด

ขยะอันตราย




ลำดับที่	ชื่อสิ่งปฏิกูลและขยะมูลฝอย	Jul	Aug	Sep	Oct	Nov	Dec	Total	วิธีการกำจัด	ผู้รับดำเนินการ
1	ผ้าปนเปื้อนน้ำมัน (Kg)	400	500	200	400	400	300	2,200	ทำเป็นเชื้อเพลิงผสม (Fuel Blending)	บริษัท ปูนซีเมนต์ นครหลวง จำกัด (มหาชน)
2	ถังปนน้ำมัน (Kg)	0	1,000	0	0	1,000	0	2,000	นำผ่านกระบวนการ นำกลับมาใช้ใหม่	บริษัท เวสต์แมนแมนเดิล ยาม จำกัด
รวมทั้งสิ้น		400	1,500	200	400	1,400	300	4,200		




รายงานปริมาณและผลการดำเนินการจัดการกากของเสีย

1. น้ำปนเปื้อนน้ำมัน

วันที่ทำการขนส่ง	ปริมาณกากของเสีย (กก.)		ทะเบียนรถขนส่ง	ขนส่งโดย	รูปถ่ายรถขนส่ง
	SPRC	บริษัทรับกำจัด			
1) 11/06/65	18,840	18,840	70-0470 เพชรบุรี	บริษัท ทีเออาร์เอฟ จำกัด	<div></div>




2. วัดจุดบ่นเบื่อน้ำมัน







วันที่ทำการ ขนส่ง	ปริมาณการขนส่ง (กก.)		ทะเบียนรถขนส่ง	บริษัทขนส่ง	รูปถ่ายรถขนส่ง
	SPRC	บริษัทรับ กำจัด			
1) 22/06/65	18,050	18,050	64-8937 กทม 65-0823 กทม	บริษัท ทีเออาร์เอฟ จำกัด	  







วันที่ทำการ ขนส่ง	ปริมาณการขนส่ง (กก.)		ทะเบียนรถขนส่ง	บริษัทขนส่ง	รูปถ่ายรถขนส่ง
	SPRC	บริษัทรับ กำจัด			
2) 23/06/65	9,020	9,020	64-8937 กทม 65-0823 กทม	บริษัท ทีเออาร์เอฟ จำกัด	  

หมายเหตุ : น้ำหนักเพิ่มมากขึ้นเนื่องจากขยะปนเปื้อนมีความชื้นสูงจากการโดนฝน

3. ทราายปนเปื่อนน้ำมัน

วันที่ทำการ ขนส่ง	ปริมาณกากของเสีย (กก.)		ทะเบียนรถขนส่ง	บริษัทขนส่ง	รูปถ่ายรถขนส่ง
	SPRC	บริษัทรับ กำจัด			
1) 6/09/2565	17,070	17,070	67-1926 กทม 78-8613 กทม	บริษัท ทีเออาร์เอฟ จำกัด	  

วันที่ทำการ ขนส่ง	ปริมาณกากของเสีย (กก.)		ทะเบียนรถขนส่ง	บริษัทขนส่ง	รูปถ่ายรถขนส่ง
	SPRC	บริษัทรับ กำจัด			
2) 6/09/2565	18,980	18,980	65-8106 กทม 65-9946 กทม	บริษัท ทีเออาร์ เอฟ จำกัด	  
3) 6/09/2565	13,590	13,590	63-1395 กทม 79-7881 กทม	บริษัท ทีเออาร์เอฟ จำกัด	  

วันที่ทำการ ขนส่ง	ปริมาณกากของเสีย (กก.)		ทะเบียนรถขนส่ง	บริษัทขนส่ง	รูปถ่ายรถขนส่ง
	SPRC	บริษัทรับ กำจัด			
4) 7/05/2565	17,240 น้ำหนักซึ่ง ขาเข้าไม่ รวมกล่อง	14,980	63-1395 กทม 79-7881 กทม	บริษัท ทีเออาร์เอฟ จำกัด	  
5) 7/09/2565	19,230 น้ำหนักซึ่ง ขาเข้าไม่ รวมกล่อง	16,680	63-1396 กทม 65-8020 กทม	บริษัท ทีเออาร์เอฟ จำกัด	  

หมายเหตุ :

1. น้ำหนักเพิ่มมากขึ้นเนื่องจากทรายมีความชื้นสูงจากการโดนฝน
2. การขนส่งในวันที่ 7 กันยายน 2565 ใช้ถังจากน้ำหนักปลายทาง เนื่องจากการขนน้ำหนักขาเข้าไม่มีการนำกล่องเปล่ามาด้วย

สรุปปริมาณกากของเสียที่ส่งกำจัด

ประเภท	ปริมาณกากของ เสีย (ตัน)	วิธีการจัดการ	บริษัทรับกำจัด
1. น้ำทะเลปนเปื้อน น้ำมัน	18.84	เผาทำลายในเตาเผา	บริษัท อัคริปปราการ จำกัด(มหาชน)
2. วัสดุปนเปื้อน น้ำมัน	27.07	เผาทำลายในเตาเผา	บริษัท อัคริปปราการ จำกัด(มหาชน)
3. ทรายปนเปื้อน น้ำมัน	81.30	เผาทำลายในเตาเผา	บริษัท อัคริปปราการ จำกัด(มหาชน)
รวม (ตัน)	127.21		

ตัวอย่างใบกำกับการขนส่งของเสีย

หมายเลขใบกำกับการณ์การขนส่งของเสียอันตราย : Manifest No.

SPR220423

ใบกำกับการณ์การขนส่งของเสีย

(Uniform Waste Manifest)

☐ อันตราย (Hazardous)☐ ไม่อันตราย (Non Hazardous)

1. ส่วนของผู้ก่อเกิดของเสียอันตราย : This section must be completed by the Generator

1) ชื่อ : Name บริษัท บริษัท อีเอ็ม เอ็ม จำกัด		2) เลขประจำตัวผู้ก่อเกิดของเสียอันตราย : Generator's ID DTV-CT-054800073	
สถานที่เกิด : Generator address บ. อีเอ็ม เอ็ม จำกัด ถนนสุขุมวิท แขวงคลองเตย เขตคลองเตย กรุงเทพฯ 10110		โทรศัพท์ : Phone 038-699000 โทรสาร : Fax 038-6992113	
		กรณีฉุกเฉิน : Emergency 038-699000	
3) ผู้ขนส่งของเสียอันตราย : Transporter			
รายชื่อ 1 ชื่อบริษัท : Company name บริษัท บริษัท อีเอ็ม เอ็ม จำกัด (บริษัท อีเอ็ม เอ็ม จำกัด)		เลขประจำตัวผู้ขนส่งของเสียอันตราย รายที่ 1 : Transporter's ID DTV-T-060200636	
รายชื่อ 2 ชื่อบริษัท : Company name		เลขประจำตัวผู้ขนส่งของเสียอันตราย รายที่ 2 : Transporter's ID	
4) ผู้เก็บรวบรวม บำบัด และกำจัดของเสียอันตราย : Treatment Storage Disposal Facilities (TSDFs)		เลขประจำตัวผู้เก็บรวบรวม บำบัด และกำจัดของเสียอันตราย : Disposer's ID	
ชื่อบริษัท : TSDF's name บริษัท บริษัท อีเอ็ม เอ็ม จำกัด			
5) รายละเอียดของของเสียอันตรายที่ขนส่ง			
ลำดับ No.	รายละเอียด (Description)	รหัสของเสียอันตราย : Waste ID	ภาชนะบรรจุ : Containers จำนวน : No. ชนิด : Type ปริมาตรสุทธิ Quantity หน่วยน้ำหนัก Unit Wt/ Vol รายละเอียดเพิ่มเติม Additional Information
	Sludge		
รวมปริมาณของเสียอันตรายทั้งหมด : Total Quantity ของเหลว : Liquid.....ลิตร/ลูกบาศก์เมตร : Liters/cu.m ของแข็ง : Solid.....กิโลกรัม/ตัน Kgs/tons			
6) การปฏิบัติที่มีลักษณะพิเศษและข้อมูลเพิ่มเติม Special handling instructions and additional information			
7) คำรับรอง : ข้าพเจ้าขอรับรองว่าได้ส่งมอบของเสียอันตรายแล้วตามที่ระบุข้างต้น และมีการบรรจุติดป้ายหรือฉลากอย่างเหมาะสมตรงตามข้อกำหนดของกฎหมายทุกประการ : Generator Certificate : I hereby declare that the contents of this consignment are accurately described above and have been packed and labeled and are in proper condition for transport according to regulation			
ลงชื่อ : Generator's name		ลายเซ็น : Signature วันที่ : Date เดือน : Month พ.ศ. : Year	

2. ส่วนของผู้ขนส่งของเสียอันตราย : This section must be completed by the transporter

1) ชื่อผู้ขนส่งรายที่ 1 : Transporter's name บริษัท บริษัท อีเอ็ม เอ็ม จำกัด (บริษัท อีเอ็ม เอ็ม จำกัด)		2) พาหนะที่ใช้ Vehicle <input type="checkbox"/> รถบรรทุก Truck <input type="checkbox"/> รถไฟ Train <input type="checkbox"/> เรือ Ship <input type="checkbox"/> เครื่องบิน Plane	
เลขประจำตัวผู้ขนส่ง : Transporter's ID DTV-T-060200636		3) เลขทะเบียนพาหนะ Vehicle ID	
โทรศัพท์ : phone 038-699000 โทรสาร : Fax 038-6992113			
กรณีฉุกเฉิน : Emergency 038-699000			
4) ข้าพเจ้าขอรับรองว่าได้รับของเสียอันตรายแล้วตามที่ระบุข้างต้น และ การขนส่งเป็นไปตามข้อกำหนดของกฎหมายทุกประการ : Transporter Certifications : I hereby declare that I have received the type and quantity of waste as described above by the generator and that waste has been transported according to regulations.			
โดยขนส่งจากจังหวัด : From กรุงเทพฯ		ไปยังจังหวัด : To กรุงเทพฯ	
		ใช้ระยะเวลาประมาณ : Time spending 7.0 ชม./วัน : hours/day	
ลงชื่อผู้ขนส่งรายที่ 1 : Transporter's name		ลายเซ็น : Signature วันที่ : Date เดือน : Month พ.ศ. : Year	
5) ชื่อผู้ขนส่งรายที่ 2 : Transporter's name		6) พาหนะที่ใช้ Vehicle <input type="checkbox"/> รถบรรทุก Truck <input type="checkbox"/> รถไฟ Train <input type="checkbox"/> เรือ Ship <input type="checkbox"/> เครื่องบิน Plane	
เลขประจำตัวผู้ขนส่ง : Transporter's ID		7) เลขทะเบียนพาหนะ Vehicle ID	
โทรศัพท์ : Phone โทรสาร : Fax			
กรณีฉุกเฉิน : Emergency			
8) ข้าพเจ้าขอรับรองว่าได้รับของเสียอันตรายแล้วตามที่ระบุข้างต้น และ การขนส่งเป็นไปตามข้อกำหนดของกฎหมายทุกประการ : Transporter Certifications : I hereby declare that I have received the type and quantity of waste as described above by the generator and that waste has been transported according to regulations.			
โดยขนส่งจากจังหวัด : From กรุงเทพฯ		ไปยังจังหวัด : To กรุงเทพฯ	
		ใช้ระยะเวลาประมาณ : Time spending 7.0 ชม./วัน : hours/day	
ลงชื่อผู้ขนส่งรายที่ 2 Transporter's name		ลายเซ็น : Signature วันที่ : Date เดือน : Month พ.ศ. : Year	

3. ส่วนของผู้ประกอบการสถานเก็บรวบรวม บำบัด และกำจัดของเสียอันตราย : This section must be completed by TSDF's

1) ชื่อผู้รับกำจัด TSDF's name บริษัท บริษัท อีเอ็ม เอ็ม จำกัด		2) เลขประจำตัวผู้รับกำจัด : TSDF's ID DTV-TS-13-130200013	
สถานที่กำจัด : TSDF's address บริษัท บริษัท อีเอ็ม เอ็ม จำกัด ถนนสุขุมวิท แขวงคลองเตย เขตคลองเตย กรุงเทพฯ 10110		โทรศัพท์ : Phone 038-699000 โทรสาร : Fax 038-6992113	
		กรณีฉุกเฉิน : Emergency 038-699000	
3) คำรับรอง : ข้าพเจ้าขอรับรองว่าได้รับของเสียอันตรายแล้วตามที่ระบุข้างต้น : TSDF certificate of arrival : I hereby declare that I have received the reference load.			
และสามารถกำจัดของเสียที่ได้รับมาได้ตามระยะเวลา : Treatment period 133804		<input type="checkbox"/> วัน : Day <input type="checkbox"/> เดือน : Month <input type="checkbox"/> ปี : Year นับจากวันที่ได้รับของเสีย : since the day that received waste	
ลงชื่อผู้รับกำจัด : TSDF's name		ลายเซ็น : Signature วันที่ : Date เดือน : Month พ.ศ. : Year	
4) กรณีของเสียอันตรายไม่ตรงตามที่แจ้ง : Discrepancy Notification			
ประเภทของเสียอันตราย : Type of waste		ปริมาณ : Quantity	
การดำเนินการ : Action taken <input type="checkbox"/> ส่งคืน : Returned <input type="checkbox"/> จัดประเภทใหม่ : Reclassified / รหัส : Waste ID		<input type="checkbox"/> รับกำจัด : Accepted เหตุผล : Reason of action	
วันที่ส่งคืน : Date returned (วัน/เดือน/ปี : dd/mm/yy) หากไม่เกี่ยวกับการขนส่งของเสียอันตรายที่ส่งกลับ : Returned manifest no.			
ชื่อผู้ส่งคืน : TSDF's name		ลายเซ็นผู้ส่งคืน : TSDF's Signature	

หมายเลขใบก้ากับการขนส่งของเสียอันตราย : Manifest No.

SPR220384

ใบก้ากับการขนส่งของเสีย
(Uniform Waste Manifest)☐ อันตราย (Hazardous) ☐ ไม่อันตราย (Non Hazardous)

1. ส่วนของผู้ก้ากำเนิดของเสียอันตราย : This section must be completed by the Generator

1) ชื่อ : Name สถานที่ก้ากำเนิด : Generator address	2) เลขประจำตัวผู้ก้ากำเนิดของเสียอันตราย : Generator's ID โทรศัพท์ : Phone กรณฉุกเฉิน : Emergency
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3) ผู้ขนส่งของเสียอันตราย : Transporter รายชื่อ 1 ชื่อบริษัท : Company name รายชื่อ 2 ชื่อบริษัท : Company name	เลขประจำตัวผู้ขนส่งของเสียอันตราย รายที่ 1 : Transporter's ID เลขประจำตัวผู้ขนส่งของเสียอันตราย รายที่ 2 : Transporter's ID
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4) ผู้เก็บรวบรวม บำบัด และกำจัดของเสียอันตราย : Treatment Storage Disposal Facilities (TSDFs) ชื่อบริษัท : TSDF's name	เลขประจำตัวผู้เก็บรวบรวม บำบัด และกำจัดของเสียอันตราย : Disposer's ID
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5) รายละเอียดของเสียอันตรายที่ขนส่งเคลื่อนย้าย	รายละเอียด (Description)	รหัสของเสียอันตราย : Waste ID	ภาชนะบรรจุ : Containers จำนวน : No. ชนิด : Type	ปริมาณสุทธิ : Quantity	หน่วยหนัก : Unit Wt/ Vol	รายละเอียดเพิ่มเติม : Additional Information
	Oil Sludge					13.40

รวมปริมาณของเสียอันตรายทั้งหมด : Total Quantity	ของเหลว : Liquid	ของแข็ง : Solid
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6) การปฏิบัติที่พิเศษเฉพาะและข้อมูลเพิ่มเติม Special handling instructions and additional information
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7) คำรับรอง : ข้าพเจ้าขอรับรองว่าได้ส่งมอบของเสียอันตรายแล้วตามที่ระบุข้างต้น และมีการบรรจุติดป้ายหรือฉลากอย่างเหมาะสมตรงตามข้อกำหนดของกฎหมายทุกประการ : Generator Certificate : I hereby declare that the contents of this consignment are accurately described above and have been packed and labeled and are in proper condition for transport according to regulation
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ลงชื่อ : Generator's name	ลายเซ็น : Signature	วันที่ : Date	เดือน : Month	พ.ศ. : Year
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2. ส่วนของผู้ขนส่งของเสียอันตราย : This section must be completed by the transporter

1) ชื่อผู้ขนส่งรายที่ 1 : Transporter's name เลขประจำตัวผู้ขนส่ง : Transporter's ID โทรศัพท์ : phone กรณฉุกเฉิน : Emergency	2) พาหนะที่ใช้ Vehicle <input type="checkbox"/> รถบรรทุก Truck <input type="checkbox"/> รถไฟ Train <input type="checkbox"/> เรือ Ship <input type="checkbox"/> เครื่องบิน Plane 3) เลขทะเบียนพาหนะ Vehicle ID
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4) ข้าพเจ้าขอรับรองว่าได้รับของเสียอันตรายแล้วตามที่ระบุข้างต้น และ การขนส่งเป็นไปตามข้อกำหนดของกฎหมายทุกประการ Transporter Certifications : I hereby declare that I have received the type and quantity of waste as described above by the generator and that waste has been transported according to regulations. โดยขนส่งจากจังหวัด : From ไปยังจังหวัด : To ระยะเวลาประมาณ : Time spending ชม./วัน : hours/day
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ลงชื่อผู้ขนส่งรายที่ 1 : Transporter's name	ลายเซ็น : Signature	วันที่ : Date	เดือน : Month	พ.ศ. : Year
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5) ชื่อผู้ขนส่งรายที่ 2 : Transporter's name เลขประจำตัวผู้ขนส่ง : Transporter's ID โทรศัพท์ : Phone โทรสาร : Fax กรณฉุกเฉิน : Emergency	6) พาหนะที่ใช้ Vehicle <input type="checkbox"/> รถบรรทุก Truck <input type="checkbox"/> รถไฟ Train <input type="checkbox"/> เรือ Ship <input type="checkbox"/> เครื่องบิน Plane 7) เลขทะเบียนพาหนะ Vehicle ID
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8) ข้าพเจ้าขอรับรองว่าได้รับของเสียอันตรายแล้วตามที่ระบุข้างต้น และ การขนส่งเป็นไปตามข้อกำหนดของกฎหมายทุกประการ Transporter Certifications : I hereby declare that I have received the type and quantity of waste as described above by the generator and that waste has been transported according to regulations. โดยขนส่งจากจังหวัด : From ไปยังจังหวัด : To ระยะเวลาประมาณ : Time spending ชม./วัน : hours/day
--

ลงชื่อผู้ขนส่งรายที่ 2 : Transporter's name	ลายเซ็น : Signature	วันที่ : Date	เดือน : Month	พ.ศ. : Year
---	---------------------	---------------	---------------	-------------

3. ส่วนของผู้ประกอบการสถานเก็บรวบรวม บำบัด และกำจัดของเสียอันตราย : This section must be completed by TSDF's

1) ชื่อผู้รับก้าจัด TSDF's name สถานที่ก้าจัด : TSDF's address	2) เลขประจำตัวผู้รับก้าจัด : TSDF's ID โทรศัพท์ : Phone โทรสาร : Fax กรณฉุกเฉิน : Emergency
---	---

3) คำรับรอง : ข้าพเจ้าขอรับรองว่าได้รับของเสียอันตรายแล้วตามที่ระบุข้างต้น TSDF certificate of arrival : I hereby declare that I have received the reference load. และสามารถกำจัดของเสียที่ได้รับมาได้ตามระยะเวลา : Treatment period. <input type="checkbox"/> วัน : Day <input type="checkbox"/> เดือน : Month <input type="checkbox"/> ปี : Year นับจากวันที่ได้รับของเสีย : since the day that received waste
--

ลงชื่อผู้รับก้าจัด : TSDF's name	ลายเซ็น : Signature	วันที่ : Date	เดือน : Month	พ.ศ. : Year
----------------------------------	---------------------	---------------	---------------	-------------

4) กรณีของเสียอันตรายไม่ตรงตามที่แจ้ง : Discrepancy Notification ประเภทของเสียอันตราย : Type of waste ปริมาณ : Quantity การดำเนินการ : Action taken <input type="checkbox"/> ส่งคืน : Returned <input type="checkbox"/> จัดประเภทใหม่ : Reclassified / รหัส : Waste ID <input type="checkbox"/> รับก้าจัด : Accepted เหตุผล : Reason of action วันที่ส่งคืน : Date returned (วัน/เดือน/ปี : dd/mm/yy) หมายเลขใบก้ากับการขนส่งของเสียอันตรายที่ส่งคืน : Returned manifest no. ชื่อผู้ส่งคืน : TSDF's name ลายเซ็นผู้ส่งคืน : TSDF's Signature
--

ภาคผนวก ข.14

รายงานการติดตามยานพาหนะ

วันที่, เวลา	วันที่, เวลา เริ่มจอด	วันที่, เวลา สิ้นสุด	รวมเวลาจอด	เซนเซอร์					ความเร็ว	ระยะทาง	ระยะทางรวม	อุณหภูมิ	สถานี	สถานี		
				1	2	3	4	A						ตำบล	อำเภอ	จังหวัด
16 พ.ย. 65 19:31:40	16 พ.ย. 65 19:31:40	16 พ.ย. 65 19:38:28	0 วัน 00 ชม 06 นาที	0	0	0	0		0	0.0	305.2	-		ป่าสักแพว	แก่งคอย	สระบุรี
16 พ.ย. 65 19:38:28	null	null	-	0	0	0	0		8	0.0	305.2	-		ป่าสักแพว	แก่งคอย	สระบุรี
16 พ.ย. 65 19:43:51	null	null	-	0	0	0	0		0	0.0	305.4	-		ป่าสักแพว	แก่งคอย	สระบุรี
16 พ.ย. 65 19:47:51	null	null	-	0	0	0	0		0	0.0	305.4	-		ป่าสักแพว	แก่งคอย	สระบุรี

เวลาเดินทางรวม	0 วัน 06 ชม 52 นาที
รวมเวลาเดินเท้า	0 วัน 02 ชม 22 นาที
รวมเวลาจอด	0 วัน 01 ชม 45 นาที
ระยะทางรวม	305.4

ภาคผนวก ข.15

สถิติอุบัติเหตุ

Dec 2022 : Safety Statistic

Description	Month	YTD
Employee Man-hours	71,998	956,684
Contractor Man-hours	82,583	1,202,393
Total Man-hours	154,581	2,163,432
First Aid Cases	0	5
Recordable Injury Cases	0	2
Medical Treatment (MTC)	0	1
Restricted Work (RWC)	0	1
Days Away from Work (DAFW)	0	0
Total Recordable Injury Rate (TRIR)	0.00	0.18
Days Away from Work Rate (DAFWR)	0.00	0.00
Motor Vehicles Crash (MVC)	0	5
Other Vehicles Crash (OVC)	0	0
Recordable Fire Cases	0	0
Non-Recordable Fire Cases	0	4
Hours since last Recordable Injury Case (17 Nov 2022)	229,433	
Hours since last Days Away From Work Case (24 Jun 2013)	33,551,122	



ภาคผนวก ข.16

โครงการรับผิดชอบต่อสังคม
ของบริษัท สตาร์ ปิโตรเลียม รีไฟน์นิ่ง จำกัด (มหาชน)

การสนับสนุนส่งเสริมชุมชนและการมีส่วนร่วมกับภาคสังคม

SPRC ดำเนินงานด้านความรับผิดชอบต่อสังคม โดยมุ่งเน้นสนับสนุนการเติบโตขององค์กร สร้างคุณค่าให้แก่สังคมและชุมชน สร้างความเชื่อมั่นและการยอมรับจากชุมชน รวมถึงผู้มีส่วนได้เสียที่เกี่ยวข้องตามนโยบายความรับผิดชอบต่อสังคม โดยใช้แนวทางการมีส่วนร่วมและสื่อสารกับผู้มีส่วนได้เสียทุกระดับผ่านโครงการและกิจกรรมความรับผิดชอบต่อสังคม เพื่อตอบสนองความต้องการของชุมชน โดยครอบคลุม 4 ด้านหลักคือ

- ด้านการศึกษาและเยาวชน
- ด้านคุณภาพชีวิต
- ด้านสิ่งแวดล้อม และ
- ด้านสร้างความสัมพันธ์ในระยะยาวร่วมกับชุมชนโดยรอบ

โดยได้ดำเนินการผ่านกิจกรรมต่าง ๆ ดังนี้



การสนับสนุนส่งเสริมชุมชนและการมีส่วนร่วมกับภาคสังคม

ประจำปี 2565 (กรกฎาคม - ธันวาคม)



"One family ...
fueling the future
of Thailand"

การสนับสนุนส่งเสริมชุมชนและการมีส่วนร่วมกับภาคสังคม

ส่งเสริมด้านการศึกษา และเยาวชน



สนับสนุนงบประมาณการจัดการแข่งขันกีฬาเทเบิลเทนนิส ระยอง 2565 เป็นจำนวนเงิน 100,000 บาท



ร่วมกับเทศบาลตำบลบ้านเพสนับสนุนการจัดพิมพ์ หนังสือ หรดูแล "บ้านเพ ที่ไหนได้ไหน" จำนวน 5,000 เล่ม มอบให้หน่วยงาน สถานับการศึกษา ชุมชน ในจังหวัดระยอง เพื่อเป็นประโยชน์ต่อการศึกษาศของเยาวชน ประชาชนในพื้นที่ และบุคคลทั่วไปที่สนใจ ตลอดจนส่งเสริมการท่องเที่ยวเชิงวัฒนธรรมท้องถิ่น เพื่อสร้างค่านิยมที่ดี และสำนึกรักบ้านเกิด



3



2

การสนับสนุนส่งเสริมชุมชนและการมีส่วนร่วมกับภาคสังคม

ส่งเสริมด้านการศึกษา และเยาวชน



มอบอะไหล่คอมพิวเตอร์ให้แก่ วิทยาลัยเทคนิคมาบตาพุด



ร่วมกับเทศบาลจังหวัดระยอง สนับสนุนกิจกรรมเยาวชนอนุรักษ์ทะเลไทย ณ โรงเรียนวัดโนนไธสง อ.เมือง จ.ระยอง



4

การสนับสนุนส่งเสริมชุมชนและการมีส่วนร่วมกับภาคสังคม

ส่งเสริมด้านคุณภาพชีวิต

โครงการออกกำลังกายเพื่อสุขภาพ ปีที่ 7
โดยร่วมกับกลุ่มงานส่งเสริมสาธารณสุข สำนักสาธารณสุขและสิ่งแวดล้อมเทศบาลเมืองมาบตาพุด



มอบชุดเครื่องเสียงจำนวน 1 ชุด ให้กับชมรมแอโรบิก เทศบาลเมืองมาบตาพุด เพื่อใช้ในกิจกรรมแอโรบิกของชุมชน ซึ่งมีการใช้บริการลานออกกำลังกายนี้เป็นประจำทุกวัน

จัดกิจกรรมแอโรบิกสัญจร "เดินทำโรค โยกไปกับชุมชน ปีที่ 7" ประจำปี 2565 สร้างสีสันความสุขและสุขภาพที่ดีให้กับคนในชุมชน ภายใต้โครงการจิตอาสา "หาดีหน้าตาดีกับน้องสตาร์" เพื่อแสดงความรักความห่วงใย พร้อมสานสัมพันธ์อันดีกับชุมชน



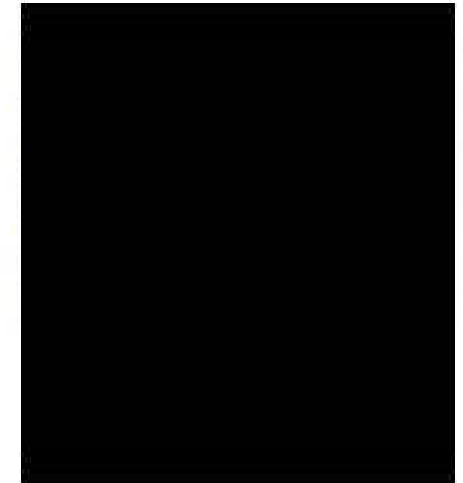
5

การสนับสนุนส่งเสริมชุมชนและการมีส่วนร่วมกับภาคสังคม

ส่งเสริมด้านคุณภาพชีวิต



SPRC จับมือกับสำนักงานนิคมอุตสาหกรรมมาบตาพุด ร่วมจัดตั้งวิสาหกิจชุมชน และจัดกิจกรรม "รวมพลังขับเคลื่อนวิสาหกิจชุมชนอย่างมืออาชีพ" ณ ที่ทำการชุมชนวัดมาบตาพุด



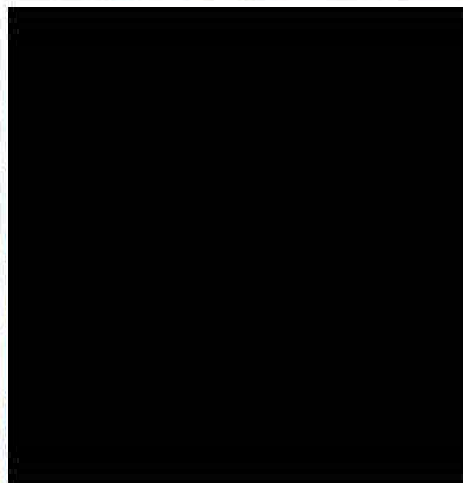
ส่งมอบเงินทำบุญ ทำบุญใหญ่ ทำบุญข้าวเหนียว พร้อมสิ่งของเครื่องใช้ในครัวเรือน ให้แก่ "กองทุนสนับสนุนการจัดบริการดูแลพัฒนาคุณภาพชีวิตผู้สูงอายุและผู้พิการเมืองมาบตาพุด" ในโครงการ "ทำบุญเดือนเกิด...กับน้องสตาร์"



6

การสนับสนุนส่งเสริมชุมชนและการมีส่วนร่วมกับภาคสังคม

ส่งเสริมด้านคุณภาพชีวิต



มอบยางกันกระแทกเรือ ให้กับเทศบาลตำบลบ้านแพ และกลุ่มประมงเรือเล็กแหลมรุ่งเรือง เพื่อใช้ในการกันกระแทกของเรือ

มอบสิ่งอุปโภคบริโภคที่จำเป็น เพื่อบรรเทาความเดือดร้อนแก่พี่น้องประชาชนชาวระยองที่ประสบภัยน้ำท่วม



7

การสนับสนุนส่งเสริมชุมชนและการมีส่วนร่วมกับภาคสังคม

ส่งเสริมด้านคุณภาพชีวิต



SPRC ร่วมกับองค์การบริหารส่วนตำบลตะพง, ชมรมผู้ประกอบการหาดแม่รำพึง จัดกิจกรรม "ตลาดวาฬน้อย" เพื่อส่งเสริมการท่องเที่ยว และกระตุ้นเศรษฐกิจในพื้นที่ฟื้นฟู โดยมีผู้เข้าร่วมงาน กว่า 1,000 คน และมียอดการใช้จ่ายสร้างเม็ดเงินสะพัดในพื้นที่กว่า 286,000 บาท ส่งสัญญาณเศรษฐกิจ กระจ่าง กำลังกลับมาคึกคักและฟื้นตัว



8

การสนับสนุนส่งเสริมชุมชนและการมีส่วนร่วมกับภาคสังคม

ส่งเสริมด้านคุณภาพชีวิต



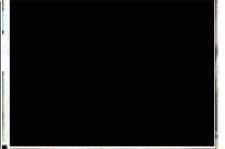
SPRC จัดกิจกรรมวิ่งการกุศล "RUN FOR YOU AND SEA" รัง-กิน-เที่ยว-งานเดียวครบ ซึ่งถ้ายรวมมูลค่าผู้ว่าราชการจังหวัดระยอง และบริษัทรถจักรยานยนต์ มีนักวิ่งจากทุกสารทิศสมัครร่วมงาน กว่า 1,500 คน โดยรายได้ค่าสมัครไม่หักค่าใช้จ่ายและบริษัท SPRC สมทบเพิ่ม รวมมูลค่ากว่า 6,750,000 บาท นำไปซื้ออุปกรณ์การแพทย์มอบให้กับโรงพยาบาลในภาคตะวันออก



9

การสนับสนุนส่งเสริมชุมชนและการมีส่วนร่วมกับภาคสังคม

ส่งเสริมด้านคุณภาพชีวิต



รพ. เฉลิมพระเกียรติ สมเด็จพระเทพรัตนราชสุดาฯ สยามบรมราชกุมารี ระยอง



รพ. สมเด็จพระนางเจ้าสิริกิติ์

รพ. ระยอง



รพ. สด. บ้านเกาะเสม็ด



รพ. สด. ตระกุ่ม



รพ. สด. บ้านเพ

จากการจัดกิจกรรมวิ่งการกุศล "RUN FOR YOU AND SEA" รัง-กิน-เที่ยว-งานเดียวครบ รายได้ค่าสมัครไม่หักค่าใช้จ่าย และบริษัท สมทบเพิ่ม รวมมูลค่ากว่า 6,750,000 บาท นำไปซื้อเครื่องมือและอุปกรณ์การแพทย์มอบให้แก่ โรงพยาบาล 3 แห่ง และ รพ. สด. ระยอง 3 แห่ง



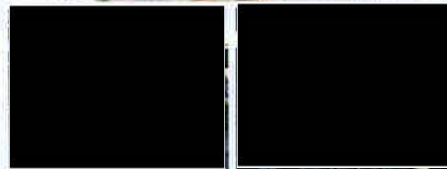
10

การสนับสนุนส่งเสริมชุมชนและการมีส่วนร่วมกับภาคสังคม

ส่งเสริมด้านคุณภาพชีวิต



SPRC สนับสนุนน้ำในกินแดดอาคารที่พักผู้บริการแก่ศูนย์บริการสาธารณสุขวัดโสมนัส เพื่อใช้กินแดดและนั่งพักผ่อนเพิ่มมาบริการ



SPRC สนับสนุนและเข้าร่วมกิจกรรมตกลา กีนปู ดูวิถีประมงพื้นบ้าน ครั้งที่ 5 ณ กลุ่มวิสาหกิจชุมชนประมงเรือเล็กท้ายต. ต.ปากน้ำ อ.เมืองระยอง

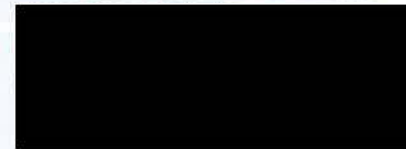


11

การสนับสนุนส่งเสริมชุมชนและการมีส่วนร่วมกับภาคสังคม

ส่งเสริมด้านสิ่งแวดล้อม

สนับสนุนและร่วมกิจกรรมปล่อยพันธุ์สัตว์น้ำ



ณ กลุ่มประมงเรือเล็กบ้านพูน



ณ กลุ่มประมงเรือเล็กตากวน-อ่าวประตุ



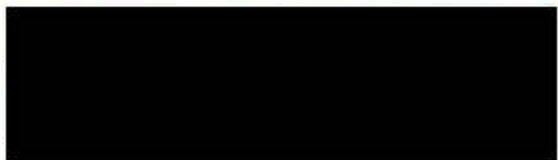
ณ กลุ่มประมงเรือเล็กหนองแฟบ



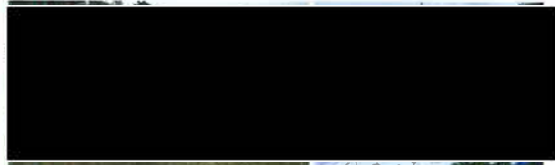
12

การสนับสนุนส่งเสริมชุมชนและการมีส่วนร่วมกับภาคสังคม

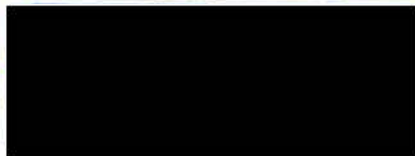
ส่งเสริมด้านสิ่งแวดล้อม



ร่วมโครงการ "ฟื้นฟูแหล่งพันธุ์หอยหวาน บริเวณชายฝั่งทะเลจังหวัดระยอง"



ร่วมกิจกรรมปล่อยพันธุ์สัตว์น้ำจัดลงคลองสาธารณะ บริเวณคลองน้ำหนู



ร่วมกิจกรรมปล่อยพันธุ์สัตว์น้ำ
เนื่องในวันประมงแห่งชาติ ประจำปี 2565

การสนับสนุนส่งเสริมชุมชนและการมีส่วนร่วมกับภาคสังคม

ส่งเสริมด้านสิ่งแวดล้อม



ร่วมกับอุทยานแห่งชาติเขาแหลมหญ้า-หมู่เกาะเสม็ด จัดกิจกรรม
"Big Cleaning Day" ขึ้นในพื้นที่อุทยานแห่งชาติเขาแหลมหญ้า-
หมู่เกาะเสม็ด บริเวณชายหาดแม่รำพึง ต.เพ อ.เมืองระยอง จ.ระยอง

ร่วมกิจกรรมปล่อยพันธุ์สัตว์น้ำจัดลงคลองสาธารณะ
เฉลิมพระเกียรติสมเด็จพระนางเจ้าสิริกิติ์
พระบรมราชินีนาถ พระบรมราชชนนีพันปีหลวง
บริเวณคลองน้ำหนู ต.มาบตาพุด อ.เมือง จ.ระยอง

การสนับสนุนส่งเสริมชุมชนและการมีส่วนร่วมกับภาคสังคม

ส่งเสริมด้านสิ่งแวดล้อม

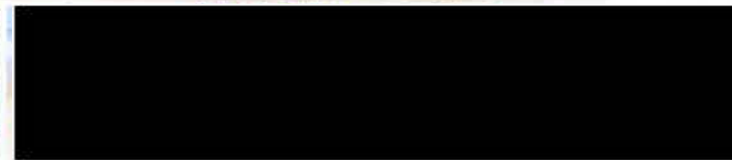


จัดกิจกรรมปล่อยพันธุ์สัตว์น้ำ
ณ กลุ่มประมงเรือเล็กปลา -
อู่ตะเภาสามัคคี

ร่วมจัดกิจกรรมปล่อยเรือเก็บขยะ ณ ปากน้ำระยอง

การสนับสนุนส่งเสริมชุมชนและการมีส่วนร่วมกับภาคสังคม

ส่งเสริมด้านสิ่งแวดล้อม



ร่วมจัดกิจกรรมวันอนุรักษ์ชายฝั่งสากล จังหวัดระยอง ประจำปี 2565 หรือ International Coastal Cleanup 2022
(ICC 2022) ซึ่งในปีนี้ SPRC และกลุ่มพันธมิตร ร่วมจัดอาสาสมัครกว่า 1,000 คน มุ่งมั่นเก็บขยะ ทำความสะอาดตลอดแนว
ชายหาดแม่รำพึง จังหวัดระยอง คืนความสวยงามให้หาดทราย และมุ่งหวังให้ทุกคนตระหนักถึงปัญหาสิ่งแวดล้อมของระบบ
นิเวศชายฝั่ง พร้อมสร้างจิตสำนึกในการรักษาความสะอาด โดยจากความร่วมมือของทุกภาคส่วนนั้น ทำให้สามารถเก็บ
ขยะได้มากถึง 2,999 กิโลกรัม

การสนับสนุนส่งเสริมชุมชนและการมีส่วนร่วมกับภาคสังคม

ส่งเสริมด้านประเพณี วัฒนธรรม



ร่วมกับ ชุมชนใกล้เคียง เป็นเจ้าภาพทอดกฐินสามัคคี ประจำปี 2565 ณ วัดโสภณาราม ตำบลมาบตาพุด อำเภอเมือง จังหวัดระยอง ได้ยอดเงินทำบุญรวมทั้งสิ้น 1,188,999 บาท

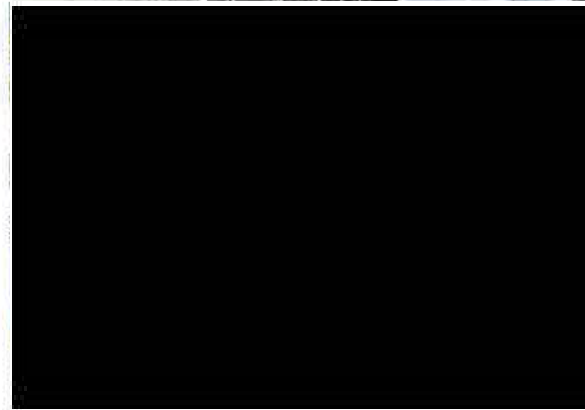
และร่วมออกโรงทาน รวมถึงสนับสนุนงบประมาณทำบุญ สำหรับงานกฐินสามัคคีของวัดต่าง ๆ ในจังหวัดระยอง รวม 16 แห่ง เพื่อร่วมสืบสานประเพณีทางพุทธศาสนาให้อยู่คู่กับชุมชนอย่างยั่งยืนสืบ



17

การสนับสนุนส่งเสริมชุมชนและการมีส่วนร่วมกับภาคสังคม

ส่งเสริมด้านประเพณี วัฒนธรรม



สนับสนุนและร่วมกิจกรรมงานวันรวม
น้ำใจสู่สุลต่านยะห์ ครั้งที่ 20

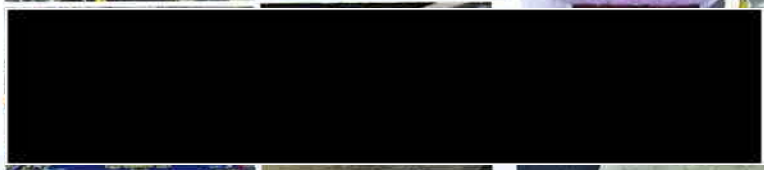
สนับสนุนและร่วมกิจกรรมวันพ่อแห่งชาติกับชุมชนต่าง ๆ



18

การสนับสนุนส่งเสริมชุมชนและการมีส่วนร่วมกับภาคสังคม

กิจกรรมเชื่อมความสัมพันธ์ และสนับสนุนกิจกรรมอื่น ๆ



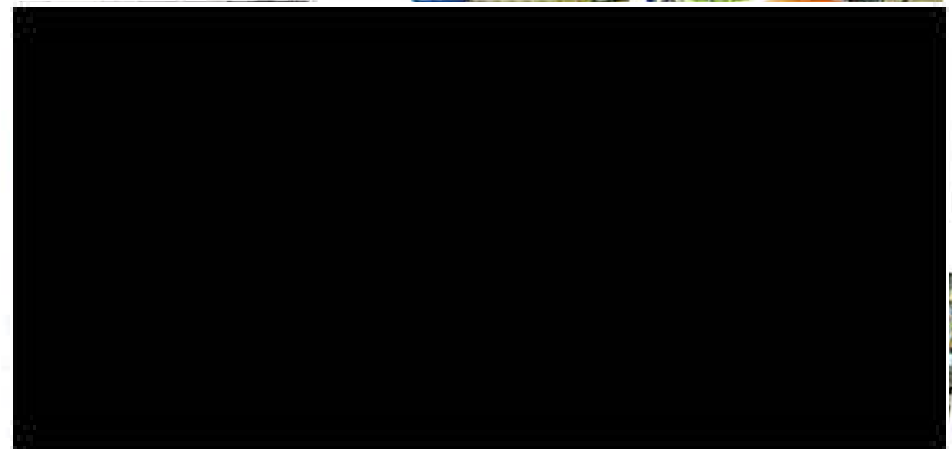
ร่วมทำบุญประจำปี
งานมงคล และอวมงคล
ของชุมชนต่าง ๆ



19

การสนับสนุนส่งเสริมชุมชนและการมีส่วนร่วมกับภาคสังคม

กิจกรรมเชื่อมความสัมพันธ์ และสนับสนุนกิจกรรมอื่น ๆ



จัดเยี่ยมชุมชนโดยมีทีมงานชุมชนสัมพันธ์ ผู้บริหาร และพนักงานจิตอาสาจากฝ่ายต่าง ๆ ร่วมเยี่ยมชุมชนด้วย



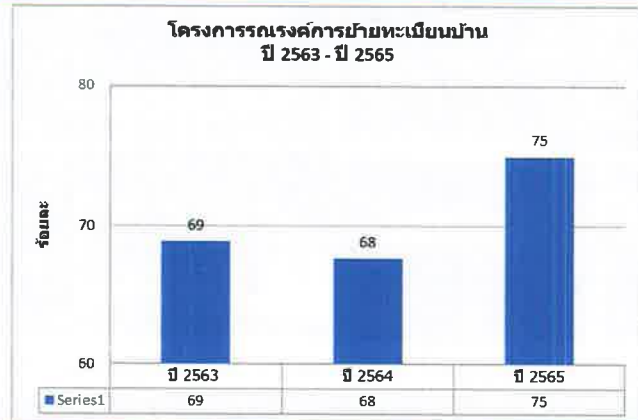
20

การสนับสนุนส่งเสริมชุมชนและการมีส่วนร่วมกับภาคสังคม

โครงการรณรงค์ การย้ายทะเบียนบ้าน

- พนักงานมีทะเบียนบ้านอยู่ในจังหวัดระยอง จำนวน 392 คน จากพนักงานทั้งหมด 523 คน คิดเป็น 75%

บริษัทฯ มีนโยบาย ถ้าพนักงานซื้อบ้านที่จังหวัดระยอง จะช่วยค่าดอกเบี้ยบ้านครึ่งหนึ่ง ซึ่งทางผู้บริหารของบริษัทฯ ได้เน้นย้ำ และไม่ให้มีการเปลี่ยนแปลงนโยบายนี้ ถึงแม้ว่าจะมีการร้องขอให้ขยายขอบเขตไปที่กรุงเทพมหานครหรือจังหวัดอื่น



SPRC

21

รางวัลแห่งความภาคภูมิใจ



SPRC

23

การสนับสนุนส่งเสริมชุมชนและการมีส่วนร่วมกับภาคสังคม

โครงการรณรงค์ การโอนย้ายทะเบียนรถ

- รถที่ใช้ในกิจการของบริษัทฯ จำนวนทั้งหมด 38 คัน จดทะเบียน จ.ระยอง จำนวน 38 คัน คิดเป็น 100%
- รถพนักงาน จำนวนทั้งหมด 840 คัน จดทะเบียน จ.ระยอง จำนวน 380 คัน คิดเป็น 45%
- รถผู้รับเหมา จำนวนทั้งหมด 1,101 คัน จดทะเบียน จ.ระยอง จำนวน 496 คัน คิดเป็น 45%

รวมคิดเป็น 46%



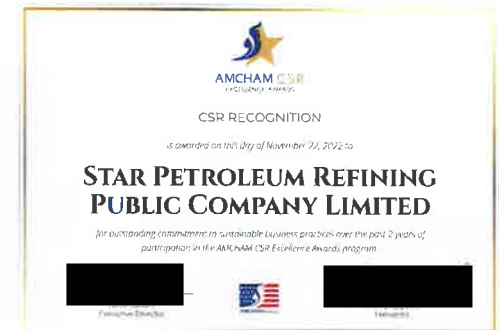
SPRC

22

รางวัลแห่งความภาคภูมิใจ



รางวัลและประกาศเกียรติคุณ “โรงงานอุตสาหกรรม 4.0”
ด้าน Smart Safety / Emergency



SPRC ได้รับรางวัล CSR Recognition Award เป็นปีที่ 2 จาก
การประกาศรางวัลด้านความรับผิดชอบต่อสังคมและสิ่งแวดล้อมยอดเยี่ยม
ของหอการค้าอเมริกันในประเทศไทย

SPRC

24

รางวัลแห่งความภาคภูมิใจ



รางวัลเกียรติยศ CSR-DIW Continuous Award ประจำปี 2564 ต่อเนื่องเป็นปีที่ 6 จากโครงการส่งเสริมโรงงานอุตสาหกรรมให้มีความรับผิดชอบต่อสังคมและอยู่ร่วมกับชุมชนได้อย่างยั่งยืน (CSR-DIW) จัดโดยกรมโรงงานอุตสาหกรรม กระทรวงอุตสาหกรรม



รางวัลเหรียญทองแดงจากการประกวดโครงการ "ตรวจปริมาณน้ำมันในน้ำมันก่อนส่งไปยังหน่วยบำบัดน้ำเสีย" ปี 2564 โดยคณะกรรมการ PTT Group Operational Excellence



25

รางวัลแห่งความภาคภูมิใจ



รางวัลอุตสาหกรรมสีเขียว ระดับที่ 3: ระบบสีเขียว จากกระทรวงอุตสาหกรรม อันเป็นผลจากการที่บริษัทฯ มีการบริหารจัดการสิ่งแวดล้อมอย่างเป็นระบบ มีการติดตามประเมินผล และทบทวนเพื่อการพัฒนาอย่างต่อเนื่อง (ปี 2562-2565)



SPRC ได้รับใบรับรองติดตาม Thai STOP COVID-19 จาก กรมอนามัย



26

รางวัลแห่งความภาคภูมิใจ



ISO 9001:2015 มาตรฐานระบบการบริหารด้านคุณภาพ
ISO 14001:2015 มาตรฐานระบบการบริหารสิ่งแวดล้อม
ISO/IEC 17025:2005 มาตรฐานความสามารถห้องปฏิบัติการในการวิเคราะห์ และสอบเทียบ
ISO 45001:2018 มาตรฐานระบบการบริหารด้านอาชีวอนามัยและความปลอดภัย



ได้รับการรับรองการเป็นสมาชิกแนวร่วมปฏิวัติของภาคเอกชนไทย ในการต่อต้านการทุจริต (The Thailand's Private Sector Collective Action Coalition Against Corruption หรือ CAC)



27

รางวัลแห่งความภาคภูมิใจ



รางวัล CG Award ระดับดีเลิศ 5 ดาว ประจำปี 2564 ต่อเนื่องเป็นปีที่ 5 โดย สถาบันกรรมการบริษัทไทย (IOD) ร่วมกับ ตลาดหลักทรัพย์แห่งประเทศไทย (ตลท.)



บริษัทได้รับรางวัลคัดเลือกอยู่ในกลุ่มดัชนี MSCI Global Small Cap Indexes, 2563



28

ภาคผนวก ข.17

ระเบียบปฏิบัติ เรื่อง การสื่อสารและการร้องเรียน
ด้านสิ่งแวดล้อม อาชีวอนามัย และความปลอดภัย


Common		
 EHS Communications & Complaints		
Prepared by:	Nipa Nimmansethakul	Number: EHS-SP-QS-0003
Approved by:	Angkana Panyaopart	Revision: 1.
Low	Medium	High

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Purpose

The purpose of this procedure is to provide guidelines to ensure proper internal communications between the various levels and functions of the organization, and to handle external communications; in terms of receiving, documenting and responding regarding Environment, Health and Safety including environmental complaints.

System Information

Summary The Environmental Complaints or Community Disturbance includes:

- Smell
- Noise & vibration
- Smoke
- Particulates matters
- Unauthorized discharge of wastewater, solid waste to the public
- Others that has environmental impact to stakeholders e.g., products / by products spilled outside plant, Falling of material during transportation e.g., soil and make public road dirty and nuisance to public, etc.

Roles and Responsibility Deviation from the procedure must be stopped and informed a line supervisor or line manager, concerned people for a solution prior to executing this procedure.

Precautions N/A

Prerequisites N/A

Detailed Activities

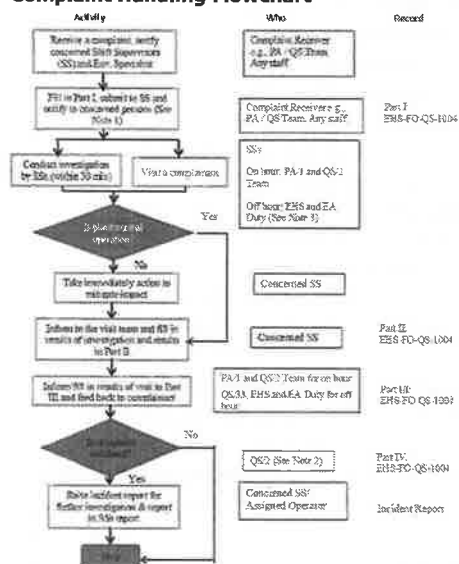
1. External Communications

1.1 Dealing with External Complaints

There are 2 levels of External Complaint or Community Disturbance as follows:

- Recordable Community Disturbance is a complaint that
 - Cause health impact to any neighbor or
 - Widely nuisance to communities (> 1 household/ company or 1 sensitive group (i.e., school, hospital, temple)
 - Unauthorized discharge of wastewater, solid waste to the public
 - Falling of material during transportation (e.g., sulfur, soil) and make public road dirty and nuisance to public
- Non Recordable Community Disturbance is a complaint other than Recordable Community Disturbance.

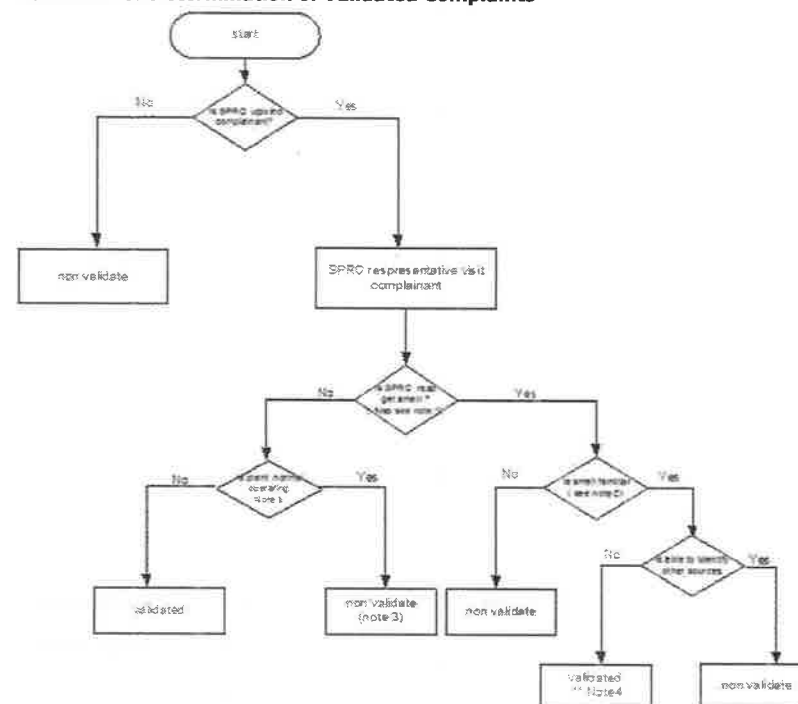
Complaint Handling Flowchart



Note:

- The concerned persons included CE, DO, PN, PD, PA, QS, PN/7 PD/7, Operation Coordinators, EHS duty, and External Affairs duty.
- QS/2 uses the Guideline for Determination of Validated Complaints. If the guideline cannot be applied, Evaluation Team should be set. Evaluation Team comprised of PUs representative, QA representative, PA representative and complainant.
- Security Team/Ops will be the 1st visit the complainant during waiting for Duty Team arrival.

Guideline for Determination of Validated Complaints



Note:

- If the guideline cannot be applied (such as representative does not visit within 1 hour or late report of the smell), Evaluation Team should be set to determine that:
 - Validate / Not Validate
 - Investigate root cause why guideline cannot be followed and improve process.
- Familiar and used to be our sources of smell include burning matches, burning gas, sour hydrocarbon, hydrogen sulfide, sulfur, hydrocarbon and LPG (like mercaptan).
- Normal operation covers:
 - No shutdown or maintenance activity which cause potential smell impact.
 - Shutdown or maintenance activity which has proper smell control.
 - Environmental Control System (for examples: vapor collection and scrubber, ETP Ground Flare, Vapor Recovery Unit, etc.) work properly and efficiently.
- Exemption for the burning match smell due to high level of sources.

Validated Complaints, KPI and Team Reward

All complaints shall be documented, investigated and determined whether they are validated.

If validated complaints occur from the same source during a particular period of time (e.g., plant upset, shut down or smell control system failure), only the initial validated complaint is taken into account in the KPI and Team Reward. However, the repeat complaints, which result from not taking the corrective actions as agreed, will be added in the KPI and Team Reward,

Example: API Separator out of service

Case 1: There are 3 complaints and determined validated complaints. In the record, there will be 3 validated complaints. However, only 1 validated complaint (initial complaint) will be taking into account in KPI and Team Reward.

Case 2: Assume QS recommended a mitigation measure which accepted by PUs Manager due to API's not in service but no action was taken resulting in a repeat complaint. This would result in an additional complaint against KPI and Team Reward.

1.2 Handling of Incoming Communications from Outside

Proper communications guidelines with external contacts which include Regulatory Authorities, Community Leaders and other Environmental Groups are established to ensure sound cooperation/coordination in environment related affairs.

Receiving External Communications

Incoming letters from outside especially regulatory authorities normally addresses to the company Chief Executive Officer (CEO). If the letters express environmental requirements, interests or concern, the Chief Executive Officer (CEO) office will forward the letter to QS for handling.

If incoming EHS communications is via phone call, the company telephone operator will route the line to QS for receiving the requirements.

Documenting and Responding to External Communications

Upon receiving an environmental letter, QS by the EHS Specialist is responsible for preparing correspondence for Manager QS's review and sign.

Incoming letter is registered in the Intranet Web\Incoming Document Registration System while a copy of responding letter is kept in Intranet Web\Outgoing Document Registration System.

In case of communication by phone, EHS Specialist can answer/talk to the callers about his or her area of knowledge. If he or she is not technically qualified to answer the question, the callers will be advised for a call back as soon as practicable.

1.3 Outgoing Communications to the Public

For external communications, refer to the AM-SP-PA-003 Corporate Communication.doc which provide guidelines for developing and implementing activities and various channels to communicate with concerned external stakeholders i.e. Map Ta Phut community people, local government authorities concerned, neighboring plants in Map Ta Phut Industrial Complex, Rayong people and general public.

The external communications arranged with objectives to enhance the company image and reputation amongst the stakeholders in the long term, including prevent misunderstanding on the refineries' operations.

In case of abnormal incident required clarification letter, the letter will be jointly drafted by PA and QS, reviewed by Duty Manager, LT of concerned area, QS and PA and then signed by Duty Manager.

1.4 Informing External Contacts

1.4. Emergency Response Drill / Exercise

1 When SPRC has plan to conduct emergency response drill/exercise including emergency alerting system in the Refinery which may cause concern to the neighbors, or plan for operations that may cause external impact (e.g., start up of the process unit), the company by Public Affairs with coordination with QS shall inform the following external contacts and neighbors in advance:

- Industrial Estate Map Ta Phut Office
- Map Ta Phut Municipality
- Map Ta Phut Police Station
- Huay Pong Police Station
- Nearby Schools and Temple
- Nearby Industrial Plants
- Rayong Provincial Industrial Work Office
- Communities

PA is responsible for notification to concern communities, local authorities and industries. For details, refer to the AM-WI-PA-006 Notification on Refinery's Operation Emergency Response Exercise.doc

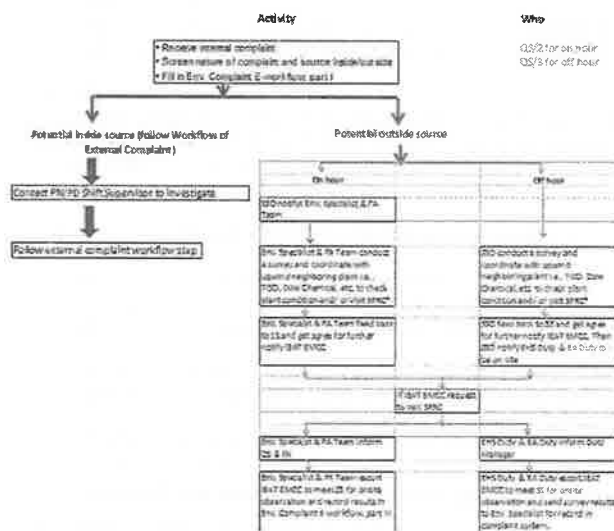
1.4. Reporting Requirements

2 EHS related reports are required to submit as detailed in the permit / license / report document in EHS-OT-QS-0006_Reporting_Requirements.xls. Document Reminder System is a tool for reminding government document due date controlled by LS Department.

For other EHS related incidents reporting, refer to RMS-SP-SPRC-007 Incident Investigation and Analysis.docx.

2. Internal Communications

2.1 Internal Environmental Complaint Guideline



Note * SS can allow neighboring plant to visit SPRC if needed. For Operation complaint, SS communicates action taken to Operators.

2.2 Shift Supervisor Report

Shift Supervisor report is prepared by Shift Supervisor and communicated in the Shift Supervisor Report via e: mail to Top Management, Manager PUs, Manager QEHS&LAB, Environmental Specialist, Public Affairs Personnel twice a day (i.e., for Day and Night Shifts). Information in this report includes the followings:

- EHS incidents including complaints incident
- PUN and PUD Operations Status

The Shift Supervisor is responsible for reporting information on nuisance from outside sources. If the smell is sufficiently strong that it could affect health i.e., irritate nose, produce nausea or dizziness, the Shift Supervisor or affected person shall notify the QS and Public Affairs or External affair duty person if outside office hours immediately.

2.3 EHS Related Meetings

There are 3 main meetings in which EHS issues are routinely informed, reported and discussed i.e., Operations Meeting, Management (Leadership Team) Meeting and EHS Supporting Meetings.

- Operations Meeting** The purpose of this meeting is to ensure sound communications and coordination between Operations and other related departments. The meeting is routinely conducted in the morning. Planned EHS and other field activities are normally informed in the meeting.
- Management (Leadership Team) Meeting** The weekly meeting is normally conducted on Wednesday. The Chief Executive Officer (CEO) chairs the meeting with senior department managers. In the meeting each manager report his or her department related issues. This meeting is a tool for communicating environment, health and safety related issues to top management and senior managers. The Chief Executive Officer (CEO) usually emphasizes the importance of environmental affairs on company business and requests full support / cooperation from each department. The minutes of management meeting is communicated to all staff for information after each meeting.
- EHS Supporting Committees Meeting** There are 4 EHS Supporting Committees (i.e., EHS Main Committee, PN EHS Committee, PD EHS Committee and Maintenance & Contractor EHS Committee) The meetings of the EHS Supporting Committees are conducted on a monthly basis. (For more detail, refer to EHS-SP-QS-0008 EHS Supporting Committee.doc) For other EHS related meetings refer to EHS-WI-QS-0002 EHS Meetings.doc

2.4 Planning for Operations that May Cause External Impact

Reference with the IEAT Notification 67/2014, type of shutdown and notification timeline is specified as below table:

Item	Type of shutdown	Notification Timeline	SPRC Actions
1	Turnaround/Annual Shutdown	≥15 days in advance	<ul style="list-style-type: none"> Required Operation to notify 17 days in advance (PA prepare document 2 days). If changes, required to re-notify
2	Commercial Shutdown	≥7 days in advance	Not Applicable
3	Emergency Shutdown	<ul style="list-style-type: none"> Within 15 minutes after incident by phone Notify plan within 3 days 	Required Operation to immediately notify REB, then REB further notify Environmental Specialist and PA/1

When planning to perform any job (for example unit start up or shut down) which may temporarily release odors or high noise levels, the Operation Coordinator is to notify Manager Public Government Affairs and Manager QEHS&LAB at least 17 days in advance for Turnaround/Annual Shutdown. Required Information for Turnaround/Annual Shutdown is as follows:

- Main equipment package list
- Chemical list remain in equipment /cleaning chemical which may result in significant impact to environment and control measures
- Equipment Isolation list ready for IEAT inspection

- Shutdown Procedure include preparing equipment, draining, opening, maintenance • Air emission, wastewater and solid waste management
- Flare management; noise, black smoke, heat, light, smell • Safety control on high risk working • Contingency Response Plan
- Contact persons & Communication plan
- Contractor Management; number, Selection criteria/competency, training & Evaluation, Safety promotion, Safety Officer, dedicated temporary area for canteen, toilet, rest area, parking lot, etc.
- Conduct pre startup safety review

For other planned shutdown, Operation Coordinator is to notify Manager Public Government Affairs and Manager QEHS&LAB at least 5 days in advance. The notifications should at least consist of the followings:

- Purpose of planned activities
- Shutdown period and its impact period
- Types and level of impact
- Mitigation Measures of impact e.g., keep low inventory, refine low sulfur feed, install temporary control equipment, etc.

The above notifications shall be completed in the form EHS-FO-QS-1010 Plant Shutdown Startup Notification.doc. PA is responsible for notification to concerned communities, local authorities and industries. For details, refer to the AM-WI-PA-006 Notification on Refinery's Operation Emergency Response Exercise.doc

2.5 Environment, Health and Safety Performance Communications

Environment, Health and Safety Performance Communications

Monthly Environment, Health and Safety Performance reports are communicated to all staff via company Web and the boards located at the Refinery Main Gates and Marine Terminal Control Building.

2.6 Environment Health and Safety Handbook

Environment Health and Safety Handbook

Environment Health and Safety Handbook will be provided to new comer both staff and contractor after finish EHS induction and IIF orientation. Brief EHS policy is also available in this handbook.

2.7 Other Communications via e: mail

Other Communications via e: mail

Electronic mail called e: mail is widely used for internal communications. Messages are usually communicated to concerned persons/divisions/ departments or all staff in a form of EHS Alert / Instructions (e.g., Safety Flash).

2.8 Emergency Response Drill by External Organization

Emergency Response Drill by External Organization

Emergency response drill and alarm testing conducted by neighboring plants are communicated to concerned area by SPRC Emergency Response Coordinator group by e-mail or telephone and morning operation meeting.

For other internal communications, refer to the AM-SP-PA-002 Internal Communication.doc covers various communication channels, printing materials for staff, and internal communication survey.

Appendix**Definitions**

N/A

References

- RMS-SP-SPRC-007 Incident Investigation and Analysis.docx
- EHS-SP-QS-0008 EHS Supporting Committee.doc
- EHS-WI-QS-0002 EHS Meetings.doc
- AM-SP-PA-002 Internal Communication.doc
- AM-SP-PA-003 Corporate Communication.doc
- AM-WI-PA-006 Notification on Refinery's Operation Emergency Response Exercise.doc
- IEAT Notification No. 67/2014, Shutdown/Turnaround for Industries in IEAT and MTP Port

Amendment List

Below is a list of changes between the previous and the current revision of this document.

Revision n	Date	Page/ Section	Reason	By
0	06-Oct-08	All	First release	QS/1
1	21-Sep-09	P.2/2.1.1	Update Dealing with external complaints work flow and hyperlink	QS21
		P.4/2.1.2	Guidelines for Determination of Validated Complaints	
2	15-Oct-12	P.1,2/1, 2.1	1. Add Community Disturbance and revised scope	QS/21
		P.5/2.2.2	2. Updated Documenting and Responding to External Communications	
		P.7/2.4.2	3. Updated Reporting Requirements.	
		P.8/3.1	4. Updated Internal Environmental Complaint Report Guideline	
3	15-Oct-14	P.9 /3.4	Revise Planning for Operation that may cause external impact to comply with the IEAT Notification 67/2014	QS/21
4	22-Dec-14	All	Change SPRC logo	Nipa N. (QS/21)
		P.6/2.3	Add work process for abnormal incident required clarification letter.	
5	12-Apr-16	P.3/2.1	Revised Complaint handling flowchart	Nipa N. (QS/21)
6	4-Jun-18	P.1/ 1	Revised by adding Environment, Health and Safety	Nipa N. (QS/21)
		P.3/2.1	Add Assigned Operator in Complaint handling flowchart	
		P.6/2.2	Revised from Environmental Specialist to EHS Specialist	
7	16-Oct-18	P. 5 / 2.1.2	Revised normal operation scope in Guidelines for Determination of Validated Complaints	Nipa N. (QS/21)
		P.8 /3.1	Revised Internal Environmental Complaint Guideline	
1	28-Feb-19	All	1. Convert from EDMS Procedure Number: EHS-SP-QS-0003 2. Start Revision 1 at SmartProcedures	Nipa N. (QS/21)

No changes specified in the current Revision of this Procedure.

Distribution List

Copy No.	Controller/Holder	Location
00	Electronic Controller	SmartProcedures

ภาคผนวก ข.18

การตรวจสอบระบบท่อขนส่งน้ำมัน

SPM WEEKLY MAINTENANCE REPORT

DATE : 08-Jul-22

REF	DESCRIPTIONS	Date	RESULTS	REMARKS
2.2.2.2	*Grease surface fluid swivel assembly	08-Jul-22	normal	
2.2.2.2	Lubricate Mooring & other auxillary equipment		normal	
2.2.3	Inspect buoy body/fender for any damaged		normal	
2.2.4	*Check Center well drain for contamination		normal	
	Check Central Pipe swivel (CPS) relief valve		normal	
2.2.5	*Open bearing cavity drain plug check water		normal	
	Check water barrage , gasket , means of Bearing protection		normal	
	Inspect buoy turntable for freely rotating , Normal condition		normal	
	Check Product path in Moon Pool / Turntable ,Exp.joint & Valves for any leakage		normal	
	* Inspect Floating hose strings , MBC , Connection , Messenger for any leakage / damaged		normal	
	* Inspect Mooring Equipment / accessories , Hawsers/ thimble / Jacket , Chain Support buoy , Chafe chain , Messenger for any damaged , connection , fouling		normal	New Hawser installed 12 Feb 21 Chafe chain installed 28 May 21
	Inspect Nav.aids, Solar panel , Wiring system & Winker Light		normal	

Rev: 220920

SPM WEEKLY MAINTENANCE REPORT

DATE : 12-Aug-22

REF	DESCRIPTIONS	Date	RESULTS	REMARKS
2.2.2.2	*Grease surface fluid swivel assembly	12-Aug-22	normal	
2.2.2.2	Lubricate Mooring & other auxillary equipment		normal	
2.2.3	Inspect buoy body/fender for any damaged		normal	
2.2.4	*Check Center well drain for contamination		normal	
	Check Central Pipe swivel (CPS) relief valve		normal	
2.2.5	*Open bearing cavity drain plug check water		normal	
	Check water barrage , gasket , means of Bearing protection		normal	
	Inspect buoy turntable for freely rotating , Normal condition		normal	
	Check Product path in Moon Pool / Turntable ,Exp.joint & Valves for any leakage		normal	
	* Inspect Floating hose strings , MBC , Connection , Messenger for any leakage / damaged		normal	
	* Inspect Mooring Equipment / accessories , Hawsers/ thimble / Jacket , Chain Support buoy , Chafe chain , Messenger for any damaged , connection , fouling		normal	New Hawser installed 12 Feb 21 Chafe chain installed 28 May 21
	Inspect Nav.aids, Solar panel , Wiring system & Winker Light		normal	

Rev: 220920

SPM WEEKLY MAINTENANCE REPORT

DATE : 15-Sep-22				
REF	DESCRIPTIONS	Date	RESULTS	REMARKS
2.2.2.2	*Grease surface fluid swivel assembly	15-Sep-22	normal	
2.2.2.2	Lubricate Mooring & other auxillary equipment		normal	
2.2.3	Inspect buoy body/fender for any damaged		normal	
2.2.4	*Check Center well drain for contamination		normal	
	Check Central Pipe swivel (CPS) relief valve		normal	
2.2.5	*Open bearing cavity drain plug check water		normal	
	Check water barrage , gasket , means of Bearing protection		normal	
	Inspect buoy turntable for freely rotating , Normal condition		normal	
	Check Product path in Moon Pool / Turntable ,Exp.joint & Valves for any leakage		normal	
	* Inspect Floating hose strings , MBC , Connection , Messenger for any leakage / damaged		normal	
	* Inspect Mooring Equipment / accessories , Hawsers/ thimble / Jacket , Chain Support buoy , Chafe chain , Messenger for any damaged , connection , fouling		normal	New Hawser installed 12 Feb 21 Chafe chain installed 28 May 21
	Inspect Nav.aids, Solar panel , Wiring system & Winker Light		normal	

Rev: 220920

SPM WEEKLY MAINTENANCE REPORT

DATE : 20-Oct-22				
REF	DESCRIPTIONS	Date	RESULTS	REMARKS
2.2.2.2	*Grease surface fluid swivel assembly	20-Oct-22	normal	
2.2.2.2	Lubricate Mooring & other auxillary equipment		normal	
2.2.3	Inspect buoy body/fender for any damaged		normal	
2.2.4	*Check Center well drain for contamination		normal	
	Check Central Pipe swivel (CPS) relief valve		normal	
2.2.5	*Open bearing cavity drain plug check water		normal	
	Check water barrage , gasket , means of Bearing protection		normal	
	Inspect buoy turntable for freely rotating , Normal condition		normal	
	Check Product path in Moon Pool / Turntable ,Exp.joint & Valves for any leakage		normal	
	* Inspect Floating hose strings , MBC , Connection , Messenger for any leakage / damaged		normal	
	* Inspect Mooring Equipment / accessories , Hawsers/ thimble / Jacket , Chain Support buoy , Chafe chain , Messenger for any damaged , connection , fouling		normal	New Hawser installed 12 Feb 21 Chafe chain installed 28 May 21
	Inspect Nav.aids, Solar panel , Wiring system & Winker Light		normal	

Rev: 220920

SPM WEEKLY MAINTENANCE REPORT

DATE : 10-Nov-22

REF	DESCRIPTIONS	Date	RESULTS	REMARKS
2.2.2.2	*Grease surface fluid swivel assembly	10-Nov-22	normal	
2.2.2.2	Lubricate Mooring & other auxillary equipment		normal	
2.2.3	Inspect buoy body/fender for any damaged		normal	
2.2.4	*Check Center well drain for contamination		normal	
	Check Central Pipe swivel (CPS) relief valve		normal	
2.2.5	*Open bearing cavity drain plug check water		normal	
	Check water barrage , gasket , means of Bearing protection		normal	
	Inspect buoy turntable for freely rotating , Normal condition		normal	
	Check Product path in Moon Pool / Turntable ,Exp.joint & Valves for any leakage		normal	
	* Inspect Floating hose strings , MBC , Connection , Messenger for any leakage / damaged		normal	
	* Inspect Mooring Equipment / accessories , Hawsers/ thimble / Jacket , Chain Suppoort buoy , Chafe chain , Messenger for any damaged , connection , fouling		normal	New Hawser installed 12 Feb 21 Chafe chain installed 28 May 21 and removed 27 July 2022
	Inspect Nav.aids, Solar panel , Wiring system & Winker Light		normal	

Rev: 220920

SPM WEEKLY MAINTENANCE REPORT

DATE : 15-Dec-22

REF	DESCRIPTIONS	Date	RESULTS	REMARKS
2.2.2.2	*Grease surface fluid swivel assembly	15-Dec-22	normal	
2.2.2.2	Lubricate Mooring & other auxillary equipment		normal	
2.2.3	Inspect buoy body/fender for any damaged		normal	
2.2.4	*Check Center well drain for contamination		normal	
	Check Central Pipe swivel (CPS) relief valve		normal	
2.2.5	*Open bearing cavity drain plug check water		normal	
	Check water barrage , gasket , means of Bearing protection		normal	
	Inspect buoy turntable for freely rotating , Normal condition		normal	
	Check Product path in Moon Pool / Turntable ,Exp.joint & Valves for any leakage		normal	
	* Inspect Floating hose strings , MBC , Connection , Messenger for any leakage / damaged		normal	
	* Inspect Mooring Equipment / accessories , Hawsers/ thimble / Jacket , Chain Suppoort buoy , Chafe chain , Messenger for any damaged , connection , fouling		normal	New Hawser installed 12 Feb 21 Chafe chain installed 28 May 21 and removed 27 July 2022
	Inspect Nav.aids, Solar panel , Wiring system & Winker Light		normal	

Rev: 220920



Field Report

Date	29 th November 2022	OWA Group	Thailand	Report No	53-66001-13-FR-01
Project No	53-66001	Dive System	SSDS 2	Dive No	Ref Dive & ROV Log
Client	Star Petroleum Refining and PTT Global Chemical			Vessel	Uniwise Rayong
Project Name	PTTGC-SPRC SPM Diving Inspection and Maintenance				
Location	Map Ta Phut SPM			Video Ref	53-66001-13-VL-01

1 Introduction

Ocean Works Asia (Thailand) Co, Ltd has been contracted by SPRC/PTTGC to provide Air Diving Services at the Map Ta Phut SPM, to carry out condition monitoring of the SPM Buoy and PLEM. This inspection is part of the ongoing monthly condition monitoring requested by the Thailand Marine Department.

2 Operational Dates

29th November 2022

3 Scope of Work

The requested inspection/survey activities were as follows.

- Inspect for leaks and general condition of all flanges, valves, and joints/connections under the SPM Buoy and at the PLEM.
- Take CP measurement at;
 - SPM Buoy including pipe work,
 - PLEM.
- Check condition of anodes on SPM Buoy and PLEM

4 Summary of Diving Activities

4.1 Inspection of all flanges, valves and joints/connections at the PLEM and Buoy.

Both the East and West pipework and blind flanges were inspected, and the following was noted:

- Both blind flanges were noted to be secure with no signs of leaks at the PLEM and Buoy
- There were no signs of leaks at the pipework/connections or valves at the PLEM
- All the bolts were noted to be secure at the PLEM and Buoy.
- The blind flanges on the East and West PLEM 24" take offs were secure with no signs of leaks.
- Pipework under the Buoy showed no signs of leaks

4.2 Cathodic Potential (CP) Reading on the PLEM and Buoy

CP readings were taken on the PLEM and Buoy at selected locations.

- CP readings on the PLEM ranged between -1206mV and -1091mV.
- CP readings on the Buoy ranged between -1039mV and -960mV.

4.3 General Visual Inspection on the PLEM and Buoy Anodes

A general inspection of the anodes on the PLEM and Buoy was carried out and during the inspection the following was noted:

- On the PLEM Anode AN5 and AN10 was found with a broken stub at one end, as noted in previous inspections. All other anodes were found to be intact and secure.
- All anodes were approximately 50% depleted.
- Oxide deposits on the anodes would suggest they were active.

4.4 General Visual Inspection (GVI) of the 7 x Steering Valves

Hand cleaning and inspection of the valves was carried out and all valves were found fully closed and there were no signs of leaks from any of the valves inspected.



Field Report



Typical PLEM Anode



Typical PLEM Anode



Typical PLEM Anode



Typical Buoy Anode



Typical Buoy Anode



Typical Buoy Anode

4.5 General Visual Inspection (GVI) of the 7 x Steering Valves

Inspection and hand cleaning of the valves was carried out and all valves were found fully closed and there were no signs of leaks from any of the valves inspected.

5 Outstanding Tasks

All tasks were completed successfully

6 Operational Constraints

The inspections were carried out safely and successfully by the divers from onboard the Unwise Rayong. There were no operational constraints encountered.

7 Attachments

- 53-66001-13-CP-01 CP Measurement - PLEM 22-11-29
- 53-66001-13-CP-02 CP Measurement - Buoy 22-11-29
- 53-66001-13-PL-01 SPM Condition Monitoring Photo Log
- 53-66001-13-VI-02 Visual Inspection - Anodes 22-11-29
- 53-66001-13-VL-01 SPM Condition Monitoring Video Log

Representative	OWA Supervisor		Client
Signature:	Electronic submission No signature required		Electronic submission No signature required
Name (Print):	Wattana Khomthong		SPM TEAM



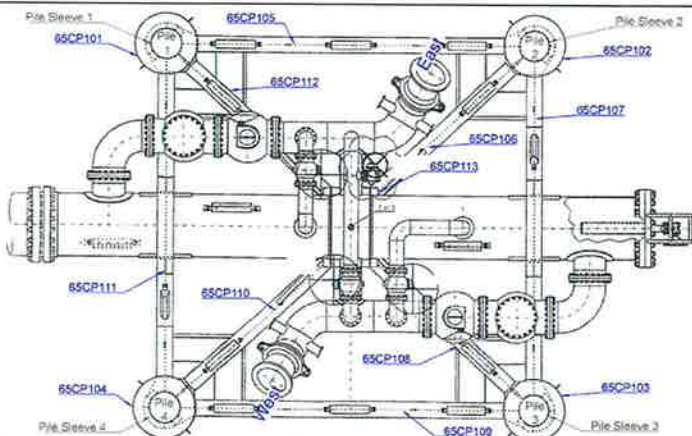
Cathodic Potential Measurement

Date	29 th November 2022	OWA Group	Thailand	Report No	53-66001-13-CP-01
Project No	53-66001	Dive System	SSDS 2	Dive No	Refer to dive log
Client	Star Petroleum Refining and PTT Global Chemical			Vessel	Uniwise Rayong
Project Name	PTTGC-SPRC SPM Diving Inspection and Maintenance				
Location	MAP TA PHUT SPM			Video Ref.	53-66001-13-VL-01

Equipment:	Make:	Serial No.	Calibration Date:	Remarks
Bathycorrometer	Roxy MK5	BU579	15 th November '22	Nil

Calibration and Function Check

Dive		Pre-Dive		Post Dive		Remarks
Date	No	Steel (-mV)	Zinc (-mV)	Steel (-mV)	Zinc (-mV)	
23/11/2022	1	-	1222		1206	Nil



Location	Reading (-mV)	Location	Reading (-mV)
65CP101	1095	65CP108	1206
65CP102	1125	65CP109	1201
65CP103	1205	65CP110	1456
65CP104	1146	65CP111	1115
65CP105	1097	65CP112	1091
65CP106	1116	65CP113	1184
65CP107	1128	-	-

Comments

Representative	OWA Data Recorder	OWA Supervisor
Signature:	Electronic form no signature required	Electronic form no signature required
Name (Print):	N/A	Wattana Khomthong



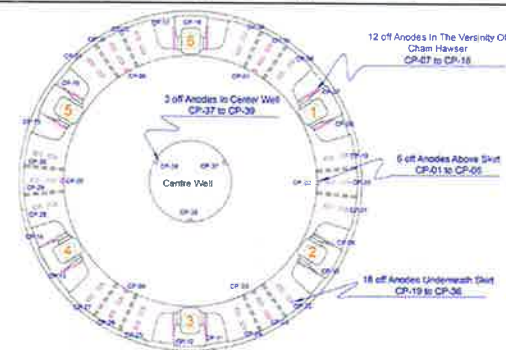
Cathodic Potential Measurement

Date	29 th November 2022	OWA Group	Thailand	Report No	53-66001-13-CP-02
Project No	53-66001	Dive System	SSDS 2	Dive No	Refer to dive log
Client	Star Petroleum Refining and PTT Global Chemical			Vessel	Uniwise Rayong
Project Name	PTTGC-SPRC SPM Diving Inspection and Maintenance				
Location	MAP TA PHUT SPM			Video Ref.	53-66001-13-VL-01

Equipment:	Make:	Serial No.	Calibration Date:	Remarks
Bathycorrometer	Roxy MK5	BU579	15 th November '22	Nil

Calibration and Function Check

Dive		Pre-Dive		Post Dive		Remarks
Date	No	Steel (-mV)	Zinc (-mV)	Steel (-mV)	Zinc (-mV)	
29/11/2022	1	-	1103		1064	Nil



Location	Reading (-mV)	Location	Reading (-mV)	Location	Reading (-mV)
CP-01	1008	CP-14	980	CP-27	975
CP-02	1000	CP-15	962	CP-28	980
CP-03	1003	CP-16	966	CP-29	978
CP-04	1008	CP-17	966	CP-30	971
CP-05	994	CP-18	977	CP-31	973
CP-06	996	CP-19	980	CP-32	972
CP-07	965	CP-20	976	CP-33	971
CP-08	975	CP-21	971	CP-34	978
CP-09	964	CP-22	972	CP-35	980
CP-10	966	CP-23	975	CP-36	970
CP-11	980	CP-24	960	CP-37	1034
CP-12	972	CP-25	982	CP-38	1039
CP-13	970	CP-26	980	CP-39	1036

Representative	OWA Data Recorder	OWA Supervisor
Signature:	Electronic form no signature required	Electronic form no signature required
Name (Print):	N/A	Wattana Khomthong

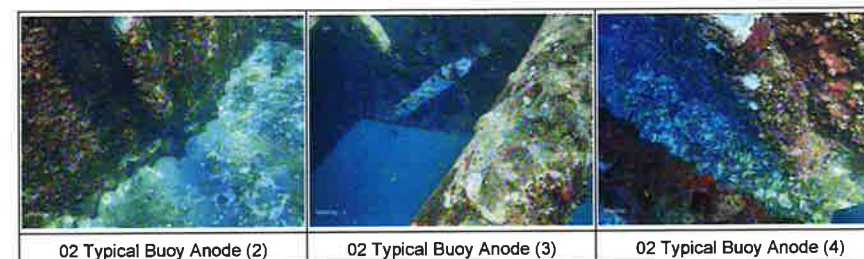
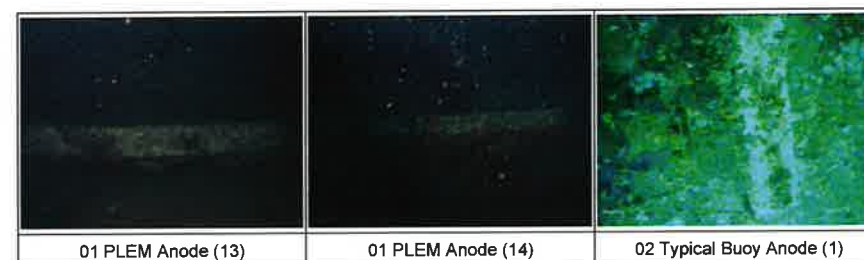


Photo Log

Date	29 th November 2022	OWA Group	Thailand	Report No	53-66001-13-PL-01
Project No	53-66001	Dive System	SSDS 2	Dive No	Ref Dive & ROV Log
Client	Star Petroleum Refining and PTT Global Chemical			Vessel	Uniwise Rayong
Project Name	PTTGC-SPRC SPM Diving Inspection and Maintenance				
Location	Map Ta Phut SPM			Video Ref	53-66001-13-PL-01



Photo Log



Representative	OWA Supervisor		Client
Signature:	Electronic submission No signature required		Electronic submission No signature required
Name (Print):	Wattana Khomthong		SPM TEAM



STAR PETROLEUM REFINING COMPANY AND PTT GLOBAL CHEMICAL

MAP TA PHUT SPM

Ocean Works Asia (Thailand) Co., Ltd.

Quarterly Inspection Report

1	24-Aug-2022	Initial Submission	KS	TO	MAD
REV	DATE	DESCRIPTION	APRD	CHKD	PREP'D
Client Document No.		OWA Document No.			
N/A		53-66001-05-FIR-01			

OCEAN WORKS ASIA (OWA)
<https://www.owa.com.sg>

OCEAN WORKS ASIA (THAILAND) Co., Ltd.

54 B.B Building 9th Floor, Room No. 3909 Sukhumvit 21 (Asoke) Klongtoey Nua, Wattana,
Bangkok 10110 Thailand

MAP TA PHUT SPM

Quarterly Inspection Report

Page 2 of 12

24-Aug-22

Rev. 1



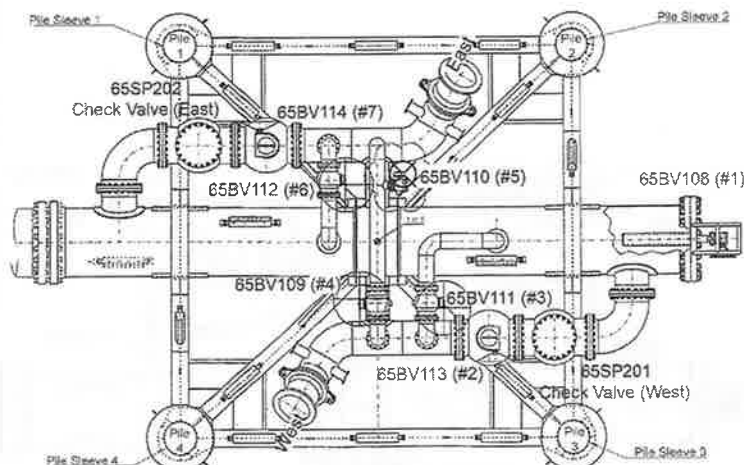
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3.0 General Visual Inspection (GVI) of the 7 x Steering Valves

As the two (2) subsea hoses had been removed, there was no requirement to cycle any of the valves. However, inspection of the valves was carried out to monitor general condition.



Note: Valve Tag Numbers revised (as at 29th April 2022) to come in line with SPRC Tag Numbering system

The valves were inspected and during the inspection the following was noted:

- 1) Valve #1 (65BV108) 4" BALL VALVE #1 - Fully Closed
- 2) Valve #2 (65BV113) 24" BALL VALVE #2 - Fully Closed
- 3) Valve #3 (65BV111) 10" BALL VALVE #3 - Fully Closed
- 4) Valve #4 (65BV109) 10" BALL VALVE #4 - Fully Closed
- 5) Valve #5 (65BV110) 4" VENT BALL VALVE #5 - Fully Closed
- 6) Valve #6 (65BV112) 10" BALL VALVE #6 - Fully Closed
- 7) Valve #7 (65BV114) 24" BALL VALVE #7 - 98% closed

There were no signs of leaks from any of the valves inspected.

4.0 East and West Subsea Hose Inspection

There were no subsea hoses installed at the time as they had been removed for in preparation for future replacement.

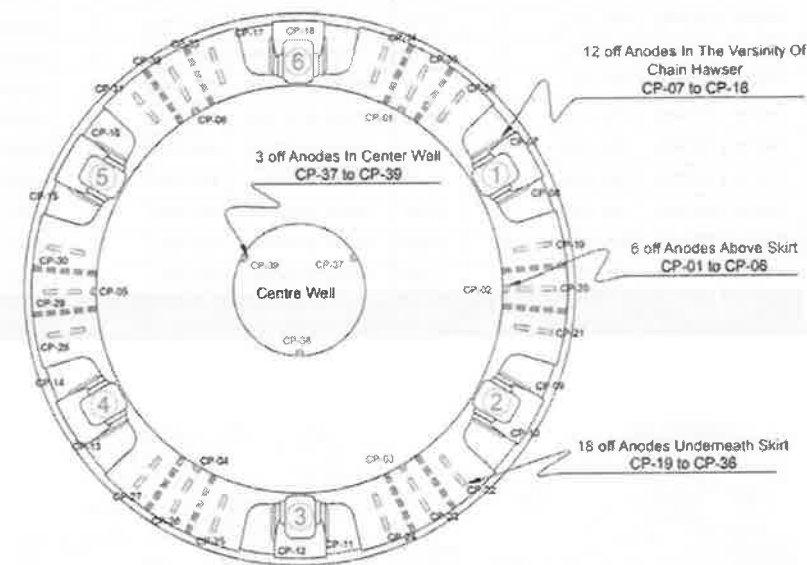
5.0 Cathodic Potential (CP) readings

Cathodic potential readings were carried out on the PLEM and Buoy. The results of which are included in the following sections.

5.1 Cathodic Potential (CP) Readings on Buoy

CP readings were taken on the buoy at the anode locations and in the moonpool area.

CP readings on the buoy structure ranged between -1004mV and -934mV.

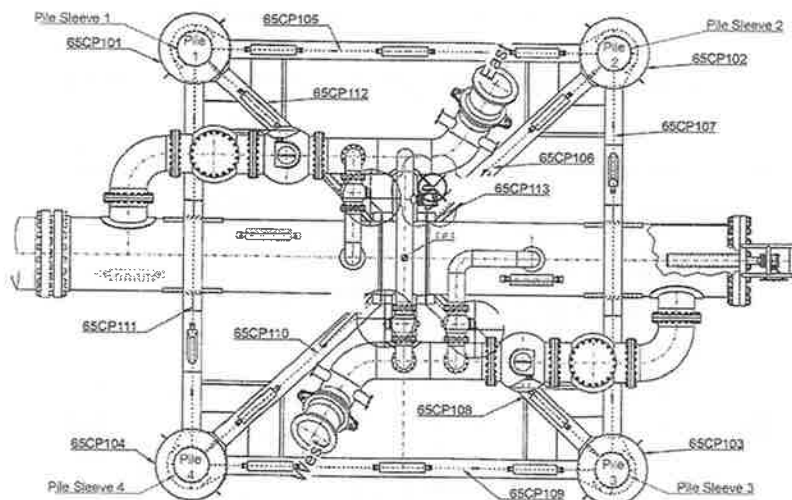


Location	Reading (-mV)	Location	Reading (-mV)	Location	Reading (-mV)
CP-01	936	CP-14	941	CP-27	938
CP-02	981	CP-15	942	CP-28	942
CP-03	976	CP-16	941	CP-29	945
CP-04	967	CP-17	938	CP-30	950
CP-05	974	CP-18	947	CP-31	952
CP-06	978	CP-19	942	CP-32	948
CP-07	937	CP-20	943	CP-33	943
CP-08	946	CP-21	939	CP-34	950
CP-09	936	CP-22	942	CP-35	947
CP-10	943	CP-23	943	CP-36	977
CP-11	935	CP-24	941	CP-37	1004
CP-12	942	CP-25	943	CP-38	999
CP-13	934	CP-26	939	CP-39	989

5.2 Cathodic Potential (CP) Reading on the PLEM

CP readings were taken on the PLEM at selected locations, CP readings on the PLEM structure ranged between -1107mV and -1091mV.

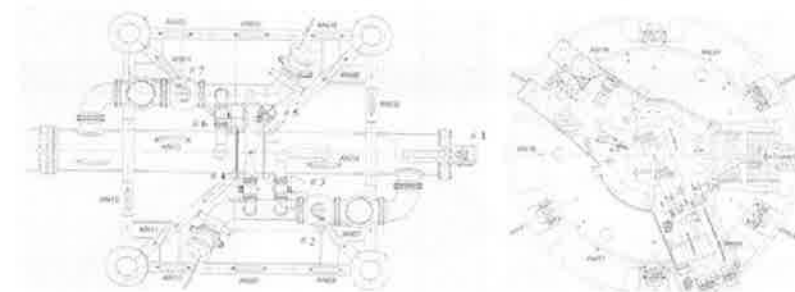
Location	Reading (-mV)	Location	Reading (-mV)
65CP101	1103	65CP108	1091
65CP102	1103	65CP109	1102
65CP103	1095	65CP110	1102
65CP104	1100	65CP111	1098
65CP105	1106	65CP112	1104
65CP106	1107	65CP113	1103
65CP107	1105		



6.0 General Visual Inspection on the Buoy and PLEM Anodes

A general inspection of the anodes was carried out on selected anodes. During the inspection the following was noted:

- On the PLEM Anode AN5 and AN10 was found with a broken stub at one end, as noted in previous inspections. All other anodes were found to be intact and secure.
- All anodes were approximately 50% depleted.
- Oxide deposits on the anodes would suggest they were active.



Anode	Depletion %	Secure	Remarks	Anode	Depletion %	Secure	Remarks
AN01	50	Yes / No	Secure & Active	AN11	50	Yes / No	Secure & Active
AN02	50	Yes / No	Secure & Active	AN12	50	Yes / No	Secure & Active
AN03	50	Yes / No	Secure & Active	AN13	50	Yes / No	Secure & Active
AN04	50	Yes / No	Secure & Active	AN14	50	Yes / No	Secure & Active
AN05	50	Yes / No	1 support broken	AN15	50	Yes / No	Secure & Active
AN06	50	Yes / No	Secure & Active	AN16	50	Yes / No	Secure & Active
AN07	40	Yes / No	Secure & Active	AN17	50	Yes / No	Secure & Active
AN08	40	Yes / No	Secure & Active	AN18	50	Yes / No	Secure & Active
AN09	40	Yes / No	Secure & Active	AN19	50	Yes / No	Secure & Active
AN10	50	Yes / No	1 support broken	AN20	50	Yes / No	Secure & Active

7.0 General Visual Inspection of the Buoy and PLEM

7.1 General visual inspection of the Buoy

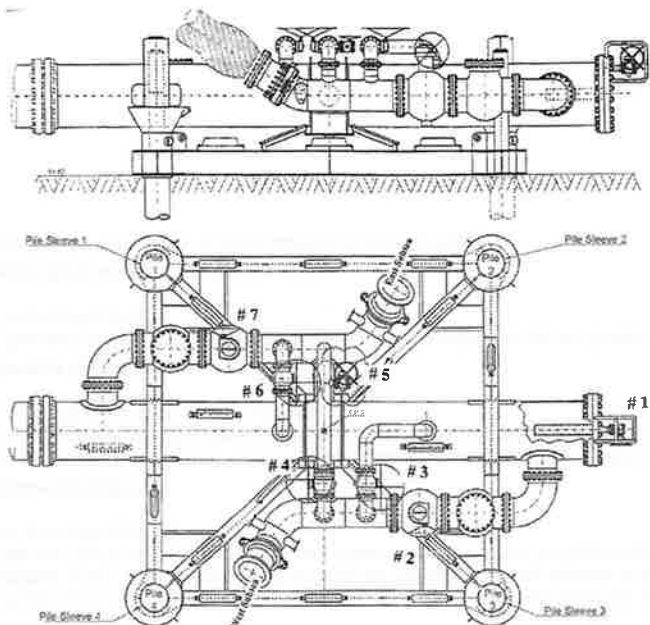
A general visual inspection of the underwater parts of the buoy was carried out and the following was noted:

- There was no damage or debris noted on the buoy and skirt
- Buoy position measurements relative to the PLEM were taken
- The Overall coating condition was good with scattered areas of paint coat flaking approx. 25% overall

7.2 General Visual Inspection of the PLEM

The general visual inspection of the PLEM was carried out and the following was noted:

- The Mainline & Flanges were inspected and there was no signs of damage and the flanges appeared to be secure with no signs of leaks.
- Apart from the two (2) anodes with one (1) end of anode detached from bracket there was no signs of damage or significant debris on or around the PLEM structure.
- There were no signs of any scour or gap at the sand slit area around the base of the PLEM



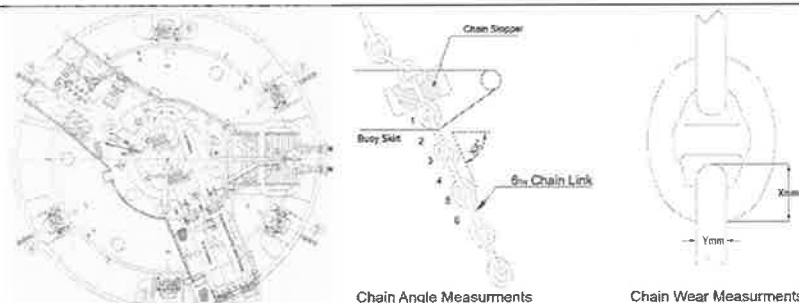
8.0 Inspection of the Six (6) Mooring Chains

8.1 Chain Angle Measurement.

Chain angle measurements were carried out on each of the 6 chains. Each measurement was taken on the 6th link down from the chain stopper and the following was noted.

Chain No.	Chain Angle (XX°)	Chain No.	Chain Angle (XX°)	Chain No.	Chain Angle (XX°)
Chain 1	49	Chain 3	48	Chain 5	50
Chain 2	49	Chain 4	49	Chain 6	48

Note: Angle measurements taken without subsea hoses installed at buoy.



8.2 Chain Wear Measurement

Chain wear measurements were carried out at the chain stopper area and the results were as follows:


Chain No	Chain Wear (mm)			
	Chain Stopper Area		TDP	
	X	Y	X	Y
1	210.6	110.4	No chain wear measurements taken at touch down point (TDP) area.	
2	210.4	110.3		
3	210.6	110.5		
4	210.4	110.4		
5	210.4	110.4		
6	210.4	110.3		

8.3 Chain Stoppers GVI

A GVI was conducted on all 6 chain stoppers and were found to be in a generally good condition. Anodes were noted to be secured with depletion of approximately 50%.

9.0 Seal Cap Re-Tightening

PLEM Seal Cap Re-Tighten of PLEM Check-Valve was carried out. The two (2) x seal caps have been fully tightened. There were no signs of any leaks around seal cap.

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	24-Aug-22	
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10.0 Conclusion

CP measurements carried out on the PLEM and Buoy were all found to be within acceptable limits. Anodes inspected on both the PLEM and Buoy appear to be active and secure. Six (6) valves were inspected. There were no signs of damage or significant debris on the Buoy or PLEM.

10.1 Recommendations

1. Anode AN5 and AN10 with the broken stub is not of any major concern, however should there be any open window for diving works, consideration should be given to the replacement of the anodes.

11.0 Technical Appraisal

The Quarterly Inspection was carried safely and successfully by the Air Divers onboard MV Uniwise Rayong.

11.1 Restrictions and Complications

There were no restrictions or complications to the inspection

MAP TA PHUT SPM	Page 12 of 12	
	24-Aug-22	
	Rev. 1	
Quarterly Inspection Report		

Appendix A: Inspection Forms / Reports

- 1) 53-66001-05-CP-01 CP Measurement - PLEM 22-08-16
- 2) 53-66001-05-CP-02 CP Measurement - Buoy 22-08-16
- 3) 53-66001-05-VI-01 Visual Inspection - Valves 22-08-16
- 4) 53-66001-05-VI-02 Visual Inspection - Anodes 22-08-16
- 5) 53-66001-05-VI-03 Visual Inspection - PLEM 22-08-16
- 6) 53-66001-05-VI-04 Visual Inspection - Buoy 22-08-16
- 7) 53-66001-05-VI-05 Visual Inspection - Chains 22-08-16
- 8) 53-66001-05-PL-01 Photo Log
- 9) 53-66001-05-VL-01 Video Log



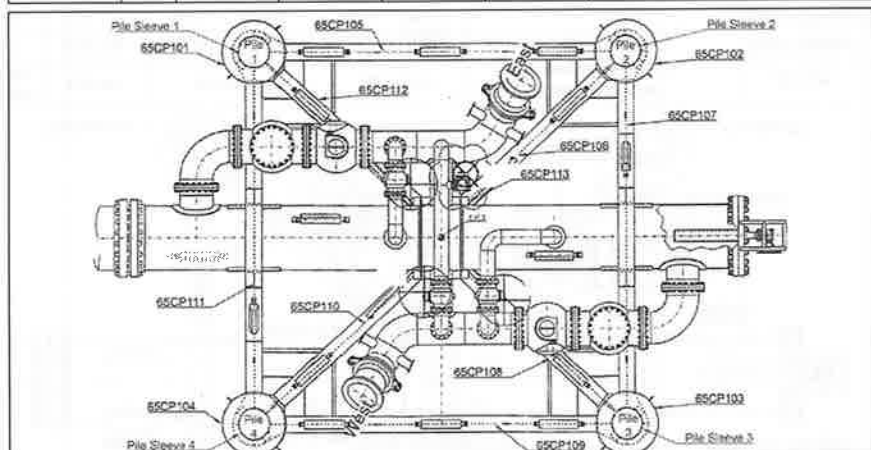
Cathodic Potential Measurement

Date	16 th August 2022	OWA Group	Thailand	Report No	53-66001-05-CP-01
Project No	53-66001	Dive/ROV Sys.	SSDS 2	Dive No	Refer to dive log
Client	Star Petroleum Refining and PTT Global Chemical			Vessel	Uniwise Rayong
Project Name	PTTGC-SPRC SPM Diving Inspection and Maintenance				
Location	MAP TA PHUT SPM			Video Ref.	53-66001-05-VL-01

Equipment:	Make:	Serial No.	Calibration Date:	Remarks
Bathycorrometer	Roxy MK5	BU579	20 th November '21	Nil

Calibration and Function Check

Dive		Pre-Dive		Post Dive		Remarks
Date	No	Steel (-mV)	Zinc (-mV)	Steel (-mV)	Zinc (-mV)	
16/08/2022	1	-	1074		1048	Nil



Location	Reading (-mV)	Location	Reading (-mV)
65CP101	1103	65CP108	1091
65CP102	1103	65CP109	1102
65CP103	1095	65CP110	1102
65CP104	1100	65CP111	1098
65CP105	1106	65CP112	1104
65CP106	1107	65CP113	1103
65CP107	1105	-	-

Comments

Representative	OWA Data Recorder	OWA Supervisor
Signature:	Electronic form no signature required	Electronic form no signature required
Name (Print):	N/A	Tawich Onnom



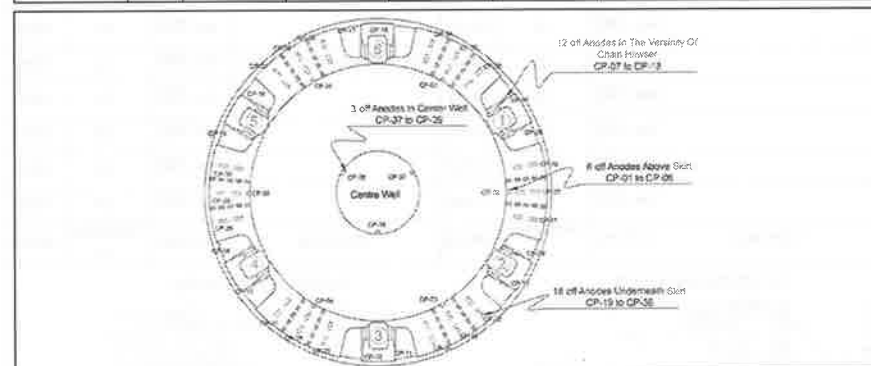
Cathodic Potential Measurement

Date	16 th August 2022	OWA Group	Thailand	Report No	53-66001-05-CP-02
Project No	53-66001	Dive/ROV Sys.	SSDS 2	Dive No	Refer to dive log
Client	Star Petroleum Refining and PTT Global Chemical			Vessel	Uniwise Rayong
Project Name	PTTGC-SPRC SPM Diving Inspection and Maintenance				
Location	MAP TA PHUT SPM			Video Ref.	53-66001-05-VL-01

Equipment:	Make:	Serial No.	Calibration Date:	Remarks
Bathycorrometer	Roxy MK5	BU579	20 th November '21	Nil

Calibration and Function Check

Dive		Pre-Dive		Post Dive		Remarks
Date	No	Steel (-mV)	Zinc (-mV)	Steel (-mV)	Zinc (-mV)	
16/08/2022	6	-	1029		1031	Nil



Location	Reading (-mV)	Location	Reading (-mV)	Location	Reading (-mV)
CP-01	936	CP-14	941	CP-27	938
CP-02	981	CP-15	942	CP-28	942
CP-03	976	CP-16	941	CP-29	945
CP-04	967	CP-17	938	CP-30	950
CP-05	974	CP-18	947	CP-31	952
CP-06	978	CP-19	942	CP-32	948
CP-07	937	CP-20	943	CP-33	943
CP-08	946	CP-21	939	CP-34	950
CP-09	936	CP-22	942	CP-35	947
CP-10	943	CP-23	943	CP-36	977
CP-11	935	CP-24	941	CP-37	1004
CP-12	942	CP-25	943	CP-38	999
CP-13	934	CP-26	939	CP-39	989

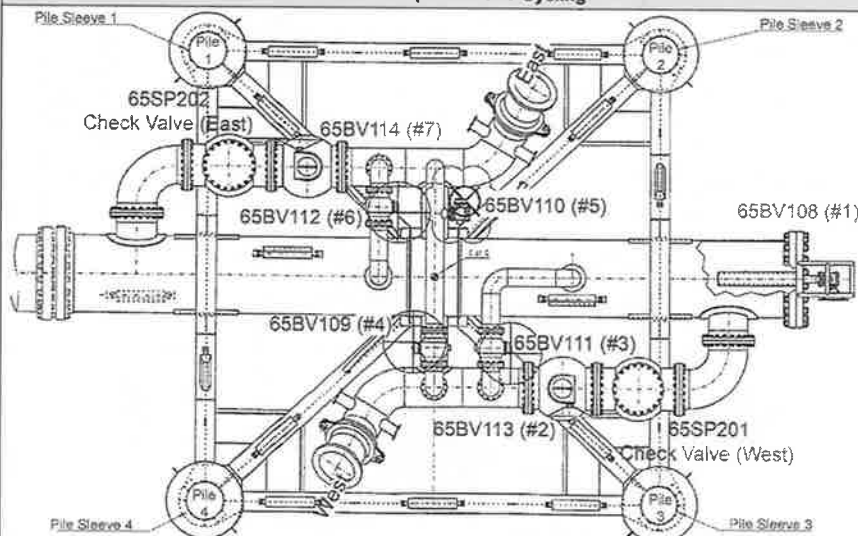
Representative	OWA Data Recorder	OWA Supervisor
Signature:	Electronic form no signature required	Electronic form no signature required
Name (Print):	N/A	Tawich Onnom



Visual Inspection

Date	16 th August 2022	OWA Group	Thailand	Report No	53-66001-05-VI-01
Project No	53-66001	Dive/ROV Sys.	SSDS 2	Dive No	Refer to dive log
Client	Star Petroleum Refining and PTT Global Chemical			Vessel	Uniwise Rayong
Project Name	PTTGC-SPRC SPM Diving Inspection and Maintenance				
Location	MAP TA PHUT SPM			Video Ref.	53-66001-05-VL-01

PLEM Valve Inspection and Cycling



Item No.	Tag No	Description	As Found	Task Performed / Inspection Findings	As Left
1	65BV108	4" BALL VALVE #1	<u>Open / Closed</u>	Condition Checked	<u>Open / Closed</u>
2	65BV113	24" BALL VALVE #2	<u>Open / Closed</u>	Condition Checked	<u>Open / Closed</u>
3	65BV111	10" BALL VALVE #3	<u>Open / Closed</u>	Condition Checked	<u>Open / Closed</u>
4	65BV109	10" BALL VALVE #4	<u>Open / Closed</u>	Condition Checked	<u>Open / Closed</u>
5	65BV110	4" VENT BALL Valve #5	<u>Open / Closed</u>	Condition Checked	<u>Open / Closed</u>
6	65BV112	10" BALL VALVE #6	<u>Open / Closed</u>	Condition Checked	<u>Open / Closed</u>
7	65BV114	24" BALL VALVE #7	<u>Open / Closed</u>	Condition Checked	<u>Open / Closed</u>

Comments

- Valves #1 to #6 and by-pass fully closed
- Valve #7 98% closed
- No signs of any oil leaks
- No valve cycling carried out as subsea hoses have been removed
- Valve cap seal tightened - No Movement

Note: Valve Tag Numbers revised (as at 29th April 2022) to come in line with SPRC Tag Numbering system

Representative	OWA Data Recorder	OWA Supervisor
Signature:	Electronic form no signature required	Electronic form no signature required
Name (Print):	N/A	Tawich Onnom

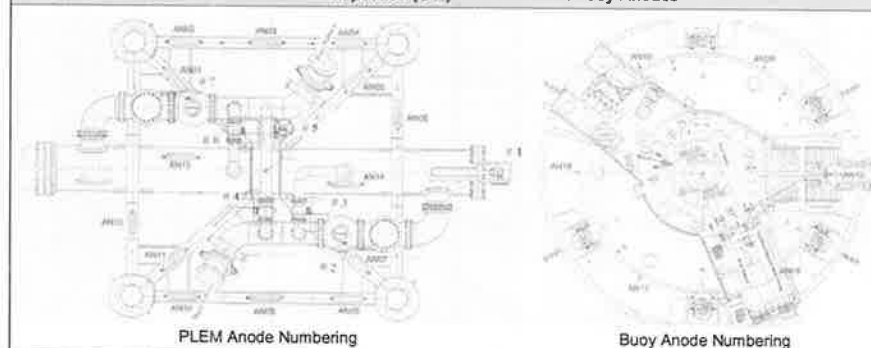


Visual Inspection

Date	16 th August 2022	OWA Group	Thailand	Report No	53-66001-05-VI-02
Project No	53-66001	Dive/ROV Sys.	SSDS 2	Dive No	Refer to dive log
Client	Star Petroleum Refining and PTT Global Chemical			Vessel	Uniwise Rayong
Project Name	PTTGC-SPRC SPM Diving Inspection and Maintenance				
Location	MAP TA PHUT SPM			Video Ref.	53-66001-05-VL-01

Type of Inspection	General (GVI)	✓	Close (CVI)		Detailed (DVI)	
--------------------	---------------	---	-------------	--	----------------	--

General Visual Inspection (GVI) on the PLEM & Buoy Anodes



Anode	% Depletion	Secure	Remarks	Anode	% Depletion	Secure	Remarks
AN01	50	<u>Yes / No</u>		AN11	50	<u>Yes / No</u>	
AN02	50	<u>Yes / No</u>		AN12	50	<u>Yes / No</u>	
AN03	50	<u>Yes / No</u>		AN13	50	<u>Yes / No</u>	
AN04	50	<u>Yes / No</u>		AN14	50	<u>Yes / No</u>	
AN05	50	<u>Yes / No</u>	1 stub broken, other secure	AN15	50	<u>Yes / No</u>	
AN06	50	<u>Yes / No</u>		AN16	50	<u>Yes / No</u>	
AN07	40	<u>Yes / No</u>		AN17	50	<u>Yes / No</u>	
AN08	40	<u>Yes / No</u>		AN18	50	<u>Yes / No</u>	
AN09	40	<u>Yes / No</u>		AN19	50	<u>Yes / No</u>	
AN10	50	<u>Yes / No</u>	1 stub broken, other secure	AN20	50	<u>Yes / No</u>	

Comments

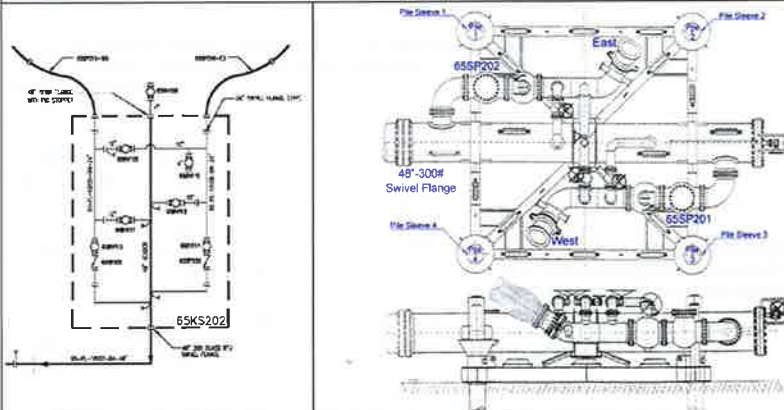
Representative	OWA Data Recorder	OWA Supervisor
Signature:	Electronic form no signature required	Electronic form no signature required
Name (Print):	N/A	Tawich Onnom



Visual Inspection

Date	16 th August 2022	OWA Group	Thailand	Report No	53-66001-05-VI-03
Project No	53-66001	Dive/ROV Sys.	SSDS 2	Dive No	Refer to dive log
Client	Star Petroleum Refining and PTT Global Chemical			Vessel	Uniwise Rayong
Project Name	PTTGC-SPRC SPM Diving Inspection and Maintenance				
Location	MAP TA PHUT SPM			Video Ref.	53-66001-05-VL-01

General Visual Inspection (GVI) on the PLEM



Mainline & Flanges (Including 48\"-300# Swivel Flange)

All in Good Condition CP Reading (-)1094mV

Pipework & Flanges – East (Including 24\" Check Valve 65SP-201)

All In Good Condition CP Reading (-)1096mV

Pipework & Flanges - West (Including 24\" Check Valve 65SP-202)

All In Good Condition CP Reading (-)1099mV

Base Frame Structure

All In Good Condition PLEM Frame Sitting on Seabed
There were no signs of any scour or gap at the sand slit area around the base of the PLEM

Piles & Pile Sleeves (Four (4) pile columns visual inspection)

All In Good Condition
CP Reading on Pile E1 (-)697mV E2 (-)698mV W1 (-)693mV W2 (-)699mV

Additional Remarks

Flange valve #1 CP Reading (-)1099mV

Representative	OWA Data Recorder		OWA Supervisor
Signature:	Electronic form no signature required		Electronic form no signature required
Name (Print):	N/A		Tawich Onnom

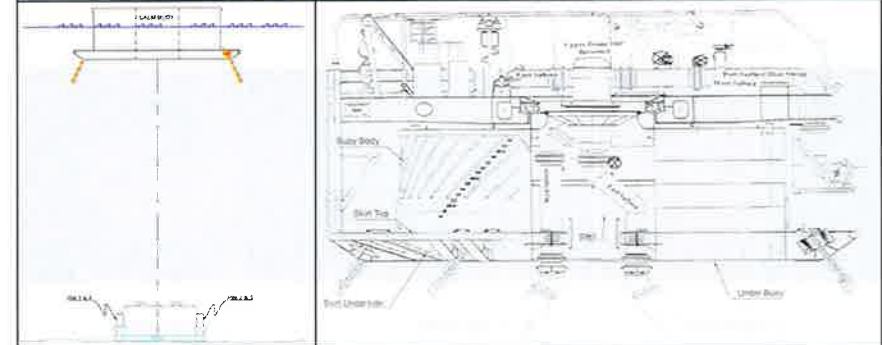


Visual Inspection

Date	16 th August 2022	OWA Group	Thailand	Report No	53-66001-05-VI-04
Project No	53-66001	Dive/ROV Sys.	SSDS 2	Dive No	Refer to dive log
Client	Star Petroleum Refining and PTT Global Chemical			Vessel	Uniwise Rayong
Project Name	PTTGC-SPRC SPM Diving Inspection and Maintenance				
Location	MAP TA PHUT SPM			Video Ref.	53-66001-05-VL-01

Type of Inspection	General (GVI)	✓	Close (CVI)		Detailed (DVI)	
--------------------	---------------	---	-------------	--	----------------	--

General Visual Inspection (GVI) on the Buoy & Buoy Position



Buoy Position Relative to PLEM

Distance DP1: 3.0m (E2) / 6.8m (E1) Distance DP2: 7.3m (W1) / 4.1m (W2)

General Condition of Skirt:

In good condition
Marine growth coverage overall 70%

General Condition of Buoy Side Shell:

In good condition
Marine growth coverage overall 90%

General Condition of Centre Well:

In good condition
Marine growth coverage overall 100%

Marine Growth Coverage (Prior to marine growth cleaning)

Overall: 75% Hard: 50% Soft: 25%

Overall Coating Condition

In good condition (see remarks below)

Additional Remarks

The Overall coating condition was good with scattered areas of paint coat flaking approx. 25% overall

Representative	OWA Data Recorder		OWA Supervisor
Signature:	Electronic form no signature required		Electronic form no signature required
Name (Print):	N/A		Tawich Onnom

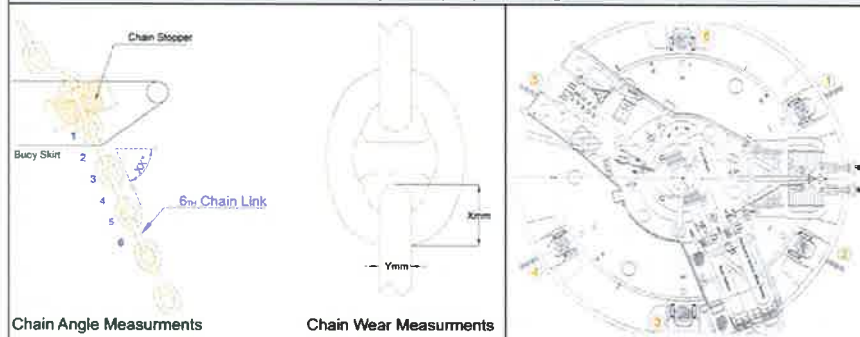


Visual Inspection

Date	16 th August 2022	OWA Group	Thailand	Report No	53-66001-05-VI-05
Project No	53-66001	Dive/ROV Sys.	SSDS 2	Dive No	Refer to dive log
Client	Star Petroleum Refining and PTT Global Chemical			Vessel	Uniwise Rayong
Project Name	PTTGC-SPRC SPM Diving Inspection and Maintenance				
Location	MAP TA PHUT SPM			Video Ref.	53-66001-05-VL-01

Type of Inspection	General (GVI)	✓	Close (CVI)		Detailed (DVI)	
--------------------	---------------	---	-------------	--	----------------	--

General Visual Inspection (GVI) Chain Angle & Wear



Chain No	Chain Angle (XX°)	Chain Wear (mm)				General Condition / Comments
		Chain Stopper Area		TDP		
		X	Y	X	Y	
1	49	210.6	110.4			1. Chain and chain stopper in good condition 2. Both subsea hoses had been removed. Angle measurements taken without subsea hoses installed at buoy. 3. Chains covered with 30-40% marine growth
2	49	210.4	110.3			
3	48	210.6	110.5			
4	49	210.4	110.4			
5	50	210.4	110.4			
6	48	210.4	110.3			

Additional Comments

- As stated in above General Condition / Comments.
- No chain wear measurements taken at touch down point (TDP) area.

Representative	OWA Data Recorder		OWA Supervisor
Signature:	Electronic form no signature required		Electronic form no signature required
Name (Print):	N/A		Tawich Onnom



Photo Log

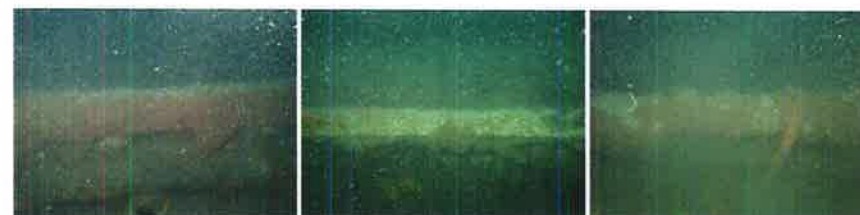
Date	16 th August 2022	OWA Group	Thailand	Report No	53-66001-05-PL-01
Project No	53-66001	Dive/ROV Sys.	SSDS 2	Dive No	Ref. to Dive Log
Client	Star Petroleum Refining and PTT Global Chemical			Vessel	Uniwise Rayong
Project Name	PTTGC-SPRC SPM Diving Inspection and Maintenance				
Location	MAP TA PHUT SPM			Video Ref.	53-66001-05-VL-01



Anode #1 (1)

Anode #1 (2)

Anode #2 (1)



Anode #2 (2)

Anode #3

Anode #4 (1)



Anode #4 (2)

Anode #5 (1)

Anode #5 (2)



Anode #6 (1)

Anode #6 (2)

Anode #7



Anode #9

Anode #10 (1)



Anode #11 (1)

Anode #11 (2)



Anode #12

Anode #13 (1)



Anode #14

Version 2: 10 July 2020
53-66001-05-PL-01 Photo Log.docx



Version 2: 10 July 2020
53-66001-05-VL-01 Video Log.docx



STAR PETROLEUM REFINING AND PTT GLOBAL CHEMICAL

MAP TA PHUT 48" SUBSEA CRUDE IMPORT PIPELINE

Ocean Works Asia (OWA)

ROV Inspection Report

STAR PETROLEUM REFINING AND PTT GLOBAL CHEMICAL MAP TA PHUT 48" SUBSEA CRUDE IMPORT PIPELINE	Page 2 of 18	
	26-Apr-2019	
48" PIPELINE ROV INSPECTION REPORT	Rev. 1	

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1	26-Apr-2019	Initial Submission (Client Review)	LL	SV	MA
REV	DATE	Description	APRD	CHKD	PREP'D
Client Document No.		OWA Document No.			
N/A		49-66001-RP-05			

OCEAN WORKS ASIA (OWA)
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Thailand 10110
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STAR PETROLEUM REFINING AND PTT GLOBAL CHEMICAL MAP TA PHUT 48" SUBSEA CRUDE IMPORT PIPELINE	Page 3 of 18	
	26-Apr-2019	
	Rev. 1	
48" PIPELINE ROV INSPECTION REPORT		

Table 1. Document History

Revision	Date	Description of Change
1	26-Apr-2019	Initial submission for client review and comment

STAR PETROLEUM REFINING AND PTT GLOBAL CHEMICAL MAP TA PHUT 48" SUBSEA CRUDE IMPORT PIPELINE	Page 4 of 18	
	26-Apr-2019	
	Rev. 1	
48" PIPELINE ROV INSPECTION REPORT		

1.0 Introduction

Ocean Works Asia (Thailand) Co., Ltd. was requested by PTT Global Chemical and Star Petroleum Refining Company for the provision of ROV services, to carry out an inspection of the Map Ta Phut 48" Subsea Crude Import Pipeline. The inspection is part of the ongoing inspection, repair and maintenance (IRM) contract for the SPM off Map Ta Phut, Thailand.

The SPM is located approximately 19km Southeast of the Map Ta Phut Petrochemical Complex in Rayong, Thailand.

The extent of the inspection of the 48" Subsea Crude Import Pipeline was from the Map Ta Phut SPM PLEM flange connection to where the pipeline goes into burial South of the BLCP power station seawall, a distance of approximately 16km.

The inspection was carried out from the 4th to 10th of April 2019 using the TETSU-7 ROV deployed from the AHT SC Emerald.

The inspection consists of a single camera general visual inspection and selected anode CP survey of the pipeline which was overseen by an attending client representative from Star Petroleum Refining Company (SPRC).

2.0 Executive Summary

The extent of the ROV inspection for the 48" Subsea Crude Import Pipeline was from the PLEM to pipeline flange at KP0.004 to where the pipeline goes into full burial at KP16.141 outside the South sea wall of the BLCP Power Station.

The flange connection of the pipeline to the PLEM was noted to be in good condition, with no signs of product leak and no damage noted to the flange or the bolts. CP readings recorded on the flange were within limits.

There was a significant amount of debris scattered along the pipeline however there was no associated damage to the pipeline. The debris noted consisted mainly of fishing debris. Other items of debris consisted of an assortment of metallic and non-metallic debris.

The pipeline was noted to be sitting on the seabed with burial ranging from <25% to 90% until the pipeline goes into full burial at KP16.139. There was no significant damage noted to the weight coat. Field joints appear to have degraded bitumastic wrap at the crown of the pipeline however there was no bare metal noted. Anodes inspected were noted to be approximately 10% depleted and CP readings taken on selected anodes were found to be within a consistent range.

At the 3 areas of pipeline wall thinning designated for detail inspection, there were no signs of damage to the weight coat.

3.0 Scope of Work

The scope of work for this project is to carry out an ROV inspection of the 48" Subsea Crude Import Pipeline.

The extent of the inspection was from the Map Ta Phut SPM /PLEM flange connection to the burial point outside the South sea wall of BLCP Power Station.

The ROV inspection carried out included:

- General Visual Inspection (GVI) of the flange and pipeline using a single-color CCTV camera.
- Assessment of the condition of the pipeline coating.
- Identify any damage to the field joints.
- Assessment of the condition and depletion of the pipeline anodes.
- Cathodic potential reading at the flange and at selected locations along the survey route.
- Identify any debris in contact with the pipeline.
- Free span & scour assessment at selected locations along the survey route.

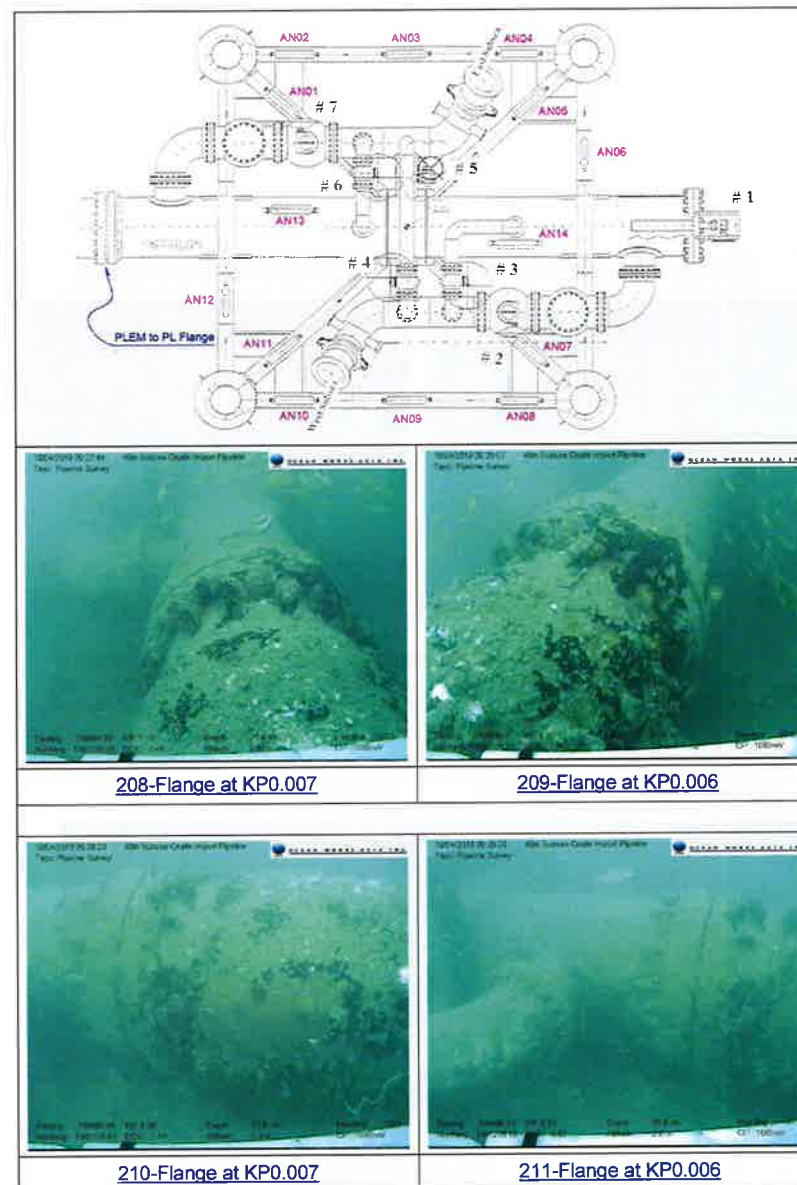
Addition to the work scope:

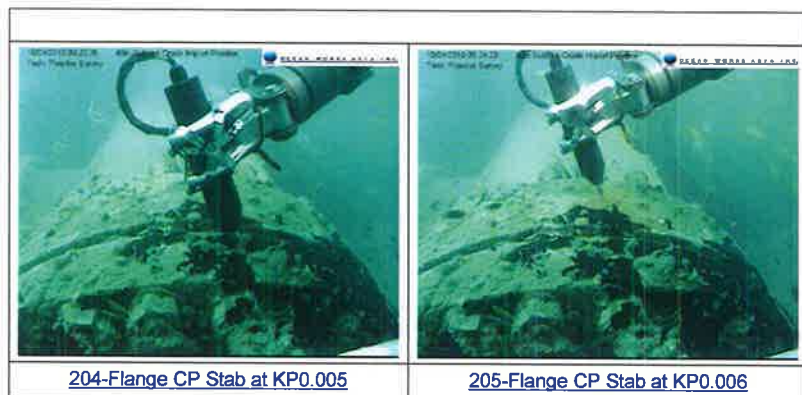
- Investigation of 3 previously reported areas of pipeline external wall thinning.

4.0 PLEM Flange General Visual Inspection

A General Visual Inspection was carried out on the PLEM to Pipeline Flange connection. During the inspection the following was noted:

- There was no signs of product leak and the flange appeared to be secure.
- All the bolts appeared to be secure with no damage or distortion.
- Flange gap appeared to be even all the way round.
- There were no signs of damage to the flange.
- Cathodic potential readings were taken at the flange connection between the PLEM and the pipeline. Readings recorded ranged between -1063mV and -1118mV.
- There was no debris on the flange.
- There was approximately 90% overall marine growth coverage on the flange.





5.0 Pipeline Inspection

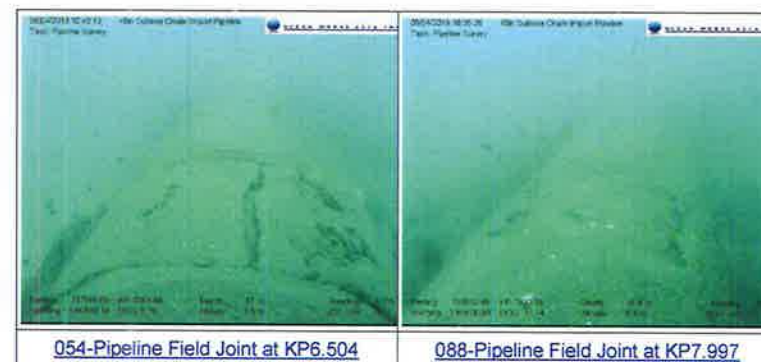
The ROV inspection of the 48" Subsea Crude Import Pipeline was carried out from the PLEM to pipeline flange at KP0.004 to where the pipeline goes into full burial at KP16.141 outside the South sea wall of the BLCP Power Station.

5.1 General Visual Inspection (GVI)

The pipeline was generally straight heading generally in a Northly direction. There were no sharp bends or any deviation of the pipeline from the as-laid route. Although there were numerous amounts of debris throughout the extent of the survey, there was no damage to the pipeline.

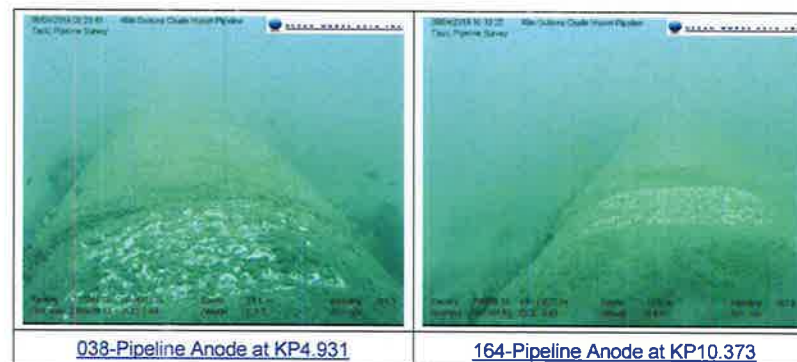
There were scattered sections of soft marine growth mainly along the sides of the pipeline and there was generally no marine growth on the crown of the pipeline. There was a layer of silt over the pipeline which could obscure any damage however no significant damage was noted.

The field joints on the pipeline appeared to have degraded bitumastic wrap/coating. This was noted as cracking or general degrading predominantly at the crown of the field joint. There was however no bare metal noted at the field joints.



5.2 Anode Condition Survey

A total of 78 anodes were found and inspected. Anodes appeared to be in good condition and secure to the pipeline. Depletion of the anodes was noted to be approximately 10%. Oxide deposits on the anode would suggest that the anodes were active.



5.3 Cathodic Potential Measurements (CP)

Cathodic potential readings were taken on selected anodes as a sampling of the performance of the anodes and a gauge of the cathodic protection offered to the pipeline. Cathodic potential readings recorded on a total of 61 selected anodes ranged between -1027mV and -1149mV.

There were no cathodic potential readings taken on the pipeline as there were no areas of bare metal noted.



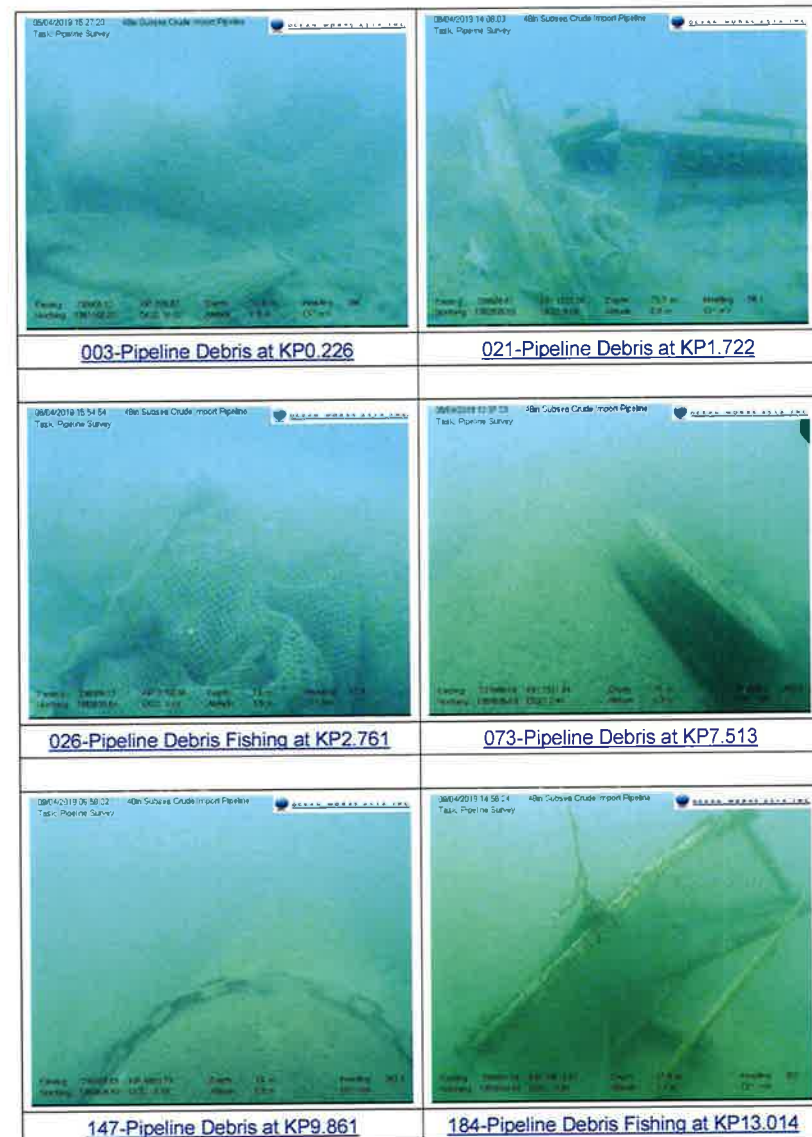
5.4 Burial & Span


The pipeline was exposed through the entire extent of the inspection. At the flange the pipeline was approximately <25% buried. From then on, the pipeline ranged in burial between 25% and 90% until the pipeline finally went into burial at KP 16.139.

5.5 Debris Survey

Debris was noted on the pipeline throughout the extent of the survey. This consisted mainly fishing nets scattered along the length on both sides and across the pipeline. There were also various items of metallic and nonmetallic debris scattered throughout the extent of the survey.

Although there was a significant amount of debris noted, there was no associated damage noted to the pipeline.



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6.0 Additional Inspection – Wall Thinning Areas

During an internal inspection of the pipeline in 2016, there were 3 areas of external metal loss detected on the pipeline. At these areas the ROV carried out a detail survey over the area and approximately 10m either side of the area. During the inspection the following was noted:

KP 3.990 – The ROV carried out multiple passes over the area and there were no signs of damage noted.

KP 4.923 – The ROV carried out multiple passes over the area and there were no signs of damage noted.

KP 15.538 – The ROV carried out a single pass over the area and there were no signs of damage noted.

7.0 Conclusion

Although there was a significant amount of debris along the length of the pipeline there was no damage noted. The pipeline was sitting on the seabed with no span sections. Anodes inspected appear to be active and secure. CP readings taken were found to be consistent.

7.1 Recommendations

Carry out further investigation by diver intervention to locate and confirm the size and extent of wall thinning at the 3 locations. Install preventative clamps at the areas of wall thinning.

8.0 Technical Appraisal

The inspections of the 48" Subsea Crude Import pipeline from the PLEM flange to where the pipeline goes into burial was carried out safely and successfully using the TETSU 7 ROV onboard the AHT SC Emerald.

8.1 Restrictions and Complications

Complications encountered during the course of the inspection campaign were:

- Debris along the pipeline causing a potential fouling hazard to the ROV.
- Limited visibility affecting the rate of travel and the ability of the ROV to spot hazards.



Chevron Energy Technology Company

**Review of pipeline integrity assessments
for 48" submarine crude pipeline
Star Petroleum Refining Public Company Limited
Map Ta Phut, Rayong Thailand**

Rev 1

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Review of pipeline integrity assessments for 48" submarine crude pipeline

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Review of pipeline integrity assessments for 48" submarine crude pipeline

1. Executive Summary

Star Petroleum Refining Public Company (SPRC) is considering deferral of the planned 2021 inline inspection of the 48" submarine crude pipeline until 2024. SPRC requested Chevron ETC conduct a review of the pipeline integrity assessments for determining the feasibility of ILI deferral. Based on the supplied pipeline integrity assessments and supplemental reports, Chevron ETC proposes a conditional recommendation to defer the inline inspection until 2024 provided the recommended action items are completed and the existing pipeline integrity controls are fully maintained during the deferral period. Chevron ETC has prepared the following report detailing the review of the assessments, discussion of pipeline hazards, and recommendations for SPRC to consider for deferral of ILI until 2024.

1. Chevron ETC recommended action items for ILI deferral:

- 1.1. SPRC consultation with Applus RTD to understand if differences in reported ovality measurements in all three inspection reports, 2009, 2011 & 2016, are due to effects of the sensor changes during each ILI run and tool tolerance or changes in actual measured pipeline ovality.
- 1.2. SPRC review the Onshore Cathodic Monitoring reports for recommendations to maintain adequate CP protection for the pipeline, including review of the 6-month inspection frequency. A higher frequency of inspection may be necessary to remedy the highlighted concerns in the reports and supplement deferral of the ILI inspection.
- 1.3. SPRC review the 5-year frequency of the subsea ROV inspection (general visual inspection and CP survey) based on the number of anomalies present. A higher frequency of inspection may be necessary to monitor existing anomalies and supplement deferral of the ILI inspection.
- 1.4. SPRC confirm an extended ILI interval is in accordance with Thailand's pipeline and pipeline integrity regulations.

2. Chevron ETC general integrity recommendations:

- 2.1. SPRC review with Applus the internal anomaly referred to as a "wheel" inside the pipeline and consider a plan for removal of this object during the next inspection
- 2.2. SPRC discuss with Applus to review the ILI data for external corrosion anomalies below the reporting threshold in the range of 5-10% n.w.t. The Applus data from 2016 could be reviewed with a lower reporting threshold to determine the volume of potential anomalies on the pipeline that may exist and be impacted if active corrosion is taking place.
- 2.3. SPRC review the threat of mechanical damage based on the understanding of the marine traffic and users of the sea in proximity of the pipeline. Measures may be required to monitor traffic in the area or increase the frequency of GVI to identify areas of mechanical damage.
- 2.4. SPRC consider the use of a field gradient survey, such as Direct Current Voltage Gradient (DCVG) for the offshore portion of the pipeline. This submarine CP survey can identify coating breakdown and provide potential readings for both exposed and burial pipe. Chevron ETC and Chevron Technology Ventures can provide additional information if required.
- 2.5. The PLEM and SPM inspections continue 3-monthly inspections per inspection strategy. It is also recommended to address the PLEM UT readings in the reports indicating wall thickness

Review of pipeline integrity assessments for 48" submarine crude pipeline

greater than nominal pipe. The report and measurements should correctly state design thickness and actual measured conditions.

2.6. SPRC consider the following factors in planning preparation for the next ILI:

- 2.6.1. Utilizing the same ILI technology and same ILI vendor to compare signal data with previous ILI results.
- 2.6.2. Additional assurance work by ILI vendor to demonstrate the full 19.3km pipeline length can be inspected.

3. **Immediate Integrity:** No immediate action is required. All reported wall loss anomalies, at the date of the inspection, pass the FFP assessment at the assessment pressure of 15.3 kgf/cm² (15 barg/ 217psig).
4. **Estimated Corrosion Growth Rate:** Chevron ETC has estimated a corrosion growth rate (CGR), for the time dependant assessment of reported anomalies. The estimated CGR is determined by calculating the wall thickness change from original nominal wall thickness to the 2016 ILI reported wall loss depths having occurred over a time period (2009-2016), much less than the actual pipeline operational period. This is a conservative corrosion estimate. Future re-inspections and ILI run comparisons will provide a more reliable estimate of current corrosion growth.
5. **Future integrity:**

Wall Loss Anomalies: The potential for future growth of all sub critical reported wall loss anomalies was conservatively modelled based on the selected estimated corrosion growth rate (CGR) for wall loss anomalies. Applying the estimated CGR, the analysis predicts that no wall loss reported by the 2016 ILI exceeds FFP limit state dimensions through 2024 at the at the assessment pressure of 15.3 kgf/cm² (15 barg/ 217psig).

Ovality: The potential for pipeline ovality to change is low based on Chevron ETC's understanding of the reported soil conditions and that the ovality would have occurred immediately after loading the pipeline due to the soil overburden. Provided the loading of the pipeline remains consistent, no changes are expected and the maximum reported ovality of 6.5% has been determined to be below the ovality limit state value of 8.7%.

6. **Re-inspection interval using ILI:** Based on the minimum predicted time for anomaly response (FFP Limit) and provided the operation regime maintains a low risk for internal corrosion, the cathodic protection (CP) system for this pipeline is fully operational, and appropriate monitoring and maintenance of the CP system is conducted Chevron ETC conditionally supports the deferral of the inline inspection to 2024.

Review of pipeline integrity assessments for 48" submarine crude pipeline

2. Background Information

The 48" crude submarine pipeline conveys crude oil from a shallow water offshore Single Point Mooring (SPM) buoy in Gulf of Thailand to the SPRC tank farm. The pipeline was commissioned in 1996 and utilized for crude service since commissioning. Following pipeline construction, a segment of the pipeline route from the refinery for approximately 2km offshore was covered by land reclamation and construction of a power plant. The pipeline has an additional overburden of approximately 12m and loading from power plant facilities and coal storage. The pipeline integrity is managed through various inspections including inline inspection in 2009, 2011, and 2016. Table 1 lists additional pipeline parameters.

Table 1- 48-inch crude pipeline parameters

Property	Details
Commissioning date	1996
Nominal pipeline size (NPS)	48" (OD = 1219.2mm)
Nominal wall thickness (n.w.t)	19.2 mm (0.756")
Pipeline length	19.3km (11.99miles)
Material grade	API 5L Grade X60 SAW
External Coating	4mm coal tar enamel with concrete weight coating (varies in thickness from 88.9 to 117.5 mm)
Maximum Operating Pressure (MOP)	10.35 barg (150 psig)



Figure 1- Overview Map of 48-inch crude pipeline

Review of pipeline integrity assessments for 48" submarine crude pipeline

3. Inline Inspections

Inline inspections provide full length, pipeline integrity assessments and are the preferred inspection methods for pipelines. The 48" crude pipeline has been inspected by ILI three times during the operational period with inspections in 2009, 2011, and 2016. All three inspections were completed by Applus RTD PIT tool, a UT wall thickness measurement tool with geometry measurement capability. The 2009 and 2016 inspection were made to inspect the full length of the pipeline, launching from the refinery to offshore, however limited by the ability of the crawler covering 14km and 17km, respectively, versus the full line length of 19.3km. The 2011 inspection focused on the first 4km from the refinery launch point heading offshore, under the reclaimed land area.

Throughout the inspection history, Applus RTD made changes to the PIT tool specifically to the rotating head and number of UT sensors. Changes to ILI tools may impact the survey results and should be captured in the ILI performance standard. The 2009 PIT tool inspection was run with an Inertial Measurement Unit (IMU) for pipeline mapping.

Chevron ETC was only provided the 2016 UT report [1], however some of the previous Applus inspection findings from 2009 and 2011 are captured in the 2016 report or in other documents provided to Chevron ETC for review.

3.1. ILI Results- Wall Loss

The 2016 ILI run used UT technology to measure pipe wall thickness along the pipeline length. The Applus report noted the ILI data collected is of high quality for assessment. No tool damage was reported and only limited signs of pipeline debris. No other concerns are identified which would affect the tool performance.

The 2016 inspection did not report any internal wall loss anomalies. Three external wall loss anomalies were reported with a maximum wall loss depth of 2.2mm or 12% of nominal wall thickness (n.w.t.). Applus RTD has indicated the deepest anomaly was also present in the 2009 inspection data, however, was below the reporting threshold. It is unclear if this is an impact of improved ILI performance or evidence of a wall thickness change due to corrosion.

Chevron ETC reviewed the remaining strength of the three reported anomalies. For this assessment Chevron ETC utilized the specified pressure of 15.3 kgf/cm² (15 barg/217psig). Note this assessment pressure is equal to the value utilized in 2012 by Keifner for assessment of the ovality and slightly above the current Maximum Operating Pressure (MOP) of 10.5 kgf/cm² (10.3 barg/150 psig). All three reported external anomalies have estimated failure pressures, per ASME B31G, in excess of the assessment pressure of 15.3kgf/cm². The anomalies do not affect pipeline integrity based on the reported depths at the time of the 2016 inspection.

Chevron ETC reviewed the future integrity of the reported wall loss anomalies. To determine the future integrity, Chevron ETC estimated a conservative corrosion growth. To estimate the growth rate, it was assumed all wall loss reported by the 2016 ILI occurred between the period 2009 and 2016, in other words the pipe wall thickness was nominal thickness in 2009 and corrosion growth occurred to the reported ILI depth in 2016.

Review of pipeline integrity assessments for 48" submarine crude pipeline

The equation for the estimated corrosion growth is presented below. The conservative assumption results in an estimated corrosion growth rate of 0.31mm/yr.

$$\text{Corrosion Growth Rate} = \frac{t_1 - t_0}{\text{Year}_1 - \text{Year}_0}$$

t_1 = wall thickness measured Year 1

t_0 = wall thickness measured Year 0

Year_1 = Inspection Date (2016)

Year_0 = Inspection Date (2009)

The reported anomalies are then calculated for remaining strength after a time period of corrosion growth. Applying the estimated corrosion growth rate linearly to the 2016 reported wall loss depths for the next period (2016 to 2024) results in a hypothetical growth of an additional 2.48mm of wall loss to a new total depth of ~25% n.w.t. Chevron ETC calculated a failure pressure for a 25% wall loss anomaly and again the result is greater than the 15.3 kgf/cm² assessment pressure and would not impact pipeline integrity.

Anomaly length impacts remaining strength calculations therefore Chevron ETC also determines failure pressures for a hypothetical long, deep defect. Failure pressure for a 25% n.w.t. defect with length of 900mm was calculated and again resulted in calculated failure pressure greater than the 15.3 kgf/cm² assessment pressure. All calculations for failure pressures assumed an additional ILI tool tolerance of 15% n.w.t., increasing the conservatism of the calculations.

Note, Chevron ETC's use of the 15.3 kgf/cm² assessment pressure greater than the current pipeline MOP does not indicate the pipeline is fit for service at an increased MOP. While the metal loss assessment has concluded the anomalies are not predicted to fail at the assessment pressure, Chevron ETC has not reviewed the entire system for operation at the higher pressure. Changes to a pipeline MOP must follow a Management of Change Process for full analysis and review of all system components.

Based on the 2016 ILI run results and Chevron ETCs review, no reported wall loss requires immediate action and the anomalies are not predicted to impact pipeline integrity (leak or burst) through 2024.

Note the 2009 and 2016 inspections only covered 14km and 17km respectively. The entire pipeline length has not been inspected by inline inspection. Chevron ETC is not aware of any additional hazards in the last 2km of the pipeline that would differ from the inspected portion. Therefore, Chevron ETC would expect the pipeline condition to be in similar condition as the inspected portion. Chevron ETC recommends SPRC make all attempts in future ILI runs to capture results for the entire 19.3km pipeline length.

Review of pipeline integrity assessments for 48" submarine crude pipeline

3.2. ILI Results- Geometry

The ovality of a pipeline is measured by a UT tool by measuring changes in the maximum and minimum internal diameter. Measuring the time from the UT signal initiation to return of the front wall echo from the pipe wall, a distance can be calculated and compared to the sensor standoff, building a geometric picture of the pipeline shape.

The 2016 ILI results included measurements of 157 points of pipeline ovality in the region of the reclaimed land. The 2016 report indicated a maximum ovality of 6.5% at log distance 73.19m. This measurement is greater than the previous maximum ovality of 6% reported in both 2009 and 2011 at log distance 338.46m. 45 of the ovality measurements in 2016 increased in ovality compared to 2011. This is similar in that 52 measurements in 2011 increased in ovality when compared to 2009.

The changes in measurement are also not addressed in the Applus Final Report and from Chevron ETC's observations, no clear patterns in the data are noted. Some areas show an always increasing ovality, others show an always decreasing ovality, and other areas have mixed results between the three inspections. For example, the ovality at log distance 73.19m was steady in 2009 and 2011 then increased almost 1% in 2016. Likewise, the ovality at log distance 338.46 was steady in 2009 and 2011, then decrease by 1%. Based on the inspections all performed on a depressurised pipeline, any change in measurement is expected be the result of pipeline loading or ILI measurement errors.

Due to the differences in report ovality and the modifications made to the PIT tool which differ in each of the three Applus PIT inspections, Chevron ETC recommends SPRC consult with Applus to understand if differences reported in the ovality measurements are due to effects of the sensor changes and tool tolerance or changes in actual measured pipeline ovality.

4. Additional Pipeline Inspections

The 48" crude pipeline is subject to other inspections including General Visual Inspection (GVI), offshore Ultrasonic Testing (UT) wall thickness readings and Cathodic Protection (CP) potential readings. Chevron ETC reviewed the provided sample of inspection strategy and inspection reports for these various inspections of the 48" pipeline, SPM buoy, and PLEM.

4.1.48" pipeline Onshore CP monitoring

Onshore monitoring of the 48" crude pipeline currently measures CP potential onshore on 6-month intervals. The 2018-2020 reports [2] highlight issues with the system equipment including rectifiers, cabling, and potential readings above the protective range of -850mV. The reports make recommendations for system corrections and indicates SPRC is currently considering some recommendations for system corrections. The CP reports illustrate a clear methodology for continued monitoring of the onshore CP system.

Chevron ETC recommends SPRC review the Onshore Cathodic Monitoring reports for recommendations to maintain adequate CP protection for the pipeline, including review of the inspection frequency. A higher frequency of inspection made be necessary to remedy the highlighted

Review of pipeline integrity assessments for 48" submarine crude pipeline

concerns in the reports and deferral of the ILI inspection. For example, rectifier readings may be required monthly to establish continued operation of the CP system.

4.2.48" Pipeline Offshore GVI and CP Monitoring

The offshore section of the 48" crude pipeline from the reclaimed land to the PLEM is inspected at 5-year frequency by GVI and CP monitoring conducted by a Remote Operated Vehicle (ROV). The most recent GVI and CP survey was completed in 2019. Chevron ETC reviewed the 2019 ROV GVI and CP inspection report [3]. Noted in the report were many anomalies for coating degradation, though no bare metal was noted. Coating breakdown increases the likelihood of external corrosion, especially in the shallow, highly oxygenated seawater. The GVI report also noted that the pipeline anodes are active, based on the presence of oxide. Anode wastage was noted on average 10%. For a pipeline near the end of design life, the low level of anode wastage is positive. However, if coating degradation is recent and increasing, it would be expected the anode wastage would increase as the system works harder to protect the pipeline. CP measurements were also reported in 2019. Stabs on the anodes indicate adequate potential measurements, greater than -850mV. The report did not mention any CP measurements on the pipeline or bare metal to measure the potential on the pipe. There is a possibility for CP shielding, inability of CP current from any source to reach and protect the surface of the pipeline, with the coating breakdown which limits the CP protection.

The 2019 GVI also surveyed the locations of external metal loss reported by the 2016 ILI report. At the three locations, the GVI did not report any noticeable external corrosion or damage of the concrete weight coating. These locations should also be reviewed in future inspections.

The 2019 GVI noted extensive areas of debris from fishing and other sources. Debris has the potential to damage the pipeline coatings as well limit the CP effectiveness when metal objects are in proximity to the pipeline. Debris also limits the ability for GVI to fully inspect the pipeline. SPRC could consider removal of metal debris touching the pipeline to increase the effectiveness of cathodic protection.

Chevron ETC recommends SPRC review the 5-year frequency of the GVI of the pipeline and CP surveys based on the number of anomalies present. Shorter intervals may be required to improve understanding of the pipeline, provide early indications of anomalies, and for alignment with future ILI results. SPRC may consider the use of field gradient survey for the offshore portion. This submarine CP survey can identify coating breakdown and provide potential readings for both exposed and burial pipe.

4.3. Offshore SPM and PLEM inspections

The 48" crude pipeline termination PLEM and SPM Buoy are on 3-monthly inspection frequency for GVI, UT and CP. Chevron ETC reviewed the reports shared from 2019 and 2020 [4]. Minor anomalies included missing anodes and CP readings slightly above the expected value of -850mV. Anodes were reported with oxide indicating activity and approximate wastage between 25% and 40%. UT thickness readings are also taken of the PLEM pipe and branches. No significant PLEM anomalies were noted in the reports though some UT readings were reported greater than the nominal pipe which should be

Review of pipeline integrity assessments for 48" submarine crude pipeline

addressed in future inspections. The PLEM and SPM inspection is robust and considering the 3-monthly frequency, would provide timely indications of integrity concerns.

Chevron ETC's recommendation for the PLEM and SPM inspections is to continue 3-monthly inspections per inspection strategy. It is also recommended to address the PLEM UT readings in the reports indicating wall thickness greater than nominal pipe. The report and measurements should correctly state design thickness and actual measured conditions.

5. Pipeline Hazard Review

The 48" submarine pipeline is subject to many hazards. Inline Inspection provides information about the pipeline condition and hazards of external loading, mechanical damage, and corrosion. This section of the report details Chevron ETC's assessment of the inspection results and pipeline hazards.

5.1. External Loading- Ovality

The hazard of external loading exists on the pipeline in the area of the reclaimed land as indicated by the ovality reports. Extensive Fitness for Service (FFS) assessments were performed following the identification of the ovality. Chevron ETC reviewed the FFS reports and conclusions. The Keifner and Associates report [5] following the 2011 ILI run provides a clear limit state for ovality of 8.7%. Based on the 2016, all ovality measured in the inspections is less than this limit state and is not predicted to impact pipeline integrity. Chevron ETC confirmed with SPRC that no additional loading or structures over the pipe occurred between 2009 and 2016.

Chevron ETC SMEs for pipeline integrity and civil/structural discussed the FFS reports [5] [6] and the Technip soils study report [7]. Chevron ETC takes no exception with the conclusions of the FFS reports or soil study.

It is believed that most of the effects of the overburden on the pipe and ovality would have occurred immediately following the loading. The reports indicate limited potential for settlement in the future due to the reported geotechnical conditions and not anticipated to change loading to the pipeline. While there are changes in the ovality readings between inspections, most readings do not indicate an increase in ovality as a result of continued settlement or loading.

Chevron ETC recommends the pipeline ovality is continued to be monitored using ILI. Chevron ETC agrees ovality inspection frequency can be aligned with the metal loss inspection frequency as concluded by the Keifner report. If similar ovality FFS analysis is conducted in the future, Chevron ETC recommends a consultation prior to the development of the computer models for enhancements to the accuracy of the FFS calculations.

5.2. Metal Loss- Internal Corrosion

Chevron ETC considered the threat of metal loss during the review of the ILI reports, FFS reports and other documentation. The threat of metal loss from both internal and external corrosion is likely for the 48" crude pipeline.

Review of pipeline integrity assessments for 48" submarine crude pipeline

ETC considered an assumption that crude deliveries to the refinery generally meet specifications for contaminants and in line with the pipeline design. It would be expected the likelihood of internal corrosion is low as crude would be stabilized and export quality. The provided crude assays do not indicate any contaminants not considered by the design basis [8]. Internal corrosion has not been reported from the inspections and the ILI report UT signal degradation from debris in the pipeline, potential for under deposit corrosion, indicating internal corrosion control is functioning.

Chevron ETC would expect the risk for internal corrosion to remain the same through 2024 provided SPRC continues operating the pipeline in the current manner with internal corrosion controls. Chevron ETC recommends SPRC review with Applus the internal anomaly referred to as a "wheel" in the pipeline and consider a plan for removal of this object during the next inspection.

5.3.Metal Loss- External Corrosion

External corrosion remains a hazard to the pipeline. While the reported anomalies from the 2016 ILI report are not anticipated to result in an integrity concern through 2024, as mentioned earlier, the overall pipeline threat of external corrosion does require continued monitoring and controls to maintain pipeline integrity.

The GVI and CP inspections reported anomalies related to the external coating and CP reading anomalies. Noted in the report were many anomalies for coating degradation though no bare metal was noted. Coating breakdown increases the likelihood of external corrosion, especially in the shallow, highly oxygenated seawater.

The 2019 GVI report also noted extensive areas of debris from fishing and other sources. Debris has the potential to damage the pipeline coatings as well limit the CP effectiveness when metal objects are in proximity to the pipeline.

The Onshore CP reports indicate CP potential anomalies with readings above -850mV. Chevron ETC's opinion is that the onshore section of pipe is also subject to increased coating damage and external corrosion. Based on the ovality measurements, it is likely the concrete and coal tar enamel coatings have been damaged. Damage coating can lead to CP shielding and allow external corrosion to initiate.

In addition to previously mentioned recommendations for CP system mitigation, Chevron ETC recommends further discussion with Applus concerning external corrosion anomalies below the reporting threshold. The Applus data from 2016 could be reviewed with a lower reporting threshold to determine the volume of potential anomalies on the pipeline that may exist and be impacted if active corrosion is taking place. Chevron ETC would not expect these shallow anomalies to impact pipeline integrity through 2024, however this exercise would provide SPRC an indication of the likelihood of future areas of external corrosion along the pipeline.

In summary, the potential for external corrosion continues for the pipeline with increased likelihood as the pipeline ages and noted coating anomalies continue degradation. Continued inline inspection of the pipeline entire length will provide the assessment method to confirm pipeline integrity.

Review of pipeline integrity assessments for 48" submarine crude pipeline

5.4.Mechanical Damage- Dents

The threat of mechanical damage from third parties remains for the 48" crude pipeline. The pipeline traverses through the reclaimed land where third party operations could impact the pipeline if additional structures are built. Offshore, the pipeline is exposed to marine traffic and other users of the sea. Mechanical damage can result in instantaneous pipeline integrity incidents, such as an anchor drag that causes rupture or can result in time dependant damage such as debris dropped on the pipeline resulting in a dent with metal loss that can fail from corrosion or fatigue.

The 2016 ILI report has not indicated any mechanical damage in the form of dents to the pipeline. The 2019 GVI report indicates lots of interaction with users of the sea based on the fishing and other debris. The GVI report indicates visibility and level of debris is limiting the inspection of the pipeline and a risk to the ROV.

Chevron ETC recommends SPRC review the threat of mechanical damage based on their understanding of the marine traffic and sea users in proximity of the pipeline. Measures may be required to monitor traffic in the area or increase the frequency of GVI to identify areas of mechanical damage.

6. Conclusions

1. Chevron ETC recommended action items for ILI deferral:

- 1.1. SPRC consultation with Applus RTD to understand if differences in reported ovality measurements in all three inspection reports, 2009, 2011 & 2016, are due to effects of the sensor changes during each ILI run and tool tolerance or changes in actual measured pipeline ovality.
- 1.2. SPRC review the Onshore Cathodic Monitoring reports for recommendations to maintain adequate CP protection for the pipeline, including review of the 6-month inspection frequency. A higher frequency of inspection may be necessary to remedy the highlighted concerns in the reports and supplement deferral of the ILI inspection.
- 1.3. SPRC review the 5-year frequency of the subsea ROV inspection (general visual inspection and CP survey) based on the number of anomalies present. A higher frequency of inspection may be necessary to monitor existing anomalies and supplement deferral of the ILI inspection.
- 1.4. SPRC confirm an extended ILI interval is in accordance with Thailand's pipeline and pipeline integrity regulations.

2. Chevron ETC general integrity recommendations:

- 2.1. SPRC review with Applus the internal anomaly referred to as a "wheel" inside the pipeline and consider a plan for removal of this object during the next inspection
- 2.2. SPRC discuss with Applus to review the ILI data for external corrosion anomalies below the reporting threshold in the range of 5-10% n.w.t. The Applus data from 2016 could be reviewed with a lower reporting threshold to determine the volume of potential anomalies on the pipeline that may exist and be impacted if active corrosion is taking place.
- 2.3. SPRC review the threat of mechanical damage based on the understanding of the marine traffic and users of the sea in proximity of the pipeline. Measures may be required to monitor traffic in the area or increase the frequency of GVI to identify areas of mechanical damage.
- 2.4. SPRC should consider the use of a field gradient survey, such as Direct Current Voltage Gradient (DCVG) for the offshore portion of the pipeline. This submarine CP survey can identify coating breakdown and provide potential readings for both exposed and burial pipe. Chevron ETC and Chevron Technology Ventures can provide additional information if required.
- 2.5. The PLEM and SPM inspections continue 3-monthly inspections per inspection strategy. It is also recommended to address the PLEM UT readings in the reports indicating wall thickness greater than nominal pipe. The report and measurements should correctly state design thickness and actual measured conditions.
- 2.6. SPRC consider the following factors in planning preparation for the next ILI:
 - 2.6.1. Utilizing the same ILI technology and same ILI vendor to compare signal data with previous ILI results.
 - 2.6.2. Additional assurance work by ILI vendor to demonstrate the full 19.3km pipeline length can be inspected.

3. **Immediate Integrity:** No immediate action is required. All reported wall loss anomalies, at the date of the inspection, pass the FFP assessment at the assessment pressure of 15.3 kgf/cm² (15 barg/ 217psig).
4. **Estimated Corrosion Growth Rate:** Chevron ETC has estimated a corrosion growth rate (CGR), for the time dependant assessment of reported anomalies. The estimated CGR is determined by calculating the wall thickness change from original nominal wall thickness to the 2016 ILI reported wall loss depths having occurred over a time period (2009-2016), much less than the actual pipeline operational period. This is a conservative corrosion estimate. Future re-inspections and ILI run comparisons will provide a more reliable estimate of current corrosion growth.
5. **Future integrity:**

Wall Loss Anomalies: The potential for future growth of all sub critical reported wall loss anomalies was conservatively modelled based on the selected estimated corrosion growth rate (CGR) for wall loss anomalies. Applying the estimated CGR, the analysis predicts that no wall loss reported by the 2016 ILI exceeds FFP limit state dimensions through 2024 at the at the assessment pressure of 15.3 kgf/cm² (15 barg/ 217psig).

Ovality: The potential for pipeline ovality to change is low based on Chevron ETC's understanding of the reported soil conditions and that the ovality would have occurred immediately after loading the pipeline due to the soil overburden. Provided the loading of the pipeline remains consistent, no changes are expected and the maximum reported ovality of 6.5% has been determined to be below the ovality limit state value of 8.7%.

6. **Re-inspection interval using ILI:** Based on the minimum predicted time for anomaly response (FFP Limit) and provided the operation regime maintains a low risk for internal corrosion, the cathodic protection (CP) system for this pipeline is fully operational, and appropriate monitoring and maintenance of the CP system is conducted Chevron ETC conditionally supports the deferral of the inline inspection to 2024.

Review of pipeline integrity assessments for 48" submarine crude pipeline

Appendix A: References

- [1] Applus RTD, "UT Intelligent Pigging Report Jun 2016," Applus, Netherlands, 2016.
- [2] "Ongoing Cathodic Protection (CP) Survey & Consultant Service TOR Test," aurecon, Thailand, 2020.
- [3] "ROV Inspection Report," Ocean Works Asia, Thailand, 2019.
- [4] "ABS SPS #5 and Quarterly Inspection Report," Ocean Works Asia, Thailand, 2019.
- [5] Keifner and Associates, "Fitness for Service Analysis of 48 inch Crude Pipeline, Rayong, Thailand," Keifner and Associates, Worthington, 2012.
- [6] Atkins Boreas, "Map Ta Phut Crude Oil Pipeline Fitness for Purpose Assessment of Reported Deformation," Atkins Boreas, Newcastle, 2010.
- [7] Technip Engineering, "Soil Settlement Analysis Report," Technip Engineering, Thailand, 2010.
- [8] Nippon Steel, "Design Report for Submarine Pipeline," Nippon Steel, 1995.
- [9] ASME, "B31G Manual for Determining the Remaining Strength of Corroded Pipelines," ASME, 2012.
- [10] American Petroleum Institute, *API RP 1160 Managing System Integrity for Hazardous Liquid Pipelines*, API, 2018.

Appendix B: Chevron ETC Fitness for Purpose Assessment Methodology

The ETC Fit-for Purpose (FFP) methodology is used for assessment of all reported wall loss anomalies. Under the conditions normally encountered in pipelines, the hoop stress due to internal pressure is the largest stress and governs the mode of failure. The ETC FFP methodology, using the Smart Facility Pipeline software first evaluates the depths and axial lengths for individual ILI anomalies against limit states (using ASME B31G Level 1; original B31G and Modified B31G) that represent the critical size required to withstand an internal pressure equal to or greater than the MOP consistent with the design safety factor. ASME B31G requires a safety factor for evaluating inspection results. The minimum requirement for factor of safety, 1.25, is equivalent to the original hydrostatic testing per ASME B31.4. The safety factor applied here is 1.39 for the entire pipeline, a more conservative assessment.

Extensive studies were conducted in previous ETC development projects. Different metal loss assessment models were evaluated – B31G, Modified B31G, DNV F-101, API/ASME 579, Shell, etc. The original B31G model was identified as the best probabilistic burst model for assessing metal loss damage. Leak model allows three leak thresholds to simulate the limits in B31G (80%), F-101 (85%) and through-wall breach of pressure boundary (100%). Following are the equations* used for calculating the limit states.

<u>Burst Limit State</u>	<u>Leak Limit State</u>
$S_t = P \times \left(\frac{1 - G \frac{d}{t}}{1 - G \frac{d}{t} \frac{1}{M}} \right) - P_{Design}$	$g_L = t - CR \times Time$
$P = \frac{2 \times C \times SMTS \times t}{D} \quad \text{or} \quad P = \frac{2 \times C \times UTS \times t}{D}$	
<p>where</p>	
$M = \sqrt{1 + A^2}$	
$A = 0.893 \frac{L}{\sqrt{Dt}}$	

Material strength – SMTS or UTS

Pipe dimensions – diameter (D) and thickness (t)

Defect dimensions – depth (d) and length (L)

Corrosion rate (CR)

Model parameters – geometry factor (G) and strength factor (C)

**Extracts from Smart Facilities Pipelines – Risk-Based Pipeline Integrity Management, ETC

The B31G level 1 models predict the failure pressure for corroded pipe, based on the effect of hoop stress considering the maximum thru wall depth and longitudinal extent of wall loss areas within otherwise unaffected pipe wall. Each model assumes a different theoretical thru wall profile for a wall loss (rectangular for Original B31G or an elliptical profile of $0.85d \times L$ for Modified B31G) to account for

Review of pipeline integrity assessments for 48" submarine crude pipeline

the fact that actual corrosion profiles encountered in pipelines can vary. These models can provide different predictions of burst pressure for wall loss anomalies with the same depth and length, but both have been demonstrated to be conservative when compared with actual burst tests. The Smart Facility Pipeline tool analysis selects the criterion (original B31G or Modified B31G criteria) that can tolerate the most severe anomaly for use in classification of immediate, near term, scheduled or monitored condition for each ILI wall loss anomaly. All volumetric wall loss regardless of its classification as corrosion or non-corrosion related is evaluated for FFP using the B31G criteria.

The API FFP response criterion for immediate conditions identifies anomalies requiring immediate repair because they exhibit depth and length that could fail at MOP. The API FFP criterion for near term or scheduled conditions identifies anomalies that require repair in accordance with a time-based schedule because they exhibit a depth and length that cannot withstand a "safe" pressure consistent with the design safety factor commonly referred to as an FFP limit state. Failure pressure limit states for corroded pipe can be represented by a sentence plot or limit state line delineating the family of depth and length for individual anomalies that share the same failure pressure in a pipeline segment with consistent attributes, namely; diameter, nominal wall thickness and specified minimum yield strength (SMYS). Similar plots can be created for other limit states to illustrate the limits of anomaly depth and length expected to withstand an internal pressure associated with a hydrostatic test or consistent with application of design safety factors.

Corrosion Metal Loss

The ETC FFP methodology considers the immediate integrity of the pipeline due to leak and rupture limit states and future integrity considering time dependent threats to pipeline integrity. In both cases the expected measurement errors of the inspection technology are considered as corrections to the limit state or FFP criterion. There are four categories of response to in-line inspection predictions according to the pipeline integrity management guidance from API 1160 "Managing System Integrity of Hazardous Liquid Pipelines"

Immediate Conditions: Anomalies are predicted to have a burst pressure at or near MOP or minimum acceptable locally corroded wall thickness. This represents a nil safety factor condition with the prescribed response to promptly reduced pressure or shut down the pipeline.

Near Term Response Conditions: Anomalies that represent a threat to pipeline integrity if left unaddressed for a period in excess of 1 1/2 years, in considering growth mechanisms but not ILI tool tolerance. While Near Term Response conditions may not have adequate safety factor to remain in the pipeline indefinitely, they do have some remaining life before they would grow to a critical flaw size with nil safety factor thus offering a mechanism for scheduling and prioritizing repair.

Scheduled Conditions: These are anomalies that fail the Fit for purpose criteria for burst pressure or wall loss depth when evaluated for both growth and tool tolerance. Similarly, they have some remaining life before they would grow to a critical flaw sized allowing for response schedule to complete a verification and repair if necessary.

Monitored Conditions: Manufacturing or construction conditions that are deemed fit for purpose at the time of inspection in accordance with industry recognized engineering evaluation. This also

Review of pipeline integrity assessments for 48" submarine crude pipeline

includes anomalous conditions identified by integrity assessment that are not currently impairing pipeline integrity. These are reviewed during subsequent integrity assessments.

Corrosion Growth Rate Estimation

The growth rate of corrosion along a pipeline is neither constant over time nor spatially along the pipeline. The estimated rate for corrosion growth can be obtained from mechanistic models (e.g. environmental models) or comparison of wall measurements (discrete or severity distributions) over a time period. The selection of the most appropriate method is made by a Subject Matter Expert considering inspection tool errors and time intervals and expected corrosion growth mechanisms.

Inspection Interval

The following deterministic example of a response or inspection interval, based on the fit for purpose (FFP) or safety factor condition, illustrates how an interval is determined by the difference in metal loss depth for very long defects between the maximum reported or predicted metal loss depth and fit for purpose depth limit divided by the corrosion growth rate.

$$Interval = \frac{T_{nom} * (FFS \frac{d}{t} - Max \frac{d}{t})}{Corrosion Growth Rate}$$

T_{nom} = nominal wall thickness

$$FFS \frac{d}{t} = \text{limit state } \frac{d}{t} \text{ ratio (per assessment method)}$$

$$Max \frac{d}{t} = \text{maximum } \frac{d}{t} \text{ ratio measured (from inspection)}$$

ภาคผนวก ข.19

การติดตั้ง Check Valve ที่ปลายท่อขนถ่าย

ภาคผนวก ข.20

การแต่งตั้งคณะกรรมการความปลอดภัย อาชีวอนามัย
และสภาพแวดล้อมในการทำงาน



STAR PETROLEUM REFINING PUBLIC COMPANY LIMITED

บริษัท สตาร์ ปิโตรเลียม รีไฟน์นิ่ง จำกัด (มหาชน)

เลขทะเบียนนิติบุคคล 0107555000155

ประกาศ

วันที่ 01 มิถุนายน 2565

จาก : ประธานเจ้าหน้าที่บริหาร

ถึง : พนักงานทุกท่าน

เรื่อง : การเปลี่ยนแปลงคณะกรรมการความปลอดภัย อาชีวอนามัยและสภาพแวดล้อมในการทำงาน (ฉบับปรับปรุงครั้งที่ 1)

เพื่อให้การดำเนินงานด้านความปลอดภัย อาชีวอนามัยและสิ่งแวดล้อมเป็นไปอย่างมีประสิทธิภาพและต่อเนื่อง จึงได้มีการปรับปรุงรายชื่อสมาชิกคณะกรรมการความปลอดภัย อาชีวอนามัยและสภาพแวดล้อมในการทำงานในส่วนของการ ซึ่งสอดคล้องกับการเปลี่ยนแปลงผังองค์กรของบริษัทฯ ดังนั้น จึงขอประกาศแต่งตั้งคณะกรรมการความปลอดภัยฯ (ฉบับปรับปรุงครั้งที่ 1) ซึ่งประกอบด้วยกรรมการที่มาจากการแต่งตั้ง (ผู้แทนนายจ้าง) และกรรมการที่มาจากการเลือกตั้ง (ผู้แทนลูกจ้าง) ดังรายชื่อต่อไปนี้

กรรมการผู้แทนนายจ้าง

1. นายสตีเฟ่น	ลิวอิส กิบสัน	DO	ประธานกรรมการ
2. นายพอล	แอนดรูว์ รัสเชอร์	PN	
3. นางสาวเชาวศรี	เหลียงรัตนกร	PD	
4. นายพงษ์กรณ์	ช่อทวงศ์	QS	
5. นายวิสิษฐ์	สุขประเสริฐ	AS	
6. นายวัฒนศิลป์	ราชาเดช	TE/6	

กรรมการผู้แทนลูกจ้าง

1. นาย เสถียรพงศ์	ช้างกลาง	PN/34	
2. นาย วิฑูรย์	ชนะบุญ	PN/41	
3. นาย สถาปนา	ศรีจันทร์	PD/31	
4. นาย กิตติรัชต์	เหล้ากักดี	AS/133	
5. นางสาวเบญจวรรณ	ประเสริฐสุข	CF/53	
6. นายธณภูมิ	ครุฑพิสิฐ	TE/13	

กรรมการและเลขานุการ

1. นายวรายุทธ	พรหมโน	QS/43	
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(เจ้าหน้าที่ความปลอดภัยในการทำงานระดับวิชาชีพ)

คณะกรรมการดังกล่าว มีวาระการทำงานตั้งแต่วันที่ 01 มิถุนายน 2565 ถึง วันที่ 31 ธันวาคม 2565

จึงประกาศมาเพื่อทราบโดยทั่วกัน

ประธานเจ้าหน้าที่บริหาร



STAR PETROLEUM REFINING PUBLIC COMPANY LIMITED

บริษัท สตาร์ ปิโตรเลียม รีไฟน์นิ่ง จำกัด (มหาชน)

เลขทะเบียนนิติบุคคล 0107555000155

Announcement

Jun 01, 2022

From : Chief Executive Officer

To : All SPRC Employees

Subject : Update SPRC EHS Main Committee (Rev.1)

In order to effective and continual implement of SPRC EHS Management, the EHS Main Committee has been revised by changing secretary member which aligning with the updating SPRC Organization. So, the company would like to announce the updating SPRC EHS Main Committee which consists of the Person from Appointment (Employer Representative) and Election (Employee Representative) as following:

Employer Representative Members:

1. Mr. Steven	Lewis Gibson	DO (Chairman)
2. Mr. Paul	Andrew Rushworth	PN
3. Miss Chaowasri	Luengratanakorn	PD
4. Mr. Pongkorn	Chochuwong	QS
5. Mr. Wisit	Sukprasert	AS
6. Mr. Watdhanasilp	Rajadej	TE/6

Employee Representative Members:

1. Mr. Satianpong	Changklang	PN/34
2. Mr. Vitoon	Chanaboon	PN/41
3. Mr. Sathapana	Srichun	PD/31
4. Mr. Kittirach	Laophakdee	AS/133
5. Miss. Benchewan	Preserdsook	CF/53
6. Mr. Thanaphoom	Khurutphisit	TE/13

Member and secretary

1. Mr. Warayut	Promno	QS/43
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(Safety Officer – Professional Level)

The term of this committee is valid from Jun 01, 2022 to December 31, 2022.
Please be informed accordingly.



Chief Executive Officer

ภาคผนวก ข.21

แผนการจัดอบรมด้านอาชีวอนามัยและความปลอดภัย
ประจำปี พ.ศ.2565

ภาคผนวก ข.22

แผนฉุกเฉิน

ผังตอบโต้ภาวะฉุกเฉิน



SPRC

"One family ...
fueling the
future of
Thailand"



1

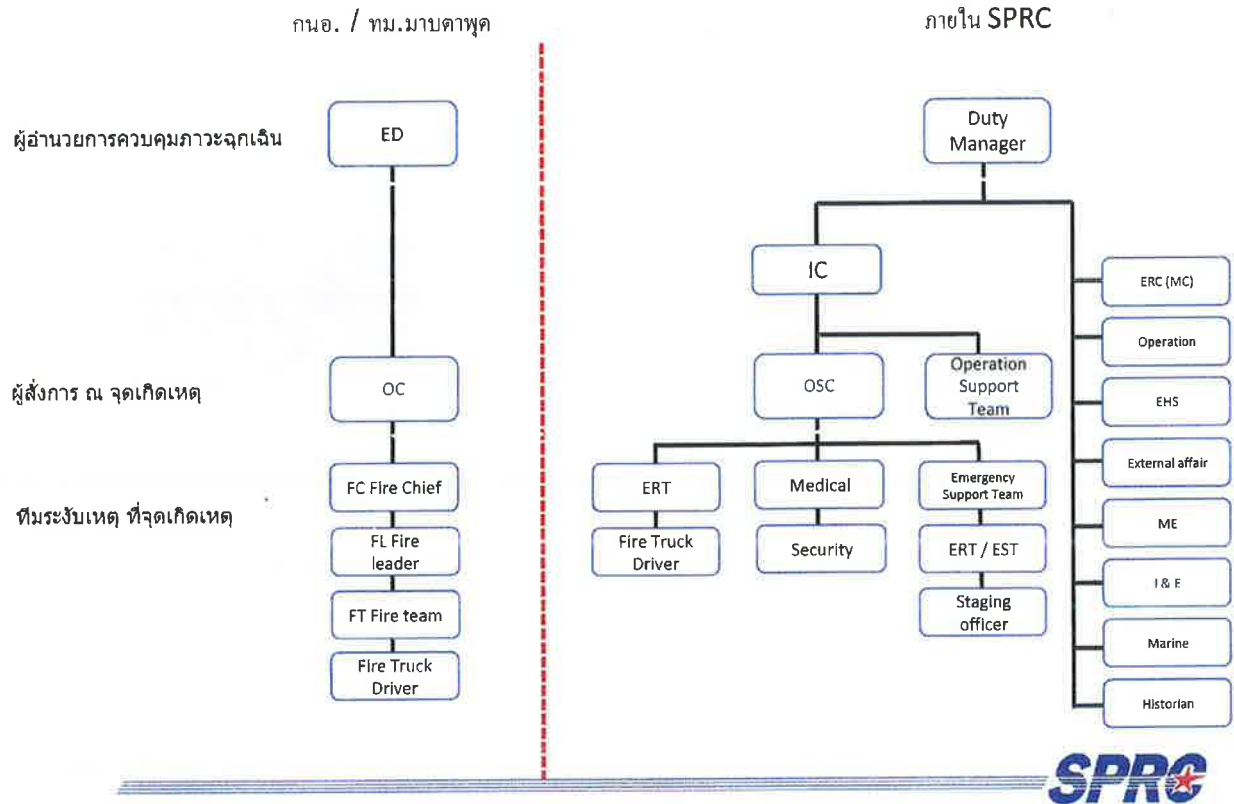
เปรียบเทียบระดับการตอบโต้ภาวะฉุกเฉิน

แผนฉุกเฉินจังหวัด ระยอง	แผนฉุกเฉินนิคม อุตสาหกรรม	แผนฉุกเฉิน SPRC	การใช้อำนาจพลและทรัพยากร
เหตุฉุกเฉินระดับ 2			
เหตุฉุกเฉินระดับ 1	ภาวะฉุกเฉินระดับนิคม อุตสาหกรรม 3	ภาวะฉุกเฉินระดับ 3	- ขอสนับสนุนกำลังพลและทรัพยากร จากเทศบาลเมืองมาบตาพุด
เหตุฉุกเฉินระดับโรงงาน	ภาวะฉุกเฉินระดับนิคม อุตสาหกรรม 2	ภาวะฉุกเฉินระดับ 2	- ขอสนับสนุนกำลังพลและทรัพยากร จากกลุ่ม EMAG หรือ กอ.
	ภาวะฉุกเฉินระดับนิคม อุตสาหกรรม 1	ภาวะฉุกเฉินระดับ 1 B	- ขอสนับสนุนทีม DUTY และพนักงาน ปฏิบัติการที่ Off Shift ของโรงงาน - ใช้ทรัพยากรของโรงงาน
		ภาวะฉุกเฉินระดับ 1 A	- พนักงานปฏิบัติการที่เข้าปฏิบัติงาน ภายในวัน-เวลาที่เกิดเหตุเท่านั้น - ใช้ทรัพยากรของโรงงาน
	เหตุผิดปกติระดับนิคม อุตสาหกรรม	เหตุผิดปกติระดับโรงงาน	



2

โครงสร้างฟังก์ชันการตอบโต้ภาวะฉุกเฉิน





Star Petroleum Refining Public Company Limited

Process Safety & QEHS Department

**EHS-SP-QS-0006
Emergency Response Plan**

Prepared by: _____

Bundit Vayuwattanasiri
Lead Emergency Management (QS/3)

Reviewed and _____

Approved by: _____
Pongkorn Chochuwong
Manager Process Safety & QEHS (QS)

Distribution List

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00	Emergency Response Coordinator (Document controller)	EDMS
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02	MCB EOC	MCB
03	PN CCB	CCB
04	QEHS and lab Document Control Room	R - 202
05	Emergency Response Coordinator	RE -103
06	Duty Manager	Duty Manager Brief Case
07	Operations Duty	Operations Duty Brief Case
08	External Affairs Duty	External Affairs Duty Brief Case
09	EHS Duty	EHS Duty Brief Case
10	ERC Duty	ERC Duty Brief Case
11	Marine Duty	Marine Duty Brief Case
12	Mechanical Duty	Mechanical Duty Brief Case
13	I&E Duty	I&E Duty Brief Case
14	PD Shift Supervisor	Incident Commander Brief Case
15	Tank Truck Loading Terminal	TTLT Office

Amendment List

Revision	Date	Page/ Section	Reason	By
0	06 Oct 08	First release	QS/1	0
1	1 Oct 09	Page Vi/ EMAG	Add IRPC in to member of Emergency Mutual Aid Group	Athit C.
		4/4.0 Emergency Response Organization Overview	Change the line of command for emergency support team to under OSC	
		6/6.0 Emergency Response Decision Procedure Appendix R	Add action of PD shift supervisor as IC on asking REB to notify PTTAR-1 FIT in case of emergency.	
		7/7.0 Actions on Emergency	Add action of REB as following: 1. Alert PTTAR-1 via hotline to alert their FIT team (Level 1) 2. Send SMS to all FIT team (level 2) to call in to support at site.	
		8/8.0 Communication Method	Add scope of communication to all SPRC personnel and contractor to cover emergency level 1 which has significant impact on operation or affect public.	
		11/9.2.1 General requirement	1. Update the name of Rayong Emergency to "Kho Kaew" 2. Add notification to the authority (IEAT Map Ta Phut and Map Ta Phut Municipality for emergency level 1 that significant affect public.	
		20/11.3	Add link of Community Evacuation Plan	
		22/11.4 Emergency Contact Points in case of neighboring company incident	Add PTTAR 1 to the company that might affect to MCB.	
		65/3.1 Bomb Threat Checklist	Add link to bomb threat checklist	
		74/9.0 Offsite Road Accidents Involving Product from SPRC	Update telephone number of SPRC TTLT Coordinator; delete PPT and Caltex Depot Manager telephone number by link to the Emergency Telephone Number instead.	
		82/ Appendix F Headcount Procedure	Add areas of building that the Office warden shall do headcount (Marine Terminal Building and Construction Building)	
		87/ Appendix I Drinking Water and Refreshment	More clarification on cash reserved for emergency situation that EA duty will be	

Revision	Date	Page/ Section	Reason	By
		90/ Appendix N	the person to coordinate with treasurers for cash.	
		95	Update Emergency Operation Center Layout Add appendix R Mutual aid agreement between SPRC and PTTAR Refinery	
		97	Add appendix S Pier Evacuation Guideline	
		98	Add appendix T PTT group crisis and Emergency Report (form)	
2	3-May-11	10/8. Notification and Reporting	Revise the sub content of Notification and reporting by grouping the reporting to authority e.g. IEAT-MTP, MTP municipality, community (8.2) and share holder (8.3) in to one table (8.2 Notification and Reporting to Stakeholders). This change is to comply with the IEAT-MTP complex emergency response plan and Rayong Emergency Response Plan B.E.2553.	Athit C.
		11/8.2.4 Shareholder notification	Add a role of ERC duty to notify to the PTT communication center in case of emergency level 1. This updating is to comply with the PTT Group Emergency Management Plan	
		21/10.3 Neighboring Community/Company Notification	More explanation about community notification process in case of emergency can effect to the communities nearby the company by linking to Community Communication Process Guideline (EHS-WI-QS-3012)	
		31/ 5.1 Duty Manager	Re-write the specific task of Duty Manager Roles and Responsibilities by changing from Shareholders to be the Stakeholder which in line with the 8.2.4	
		36/5.3 External Affair	Define a scope of role and responsibility of External Affair Duty to cover the provision of additional resource including food and refreshment to support emergency response which can ask support and cooperate with ME/IE duty to help as well as mentioned about the list of vendor/supplier available in the contact list file.	
		43/5.8 Mechanical/Instrument and Electrical Duty	More explanation of ME/I&E role and responsibility about coordinate and process request for additional resource including foods, refreshment by coordinate and process with External Affair Duty and help to mobilize the additional resources.	
3	24-Jun-12	2/Glossary	Changing the company of the following company	
		6/5.0 Emergency		



Star Petroleum Refining
Public Company Limited

EHS-SP-QS-0006: Emergency Response Plan

Revision	Date	Page/ Section	Reason	By
		Response Decision		
		22/10.4 Emergency Contact Points In case of Neighboring Company Incident	PTTAR-1 to PTTGC-6 PTTChem I-1 to PTTGC-2, PTTChem I-4 to PTTGC-3 PTTAR-2 to PTTGC-4	
		95-96/Appendix R Mutual Aid Agreement between SPRC and PTTAR	Changing the name of PTTAR to PTTGC6	
		12/8.2 Notification& Reporting to Stakeholder	Update the name list of Shareholder Management (PTT) Management that to be notified in case of emergency level 2,3 according PTT Organization.	
4	15-Jan-13	All 2/Glossary 9/SMS 12/8.2 Notification& Reporting to Stakeholder 14/8.2.1 14/8.2.4 Appendix A/Role and Responsibilities – 35/5.2 Operation Duty 36/5.3 External Affair Duty 40/5.5 EHS Duty 43/5.8 ME &IE duty 79/Appendix D Mutual Assistance 86/Appendix H Foam Supplier 97/Appendix U 98/Appendix V	Update company name from Co.,Ltd to Public Company Limited Add new EMAG member – MOC Delete SMS code N Add notification to PTT Emergency Center in case of Emergency level 1 (by ERC Duty) Add the notification and reporting form to IEAT-MTP and MTP- Port Update the notification requirement according to labor law (Update the requirement). Add new notification requirement to the Office of Atomic for Peace according to the Radiation Safety law requirement Change the location of Operation Duty from CCB to EOC Re-write the responsibility of EA duty to be more clearly on buying additional resource include food and refreshment Add new responsibility “Call in Company Radiation Safety Officer (RSO) in case of Radiation Incident Re-write the responsibility of ME&IE duty to be more clearly on supporting to EA Duty by mobilize the additional resource include food and refreshment Add new EMAG Member (MOC) Update name list of Foam Suppliers Add Appendix U: Reporting form to the Labor Protection and Welfare Add Appendix V: Reporting form to the IEAT-MTP (EMCC) in case of emergency	Athit C.

Revision No.:14
Date: 7 June 2021

Copy No.00

Page iv



Star Petroleum Refining
Public Company Limited

EHS-SP-QS-0006: Emergency Response Plan

Revision	Date	Page/ Section	Reason	By
		99/Appendix W	Add Appendix W: Reporting form the MTP-Port (in case of abnormal situation and emergency occur at Port.	
5	1-Sep-14	2/Glossary 8/ 7.0 Communication 11-12 /8.2 Notification &Reporting to stakeholder	Update the EMAG member to be in line with updated EMAG agreement. Identify more area that need to communicate to SPRC family members via all mailboxes to cover the incident occur at adjacent companies. Add the wording of periodically update required to notify to the IEAT-MTP (EMCC) according to level3 exercise recommendation. State a requirement of have to notify to the IEAT-MTP (EMCC) in case of abnormal situations resulting from emergency shutdown that required to notify to the IEAT-MTP (EMCC) within 15 minutes after aware of the Shutdown (refer to the IEAT Notification no67/B.E.2557 announce date 31 July B.E.2557) Update the notification to shareholder (PTT) from the specific name list of PTT executives to the PTT Communication Center which in line with the PTT group emergency and Crisis Management Plan Add new subject “Leak Response Guides Decision” to be use as the guideline of SPRC leak response according to the CVX Leak Response Protocol guide of practice Update the EMAG member to be in line with updated EMAG agreement. Update refinery and marine terminal assembly areas Update pipe line lay out to be in line with service agreement	Athit C.
6	22-Dec-14	All pages 39-47 and 54/ Appendix A 62/Appendix B 78/Appendix C	Change SPRC logo More clearly identified the person to call in of each duty rota member to support Update the alcohol level in blood to be 0mg% Update the mobile phone number of TTLT coordinator	Athit C.

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Revision	Date	Page/ Section	Reason	By
7	1-Sept-15	<p>20/ 10.6 Leak Response Flow Chart</p> <p>26/ 11.4 Emergency Contact Point in case of Neighboring Company Incident</p> <p>44/Appendix A.5.5 EHS Duty</p> <p>50/Appendix A7.Emergency Support Team</p> <p>54/Appendix A11.Historian</p> <p>65/Appendix C</p> <p>103-104/Appendix V/W</p> <p>106/15.Reference List</p>	<p>Update the Leak Response Flow Chart to be reflex the current practice</p> <p>Change the company name from Bayer Thai to Covestro (Thailand)</p> <p>Add role of keep monitoring and tracking of an injured person and head count details (to update to the Duty Team members)</p> <p>Add the wording of the responsibilities will be assigned by Emergency Response Coordinator</p> <p>Identify the roles of Historian to be the Assign Administrative Assistance or Marine Duty (If available/Not the Marine Case) by Duty Manager</p> <p>Update the H2S concentration at fence line from 10 ppm to 5 ppm</p> <p>Update the IEAT and IEAT-MTP Port Abnormal and Incident Notification Form to be in line with the IEAT Emergency Response Plan B.E.2557</p> <p>Change the revision of IEAT-IEAT_MTP port emergency response plan from B.E.2557 to B.E.2558</p>	Athit C.
8	24-Feb-16	<p>10/8.1 Notification Flow Chart</p> <p>11/8.2 Notification and reporting to Stakeholder</p> <p>28/13 Post Incident Review</p> <p>45/ Appendix A Role and Responsibility 5.6 Emergency Response Coordinator (Duty)</p> <p>100/Appendix U Notification to the PTT</p> <p>79, 80, 81 / Appendix C10.Failure of SPRC Trunked Radio system procedures</p>	<p>Take the PTT company out from the stakeholder notification list</p> <p>Indicate the tracking and follow up process of recommendation/feedback received from post incident review.</p> <p>Delete the role and responsibility of ERC Duty to notify the PTT out.</p> <p>Delete the Notification from to PTT out</p> <p>Update content on SPRC Trunked Radio system from old (analog) to new (digital) to reflect the fall back modes on new system implemented</p>	<p>Athit C (QS/3)</p> <p>Soontorn S. (TE/717)</p>

Revision	Date	Page/ Section	Reason	By
9	15-Aug-16	1/1.Purpose & Scope 19/10.5 Leak Response Protocol 20/10.6 Leak Response Flow Chart	Add table of Employee involvement Delete Leak Response Protocol out Update the workflow of Leak Response Flow Chart	Athit C (QS/3)
10	16-Dec-16	43/ Appendix A (Role and Responsibilities) 92/Appendix M Emergency Training and Exercise	add role of EHS (5.5) duty to advise to OSC through IC about suspend the emergency operation when scene atmosphere is IDLH and/or imminent danger condition Add link to the EHS-OT-QS-3005 Emergency Response Training and Exercise Guideline	Athit C (QS/3)
11	28-May-18	Viii / Appendix A	4.0 Changed FIT to ERT 9.0 Changed EST (Back up team) to Emergency Support Team	Bundit V (QS/3)
		Page 2	Changed FIT to ERT	
		4 / Glossary	Changed FIT to ERT Changed FIT-B to ERT or EST Added CMP and CMT	
		21 / 10.5	Deleted note and Leak check list out	
		34	Changed FIT to ERT	
			Role: ERT was reviewed	
		39 / 3.0	Changed FIT to ERT	
		50 / 7.0	EST added wording (Day Staffs)	
			Who: removed off-shift operators out	
			Emergency level 3 → 2, 3	
			FIT changed to ERT	
		53 / 9.0	FIT B revised to EST Operations and revised Responsibilities	
		62 / 17.0	Revised Legal Adviser Responsibility: Removed out “the Treasurer's Unit related to Traders Insurance Policy and /or other”	
		72 / 4.1	FIT changed to ERT	
		77 / 7.0	FIT changed to ERT	
		78 / 8.0	FIT changed to ERT	
		79 / 9.0	Revised: Off Site Road Accidents Involving Product from SPRC	
		95 / Appendix M	Revised Emergency Training and Exercises	
		103 / Appendix U	Updated form	
		104 / Appendix V	Updated form	
		105 / Appendix W	Removed out: APPENDIX W Emergency Response Considerations and Hazard Assessment Checklist for Process Loss of Containment	
		105 / REFERENCE LIST	Removed out: PTT Group Emergency Plan (CP-SSHE-3G-002)	
12	8-Apr-19	2 / 1.0 purpose and scope	Revised: response to the emergency situation by create emergency level 1A / 1B	QS/3
		2 / 3.0 Emergency level	Revised: Emergency level	
		9 / 4.0	Revised: EMERGENCY RESPONSE ORGANISATION OVERVIEW	

Revision	Date	Page/ Section	Reason	By
		8-9 / 5.0	Revised: EMERGENCY RESPONSE DECISION PROCEDURE	
		68 / Appendix C	Action major leak change item evacuation guideline 10.3 to 11.3	
		15-16 / 8.2	Revised emergency level in: Notification and Reporting to Stakeholder	
13	28-Oct-19	7 / 3.0	Revised stage of emergency, Map Ta Phut municipality move to Level 3 of company	QS/3
		15-16 / 8.2	Add inform Certification Body in Level 3	QS/3
14	7 Jun 21	6 / 2 10 / 6 15 / 8.2 29 / 11.3 34 / Appendix A 2 35 / Appendix A 3 35 / Appendix A 4 36 / Appendix A 5 36 / Appendix A 6 38 / Appendix A 7.1 47 / Appendix A 7.6 56 / Appendix A 14 59 / Appendix A 16 83 / Appendix D 2 92 / Appendix H 98 / Appendix R 100 / Appendix S 102 / Appendix U 103 / Appendix V	<ul style="list-style-type: none"> - Changed the Department name of QS & CA - Changed the position of Emergency Response Coordinator to Lead Emergency Management and Fire system specialist to Emergency management Specialist. - Add location of document control and updating on Smart Procedure - update actions on emergency table - Add Thai- MECC agency in Notification and Reporting to Stakeholder. - Changed the contact person to notify PorPor from CA to Emergency Response Coordinator. - Update responsibilities of OSC - Update responsibilities of PU Shift Supervisor - Add position and responsibilities of Emergency Response Team-Leader - Update responsibilities of ERT - Update responsibilities of FTD - Delete specific task "Act as site spoke person". - Update responsibilities of Emergency Response Coordinator (Duty) - Revised communication channel form EOC to REB - Update responsibilities of Staging Officer - Revised the SPRC Assistance to Other Companies and added the flow chart. - Add National Foam Universal Gold 1/3% at Foam Suppliers - Revised number of operation supporter from 4 person to 2 persons - Revised the assembly point. - update the IEAT-MTP Emergency Reporting Form - update the MTP-Port Abnormal situation and Emergency Reporting Form 	QS/3

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1. PURPOSE & SCOPE

Purpose

Star Petroleum Refining Public Company Limited (SPRC) Prepare Emergency Response Plan to provides an integrated approach to the management of all emergencies related to SPRC. This response plan details the action, coordination and resources required for the mitigation of an emergency. In the event of an emergency situation, available resources shall be used to achieve the following, in order of priority;

1. Preservation of human life, health and well-being.
2. Protection of the environment.
3. Protection of Company Assets
4. Render affected areas safe and stable.
5. Restoration of disrupted utilities.
6. Resumption of normal production.

Scope

The emergency response plan covers all SPRC operated locations. It also covers assistance to other parties as requested. Emergencies outside SPRC operated Locations (e.g. pipeline Emergencies) should be coordinated with the IEAT Emergency Response efforts.

The following events would be considered as an emergency:

1. A fire or explosion
2. Serious escape of gaseous, liquid hydrocarbons, and Hazardous Material likely to create health, safety hazards and contamination of environment.
3. Oil Spill.
4. The spilling or spreading of a source of ionizing radiation, or the exposure of personnel to harmful radiation.
5. Any event requiring the evacuation of buildings and other working areas
6. A bomb threat or the discovery of suspicious objects.
7. Any event which may harm the company's reputation

Employee Involvement

Process Activities	Employee Involvement	How	Training/ Competency Assurance of the Involved Employees
Response to the emergency situation			
Emergency Response Level 1A (Emergency Activation)	1) Senior Operator of Area affect 2) Emergency Response Team 3) Incident commander 4) Security Shift Officer	1) Assess the situation that have to mobilize the ERT to response to the incident 2) Communicate via trunk radio (announcement) for the resources need	Pass the required emergency related training according to the EHS Training Requirement
Emergency Response Level 1B (Emergency Activation)	1) Senior Operator of Area affect 2) Incident commander 3) Emergency Response Team 4) Security Shift Officer 5) Duty Team members	1) Assess the situation at the scene that need more resource to handle the incident. 2) Communicate via trunk. 3) Call the Duty team by Security Shift officer (via SMS). ERT/EST by SS	Passed the required emergency related training according to the EHS Training Requirement. Trained the Emergency Response for Duty Rota team
Emergency Response Level 2	1) Senior Operator of Area affect 2) Incident commander 3) Emergency Response Team 4) Security Shift Officer 5) Duty Team members 6) Mutual Aid Team members 7)	1) Assess the situation at the scene that need more resource to handle the incident 2) Communicate via trunk 3) Call the Duty team by Security Shift officer (via SMS). ERT/EST by SS	Passed the required emergency related training according to the EHS Training Requirement. Trained the Emergency Response for Duty Rota team
Emergency Response Level 3	1) Senior Operator of Area affect 2) Incident commander 3) Emergency Response Team 4) Security Shift Officer 5) Duty Team members 6) Mutual Aid Team members	Full scale emergency, which required more resource to be made available from refinery personnel and other Mutual Aid and Activate the Rayong Province Emergency Response Plan	Same as above

Process Activities	Employee Involvement	How	Training/Competency Assurance of the Involved Employees
Notification and Reporting to Stakeholder			
Notification and reporting to stakeholder- Abnormal situation	1) Environmental 2) CA Department 3) Security Shift officer (off-hour)	1) Telephone and IEAT Notification form (within 10 mins-via fax/Email)	Not required
Notification and reporting to stakeholder in case of emergency	1) External affair duty- Relevant authorities and communities 2) Nurse on Duty- Contract hospital 3) ERC Duty-Rayong Province 4) Duty Manager- Shareholder	1) Telephone and IEAT Notification form (within 10 mins-via fax/Email) 2) Telephone 3) E-mail	Not required
Mutual Aid and Assistance to Third Party			
Assistance to SPRC	1) Mutual aid group (EMAG) 2) Shift Security officer 3) On Scene Commander	1) Contact via telephone with resource required by the Security officer 2) Coordinate with the On Scene when arrival	Mutual aid group members
SPRC Assistance to other companies- Agreement Companies	1) Shift Supervisor on duty 2) ER Coordinator or Emergency management specialist.	1) Coordinate via telephone or trunk radio 2) Provide support according to the agreement or under decision of Shift Supervisor if there is any plant constraint	Not required
SPRC Assistance to other companies- Non agreement companies	1) ER Coordinator 2) Duty Manager 3) Shift supervisor on duty 4) Security Shift Officer	1) Coordinate and cooperate via telephone or trunk radio 2) Consider the plant constraint by Shift supervisor on duty 3) Get approval from Duty Manager which propose by the ER Coordinator	Not required

Process Activities	Employee Involvement	How	Training/Competency Assurance of the Involved Employees
Emergency Exercise			
Set up yearly ER master plan	Emergency Management Specialist and Area owner (PUs Process instructors)	Review; • Shift work schedule • Incident in the past (internal/External) • Past exercise scenario	Work position (Seniors) and exercise
Exercise master plan review and endorsement	QS/3, PUs Shift Supervisor and Area owner	E-Mail (circulation feedback)	Note required See details in the Emergency Response Exercise Guidance (EHS-OT-QS-3005)
Exercise preparation	Emergency Management Specialist	Meet with area owner for the scenario	Not required
Conduct the exercise and report the result	Emergency Management Specialist and Emergency Response Team	Table top exercise and field exercise	Not required
Post review	QS/3 Team and emergency response team	Evaluation and post exercise review meeting	Not required
Record keeping & Follow up	Emergency Management Specialist and whom may concern	Follow up meeting/Email (Exercise report form)	Not required
Fire Fighting Equipment Inspection Master Plan			
Set up yearly Fire Fighting Equipment Inspection	Emergency Management Specialist and fire service contractor	Review the past inspection record and schedule Applicable requirement (procedure/legal)	Education back ground/Experience on fire inspection/testing (Contractor)
Inspection master plan review	QS/3, Emergency Management Specialist, Supervisor and Area owner	E-Mail (circulation feedback)	Not required
Conduct the inspection and testing	Emergency Management Specialist, Area owner and fire service contractor	Field audit and inspection	Education back ground/Experience on fire inspection/testing (Contractor)
Record keeping & Follow up	Emergency Management Specialist and whom may concern	Follow up meeting/Report/E-mail	Not required

GLOSSARY

The following terms are used throughout the Emergency Response Plan and have the meanings given below:

Alarm	There are 3 emergency alarm levels for both sites as follow; Level 1 Wail tone for 15 second follow by announcement. Level 2 Second Wail Tone for 15 second Level 3 Third Wail Tone for 15 second All clear 15 seconds of Steady Tone
CCB	Central Control Building is located at PN
EMAG	Emergency Mutual Aid Group, including 9 companies (13 Units) in IEAT-MTP area. There are SPRC, PTTGC-6, PTTGC-2, PTTGC-3, PTTGC-4, PTTGC-5, ROC, TPE, VNT, <u>Covestro (Thailand)</u> , PTT (Gas Separation Plant), IRPC and MOC.
Emergency	A situation in which fire, explosion, Material damage, Destruction, or other circumstances threaten human life, the refinery's operation, company assets, business or environment.
EOC	Emergency Operation Centre
ERP	Emergency Response Plan.
ERC	Emergency Response Coordinator
ERT	Emergency Response Team
EST	Emergency Support Team
FIT	First Intervention Team
IC	Incident Commander
IEAT	Industrial Estate Authority of Thailand
IEAT-MTP	Map Ta Phut Industrial Estate Authority of Thailand
MC	Mutual aid Coordinator
MCB	Marine Control Building
MTP Fire brigades	Map Ta Phut Fire Brigade
OSC	On Scene Commander
PN	Production Unit
PD	The areas of Tank Farm and TTLT
RSO	Radiation Safety Officer
TTLT	Tank Truck Loading Terminal
CMP	Crisis Management Plan
CMT	Crisis Management Team
THAI MECC	Thai Maritime Enforcement Command Center

2. DOCUMENT CONTROL AND UPDATING

Controlled copies of the Emergency Response Plan are documented and maintained in the following locations:

- SMART PROCEDURE
- EDMS
- Holders at various locations (see distribution list page I).

The Emergency Response Coordinator reviews the Emergency Response Plan when there are substantial changes in the document. The Emergency Response Coordinator controls the Emergency Response Plan by:

- Maintaining controlled copies of the Plan in EDMS
- Revising the Plan to comply with the changes in documentation
- Notifying the revision of the Plan to all duty team and distribute controlled revised copies to the holders.

3. EMERGENCY LEVEL

State of Emergency

This section defines the levels of emergency and the resources required for emergency situations of increasing severity.

The following levels of emergency have been defined;

Level 1A

An emergency, which can be handled by personnel available already on site and requires no additional resources to be called in.

Level 1B

An emergency, which will require some additional resources to those currently available in the refinery. This would be the SPRC Duty Rota Team, ERT or EST Team

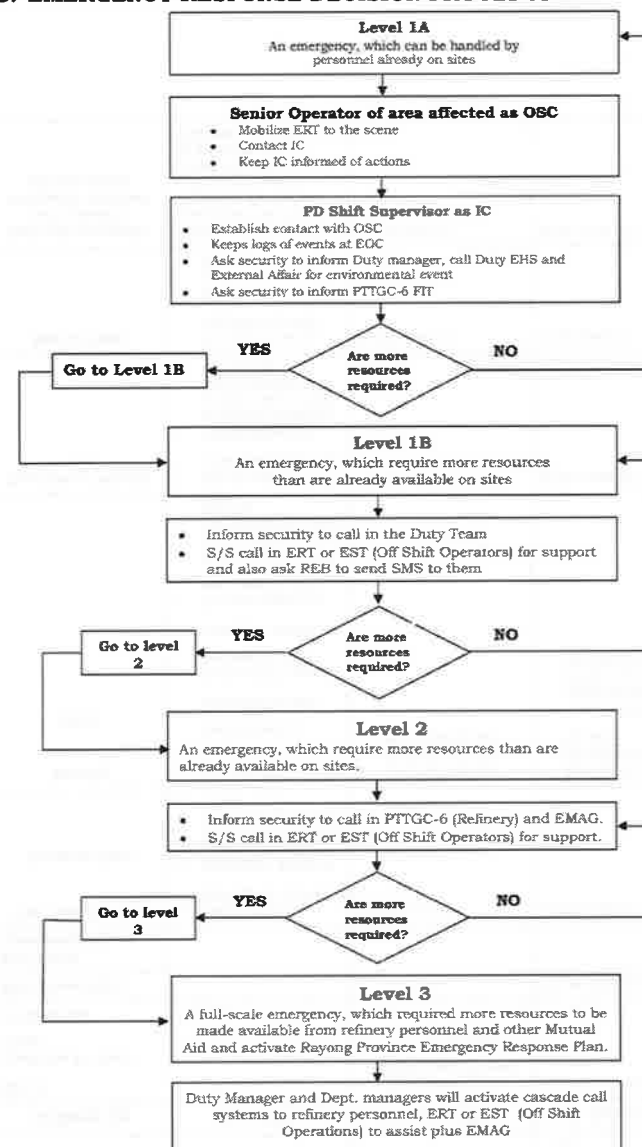
Level 2

An emergency, which will require some additional resources more than SPRC team. This would be the third-party mutual aid teams (EMAG,)

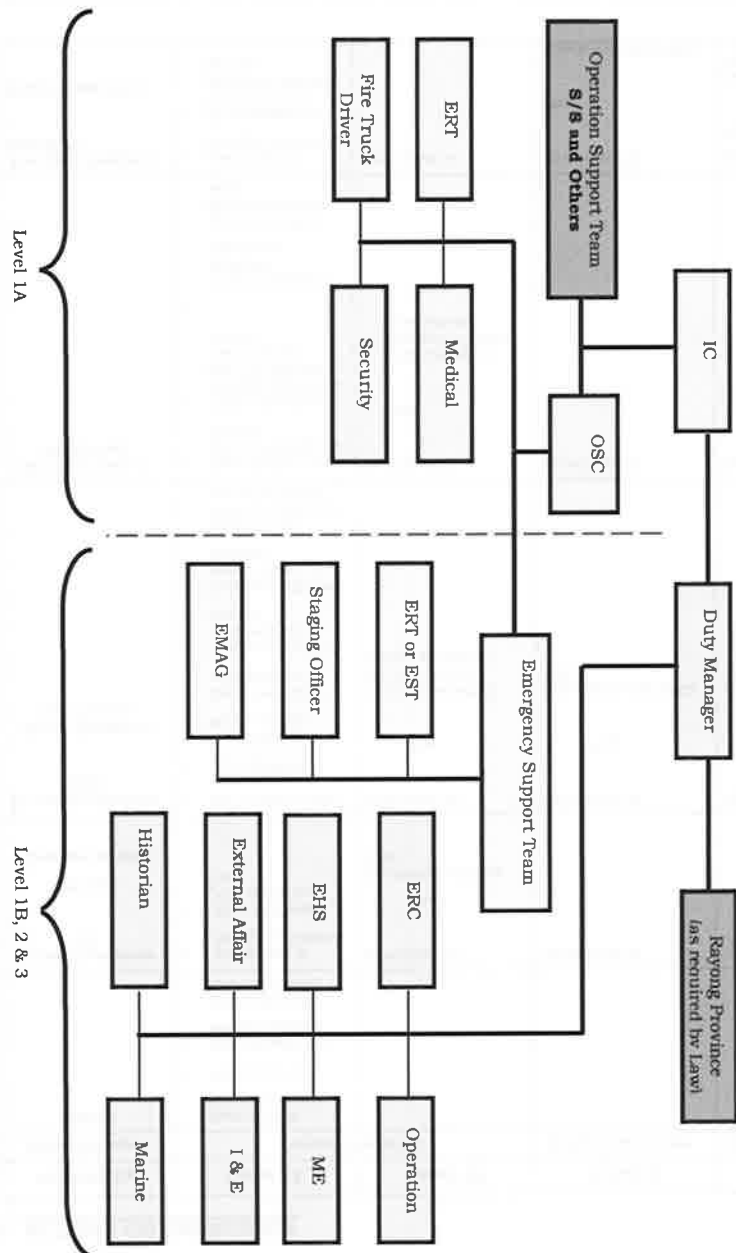
Level 3

A full-scale emergency which requires further resources to be made available from company personnel, other mutual aid teams, Map Ta Phut municipality and Rayong Province support team.

5. EMERGENCY RESPONSE DECISION PROCEDURE



4. EMERGENCY RESPONSE ORGANISATION OVERVIEW



6. ACTIONS ON EMERGENCY

Actions by	Level 1A	Level 1B	Level 2	Level 3
Authority to signal	Anyone in the refinery		On Scene Commander	On Scene Commander
Observer	<ul style="list-style-type: none"> Radio by Push emergency button. Telephone 7191 Give the name and position, company. Give location and nature of incident. 			
Incident Commander (IC) (PD Shift Supervisor on shift)	<ul style="list-style-type: none"> Switch radio to Emergency Channel Go immediately to EOC and assume as IC 	As for Level 1A Plus Coordinated with Duty Team	As for Level 1B	As for Level 1B
On Scene Commander (OSC) (Senior Operator of area affected)	<ul style="list-style-type: none"> Ask for ERT by radio Go immediately to the scene of the incident and assume the role of OSC. Set up the forward command post. Communicate with IC on Emergency channel. Cooperate with board man for plant condition Supervise ERT leader to control and secure the incident 	As for Level 1A Plus Communicate with IC who is at EOC on Emergency channel	As for Level 1B Plus Coordinated with EMAG-OSC	As for Level 2 Plus Coordinated with EMAG-OSC, Government-OSC
Shift Supervisor of affected area	<ul style="list-style-type: none"> Switch Radio to Area channel / Emergency Channel Make a decision unit shutdown agreement with OSC followed Leak response protocol. Control Emergency Shutdown procedures Consider to inform Off shift operator to aware 	As for Level 1A Plus Call in off shift to support ERT, shut down activity	As for Level 1B	As for Level 1B
Emergency Response Team (ERT) (Assigned operators)	<ul style="list-style-type: none"> Switch radio to Emergency Channel Go immediately to the scene of the incident as directed by OSC. 	As for Level 1A	As for Level 1B Plus Coordinated with EMAG-	As for Level 2 Plus Coordinated with EMAG-Government agency

Actions by	Level 1A	Level 1B	Level 2	Level 3
ERT-B Level One B / Two / Three Off Shift Ops.		<ul style="list-style-type: none"> Get together at Fire Station and get ready to go to the scene as requested by OSC. 	As for Level 1B	As for Level 2
ERT-B from EMAG			Report at Staging area	
ERT-B from Government agency				Report at Staging area
Fire Truck Operator (Assigned Ops.)	<ul style="list-style-type: none"> Switch radio to Emergency Channel Nominated drivers to take the fire truck to the scene of incident as requested by OSC 	As for Level 1A	As for Level 1A	As for Level 1A
Security (REB)	<ul style="list-style-type: none"> Activate the Emergency Alert System as requested by OSC Call out ERT team, if required by OSC. Alert ERT EMAG Provide support as requested by OSC SMS to Duty Team and all off shift operator to alert and stand by 	<ul style="list-style-type: none"> Call in duty teams and Mutual Aid team requested by OSC. 	<ul style="list-style-type: none"> Activate the Emergency Alert System Call the refinery personnel and mutual aid team as requested by OSC 	<ul style="list-style-type: none"> As for Level 2 Activate the Emergency Alert System
Panel man of affected area	<ul style="list-style-type: none"> Monitor operation of units from CCB. Initiate emergency shutdown procedure as instructed by Shift Sup./ Operation Procedures. 	As for Level 1A	As for Level 1A	As for Level 1A
Medical Team	<ul style="list-style-type: none"> Provide first aid as requested by OSC. Evacuate by ambulance as needed. 	As for Level 1A	As for Level 1A	As for Level 1A
Staff and contractors not involved in emergency response and operations.	Personnel in All operational area must proceed to the nearest safe assembly point, unless directed otherwise by the emergency response team.	As for Level 1A	As for Level 1A	As for Level 1A

7. COMMUNICATION METHODS

Communication to all SPRC personnel and contractor

Emergency situation will be communicated to all personnel by using an Emergency Alarm. There are 3 emergency alarm levels as follow:

- Level 1** **Wail Tone for 15 second follows by Public Announcement by REB**
- Level 2** **Second Wail Tone for 15 second follows by Public Announcement by REB**
- Level 3** **Third Wail Tone for 15 second follows by Public Announcement by REB**
- All Clear** **Stead Tone for 15 second follows by Public Announcement by REB**

- ♦♦ The communication of an emergency level 1, 2 and level 3 or incident which has significant impact on operation or affect public will be emailed to all SPRC personnel by Duty Manager within 24 hours, which is a similar information reported to Shareholders.
- ♦♦ In the event of Emergency form Neighboring Companies, **which affects SPRC** such as toxic gas release, or incident that occur with the adjacent neighboring company. The communication to all SPRC personnel will be made by using Public Announcement **immediately** after becoming aware of the incident. After that, the Duty Manager will communicate the incident information by email to all SPRC personnel as soon as the information is available, but no later than 24 hours

Communications to related Emergency Response Parties will be by following methods.

Groups	Communications
On Site OSC and ERT Incident Commander Shift Supervisor Security Shift Officer Operations Medical Centre All other Group	Radio: Emergency Channel. Messengers Radio: Emergency Channel Messengers Radio: Normal Channel for Operation/ Emergency Channel Radio: EHS Channel / Emergency Channel Phone: 7090, 7191 Radio: Normal Channel for Operations Radio: EHS Channel / Emergency Channel Phone: 7777 Telephones, Messengers
Call In Duty Rota Team ERT & EST-B - Level 1B, 2, 3 On Shift Operations from other area EMAG Government Agency All other SPRC Personnel Mutual Aid	Short Message Service (SMS) and following by mobile and/or home phone to ensure that the duty team members are acknowledged. Level 1B, 2, 3 : Telephone by Shift Supervisor as priority and back up by SMS sending from REB Level 2: Trunk and Hotline via Security REB Level 3: Telephone via Security REB Telephone by Cascade calling system (It is responsibility of Dept. Managers or their duty persons to call their own staff) Telephones (refer to Appendix P: Emergency Telephone Numbers)
Short Message Service (SMS) Codes	FYI, Emergency Level 1A at.... (Location) 2222 Level 1B Emergency goes to EOC immediately. 2222 M Level 2 Marine Emergency goes to MCB immediately 3333 Level 3 Emergency goes to EOC immediately. 3333 M Level 3 Marine Emergency goes to MCB immediately 9999 Emergency group test, phone 038 699090 0000 All Clear.

All other radio communication must be kept to minimum and only use for URGENT messages.

Situations	Notified By	Stakeholders	Contact channels
Abnormal situation; - Sound from abnormal operation - Light and Heat from flare - Nuisance smell	On-Hour: Environmental Specialist	IEAT-MTP (EMCC)	Duty phone: 081-732-3485, Phone:038-683933 Hotline: 1504, Trunk: EMCC Channel Fax: 038-685756 Email emcc.ieat@gmail.com
	Off-Hour: SSO	MTP Municipality	Phone: 038-685191 Radio:162.550 MHz
	CA Department	Communities	Defined in External Contact List (AM-OT-CA-012)
	On-Hour: CA Department Off-Hour : SSO	Companies	Defined in External Contact List (AM-OT-CA-012)
Emergency Level 1A, 1B	Same as abnormal situation which could impact internal and external environment, community and neighboring company.		
Emergency Level 2, 3	External Affair Duty	IEAT-MTP (ECC)	Duty phone: 081-732-3485, Phone:038-683933 Hotline: 1504, Trunk: EMCC Channel Email emcc.ieat@gmail.com Fax: 038-685756 (refer to IEAT-MTP Reporting Form Appendix U)
		MTP Municipality	Phone: 038-685191, Radio:162.550 MHz
		MTP Port	Phone: 038-683305-8, Fax:038-683309 (refer to MTP-Port Reporting form Appendix V)
		Communities/Companies	Defined in External Contract List (AM-OT-CA-012)
		Thai MECC (In case of Oil Spill)	Phone 095-5620506
	Nurse on Duty	Contract Hospital	Defined in Emergency Telephone Number (EHS-OT-QS-3003)
	ERC Duty	Rayong Province	PorPor Rayong 089-9696765 Rayong Welfare 065-5078682 Email rayong@labour.mail.go.th
	Duty Manager	Shareholder (CVX)	If require assistance contact to Chevron Emergency Information Center : (+1)-510-231-0623
		Shareholders (BOD)	Draft the notification for CE to send to Board of Directors (BOD)(1).
		CB Certification Body	Ms. Pavinee Sittikomkul (Operation Manager) SGS (Thailand) Limited, Certification and Business Enhancement, Tel. +66 2 6781813 Ext. 2065 Email: pavinee.sittikomkul@sgs.com
		SPRC staff (All)	By e-mail

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		Mailboxes)	
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Note;**(1) Using of notification template;**

1. I am required to notify you of an incident that occurred on (date) at (time) at (location).
2. One sentence description of incident
3. One sentence description of impact
4. One or two additional paragraphs should address authorities notified, other organizations involved, current status, and current actions being taken.
5. Close with the identity of the individual sending the notification, the reporting unit, and contact information for follow-up questions including cell or home phone numbers.
6. Any additional detail, if desired, can be in attachments.

8.2.1 Labor law (Safety Occupational Health and Working Environment Act (B.E2554))

In case of Hazardous chemical release or fire or explosion, the following actions are required;

- 1) In case of the incident resulting to fatality case, shall notify to the department of Labor Protection and Welfare (Rayong) via telephone, fax or other channel immediately and formal letter within 7 days.
- 2) In case of the incident resulting to operation shutdown or cause injury from both fire or explosion, shall notify to the department of Labor Protection and Welfare (Rayong) via telephone, fax or other channel immediately and formal letter within 7 days.

The formal letter shall comply with the notification of Department of Labor Protection and Welfare (refer to Appendix T- The Reporting Form to the Labor Protection and Welfare)

8.2.2 Factory Law (B.E. 1992)

It is required that any incident which cause fatality or lost time injury or illness (> 72 working hours lost) or cause operation shutdown (> 7 days) be reported in a letter to Ministry of industry Officers (Rayong Industrial Work Office) within 3 days

In case of Radiation incident shall immediately inform to the Ministry of Industry when become aware of an incident.

8.2.3 EIA Mitigation Measures

In any situation which could impact environment will notify to Office of Natural Resource and Environment Policy and Planning and the Office of Natural Resource and Environment Rayong.

8.2.4 Radiation Safety Law (Ministry Regulation B.E.2550, Permission of Radiation)

In case of radiation incident resulting leak of radiation source, the company Radiation Safety Officer (RSO) shall notify to the Office of Atomic For Peach immediately.

9. CRISIS MANAGEMENT AND BUSINESS CONTINUITY PLAN**9.1 Objective**

SPRC Crisis Management and Business Continuity Plan is aimed to provide a management process in order to strategically plan, direct and coordinate all actions and responses to reduce impact of crisis on people, environment and company business and reputation

The plan is developed to respond the crisis in a timely and coordinated manner to support the SPRC Emergency Response plan; and manage crisis to ensure business continuity

Note:

Crisis: Any incident that poses an actual or potential threat to SPRC's long-term ability to do business due to impact on its reputation and standing, legal and financial liabilities and ability to operate

9.2 Activation and Deactivation of SPRC-CMP**9.2.1 Activation**

Duty Manager with the consultation with Chief Executive Officer, will partially or fully activate SPRC-CMP depending on the necessary management efforts required for such crisis.

9.2.2 Deactivation

Duty Manager will deactivate the SPRC-CMP when he feel that all issues are addressed to the extent that the incident is no longer a threat to health, to safety and the environment; and there is no significant on the image of SPRC and Shareholders.

9.3 SPRC Crisis Management Team (CMT)

All Leadership Team Members (LT) are the member of the team. When SPRC-CMP is activated, the team will be met at M-226 Board.

9.4 Roles & Responsibilities of SPRC Crisis Management Team

The scope and extent of crisis management tactical and strategic actions carried out by the SPRC-CMT will depend on the nature and potential or actual consequences of the incident

In general terms, the SPRC CMT is to:

- ◆ Provide technical, logistic, legal, human resources, corporate affairs and financial support and assistance to the emergency response and management efforts.
- ◆ Identify the short and long-term strategic implications of the incident for the operability, image and commercial position of SPRC business.

- ♦ Develop, resource and action appropriate strategies to limit potentially adverse consequences to the business arising from the incident.
- ♦ Provide information and recommendations on incident related policy and strategic issues to the Shareholders.
- ♦ Develop and implement a long-term recovery plan.

Individual SPRC CMT members have specific responsibilities. Overall, the SPRC CMT is responsible for minimizing impacts and managing a rapid recovery by:

- ♦ On activation, establishing and assessing the situation caused by the incident and the initial effects on personnel and operations. Investigating all other facets of the incident: technical, financial, human resources, legal, corporate affairs, commercial and business.
- ♦ Identifying and analysing the short and long-term strategic implications of the incident for the operability, image and commercial position of the SPRC business.
- ♦ Establishing and maintaining coordinated and secure communications links with the affected entity and the Shareholders (if activated);
- ♦ Developing, resourcing and implementing appropriate tactics and strategies to limit potentially adverse consequences to the business arising from the incident, particularly those concerning in-country media, government and other public affairs matters.
- ♦ Liaising with the Emergency Response Organization; providing tactical and strategic support and monitoring that local emergency response efforts to follow the policies and strategies for managing the incident established by the SPRC CMT.
- ♦ Identifying other stakeholders and the consequences for them.
- ♦ Developing and coordinating a strategy to effectively manage internal and external communication flows; including those with stakeholders such as shareholders, customers, contractors and suppliers.
- ♦ Providing support to SPRC personnel and next of kin on all matters.
- ♦ Information management and security; and sharing within the team information accumulated during interactions with the affected entity and other stakeholders.
- ♦ Collecting, collating and securing all documentation related to the incident, which is generated by the SPRC CMT and support activities.
- ♦ Supporting in the planning and implementation of the recovery phase.

Preparation of post-incident reports assessing the effectiveness of the SPRC CMT's response and the institution of procedural (or other) Changes in the SPRC Emergency Response Plan, if necessary.

9.5 Schedule of Authority

The schedule of authority prescribes the approval limits for SPRC-CMT members who can approve cash and credit purchases during the crisis. This is in accordance with the Manual of Delegated Authorities (MODA).

10. Leak Response Guides Decision

10.1 Objective

This Leak Response Protocol attempts to mitigate risk in responding to leaks by providing additional guidance to Operations and bringing standardization to leak response decision-making.

10.2 Scope and Definition

A "leak" is defined as an unexpected loss of primary containment which has a potential to have a negative impact on operations, the safety of employees, and/or the environment.

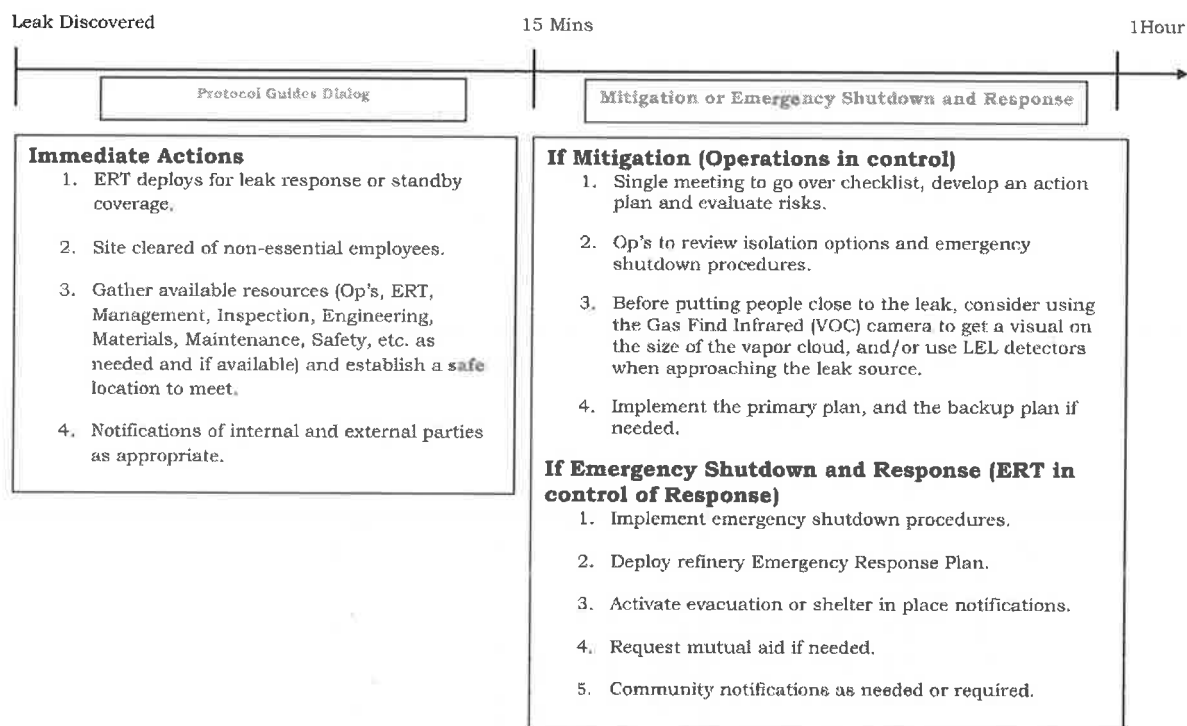
Incidental releases of hazardous substances where the substance can be absorbed, neutralized, or otherwise controlled at the time of release by employees in the immediate release area, or by maintenance personnel, are not included.

10.3 Overview

If there is any doubt about what to do, shut down the plant or move it to a safe condition.

If there is no time to review options, shut down the plant or move it to a safe condition. In some cases it may not be immediately clear what action should be taken to best protect people, the plant and the environment. If there is time to review options, get all available parties together in a meeting so all issues and concerns can be considered. After all the inputs have been gathered, develop an action plan, make sure it is clearly communicated to everyone involved, and then move forward to implement it. Utilize the Leak Response Protocol and Leak Response Flow Chart to guide the decision-making.

10.4 Leak Response Timeline

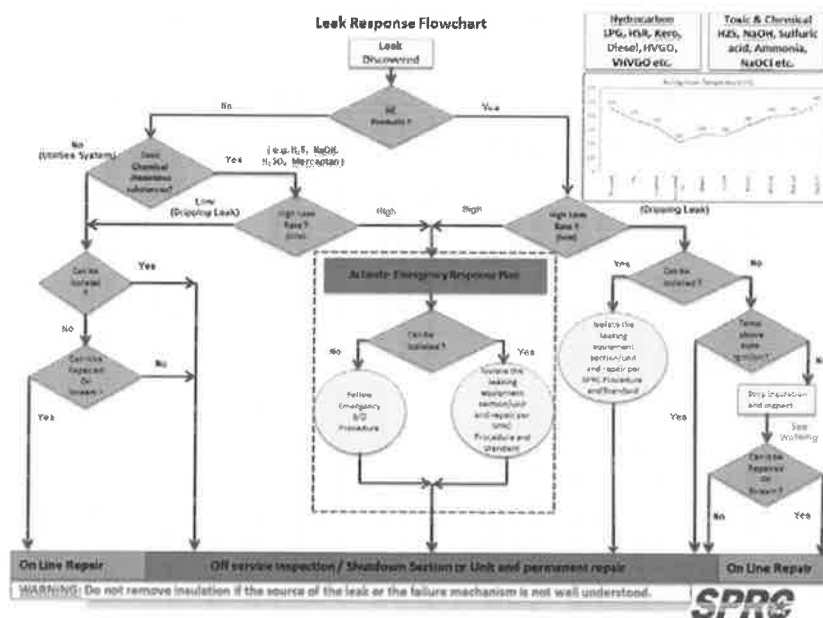


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10.5 Leak Response Flow Chart



More details about the Leak Response Protocol is refer to EHS-WI-QS-3013_Leak Response Protocol [EHS-WI-QS-3013 Leak Response Protocol](#)

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11. EVACUATION PROCEDURES

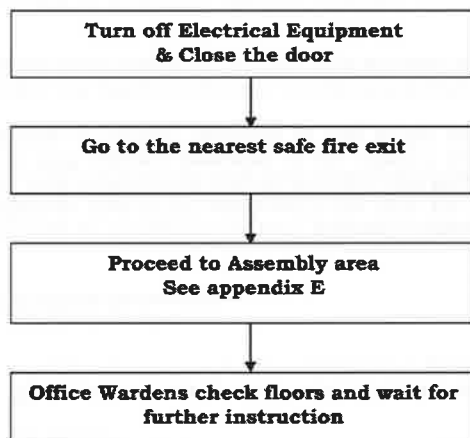
11.1 In case of Fire:

11.1.1 Actions for Building Evacuation in case of Fire in Building

1. Pull the fire alarm switch or break the fire break glass
2. Calling Security Office at 7191 to state your name and location of the fire
3. Extinguish the fire if you have had fire training and you think you can do
4. Switch off electrical equipment if time permit and close the door (do not lock)
5. Evacuate from the building by using the nearest fire exit
6. Proceed to assembly area, report to your Office Warden and wait for further instruction

Do not stay away or re-enter a building prior receiving the advice from Office Warden or Public Announcement made by REB

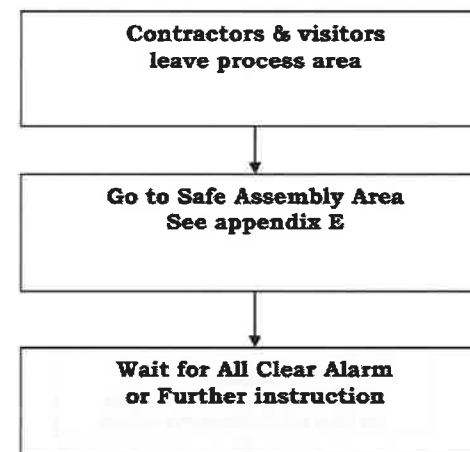
Action on Building Fire Alarm



11.1.2 Actions for Other Working Areas Evacuation in case of Fire in other working area

1. The personnel in the area of the alarm, who are not essential to emergency response or operations, must immediately stop work and go to the nearest safe emergency assembly area.
2. Evacuations must take place across wind away from fire incident.
3. It is the responsibility of the supervisors to account for their own personnel.
4. Personnel must remain at the assembly area until the " All Clear " has been sounded, or unless directed otherwise by emergency personnel.

Action on Refinery Alarm



11.2 In case of Smell or Toxic Gas Leak:

(from both SPRC internal incident and Neighboring Company Incident)

In the event of emergency caused by the smell or toxic gas leak from both SPRC internal source and neighboring company, which affects to personnel in SPRC premises, the incident can be classified into 2 levels;

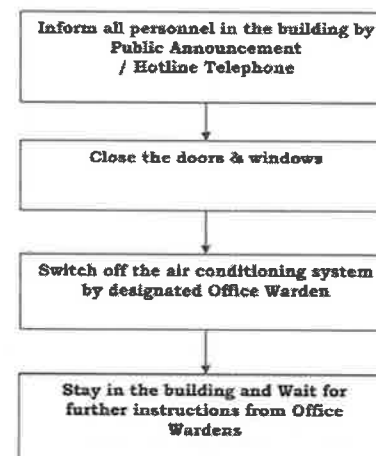
- Level 1** Only information of incident, do not need evacuation of the personnel.
- Level 2** The incident becomes more serious and the personnel on the affected area need to be either sheltered-in-place or evacuated.

11.2.1 Actions for Building Occupants**LEVEL 1**

- On 1) receiving an emergency call from incident's company or IEAT-MTP or 2) notification from SPRC personnel in the field, the Security at REB will inform Shift Supervisor of affected area and Duty Manager
- Security at REB informs personnel in the affected building by Public Announcement or Hotline Telephone to stay in the building – Do Not Panic.
- Office Warden will prepare evacuation in case of evacuation needed.
- Office Warden keeps update on situation until situation is back to normal.

LEVEL 2

- On 1) receiving an emergency call from incident's company or IEAT-MTP or 2) notification from SPRC personnel in the field or, 3) detecting the smell inside the building, the Security at REB will inform Shift Supervisor of affected building(s) and Duty Manager. **Then, activate Emergency Level 2**
- Security at REB will inform personnel in the affected building by Public Announcement or Hotline Telephone.
- Shift Supervisor of affected area will assign Senior Operator to be OSC.
- OSC will cooperate with Office Warden to respond the incident either Shelter-In-Place or evacuate the personnel in the building to the safe assembly area depending on the situation.
- OSC will be informed of the current situation via Security at all time until the situation is back to normal.

Action Steps

11.2.2 Actions for Personnel in Other Working Areas

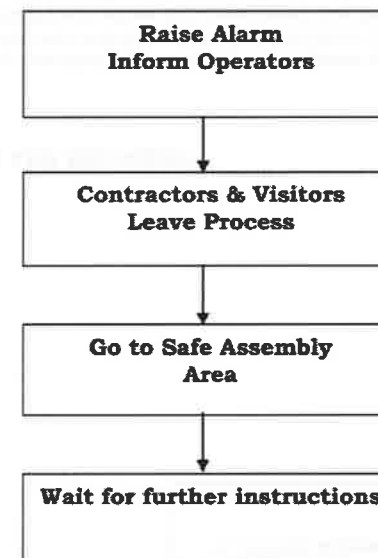
LEVEL 1

- On 1) receiving an emergency call from incident's company or IEAT-MTP or 2) notification from SPRC personnel in the field, the Security at REB will inform Shift Supervisor of affected area and Duty Manager
- Shift Supervisor will consider the action according to the information provided.
- Shift Supervisor will prepare evacuation in case of evacuation needed.
- Shift Supervisor keeps update on situation until situation is back to normal.

LEVEL 2

- On 1) receiving an emergency call from incident's company or IEAT-MTP or 2) notification from SPRC personnel in the field, the Security at REB will inform Shift Supervisor of affected area(s) and Duty Manager. **Then, activate Emergency Level 2**
- Shift Supervisor will assign Senior Operator to be OSC.
- OSC will evacuate the personnel of the affected areas to the safe assembly areas. Evacuation must take place across the wind direction.
- OSC will assign the operators with SCBA to the unsafe assembly areas in order to direct the people to the safe assembly areas
- OSC will be informed of the current situation via Security at all time until the situation is back to normal.

Action Steps



11.3 Neighbouring Community/Company Notification

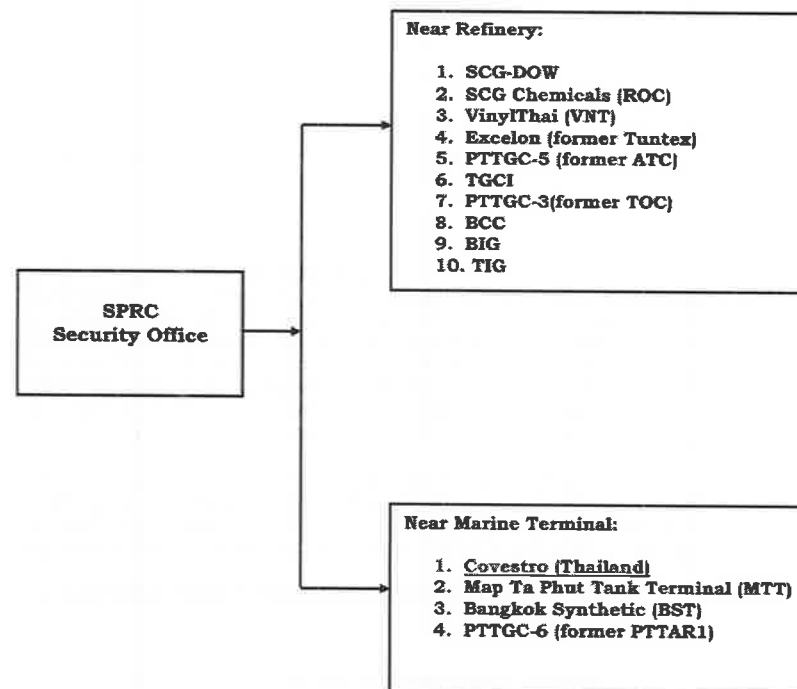
When emergency and abnormal situation which could effect to neighboring community /company, SPRC shall notify to the community leader or his deputy and company contact person refer to External Contact List (AM-OT-CA-012) for early aware refer to 8.2 Notification and Reporting to Stakeholder.

When a community evacuation is recommended, Map Ta Phut Fire Department and the Rayong Disaster Prevention and Mitigation office (PorPor) will be notified by Emergency Response Coordinator during on hours and Shift Security Officer during off hour. The Map Ta Phut Fire Department and the Rayong Disaster Prevention and Mitigation office (PorPor) will provide evacuation information. The Rayong Disaster Prevention and Mitigation office (PorPor) will then supervise the community evacuation with liaison with local police officials. **The Provincial Emergency Response Plan has to be activated.**

11.4 Emergency Contact Points In Case of Neighbouring Company Incident

(Smell or Toxic Gas Release Incident)

Below is the list of companies which have a possibility to affect SPRC once their operation upset.



12. DEACTIVATION AND RECOVERY

12.1 Deactivation

The authority for deactivating an emergency response is vested in the On-Scene Commander who will consult with the Incident Commander. Deactivation should begin when it is considered that the emergency has been contained, and satisfactorily overcome in all respects.

The activities and procedures which must be undertaken to **recover** from an emergency incident includes, but is 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 cleanup materials, replacement parts).
- ☐ The returning of equipment to outside contractors and mutual aid organizations.
- ☐ The accounting for all expenses incurred as a result of the incident.
- ☐ The filing of insurance claims
- ☐ Preparation and dispatch of final reports to relevant Shareholders, Government and local authorities.

12.2 Re-commissioning

Before re-commissioning plant or equipment which may have been involved in the emergency or affected by it, a thorough and detailed inspection must be carried out to ensure that the integrity of equipment has not been adversely affected.

12.3 Incident Investigation

It is the responsibility of the next level of management above the On-Scene Commander to designate the team responsible for performing the appropriate incident investigation. All incidents, which have resulted in the activation of an emergency response, must be investigated.



NOTE: Part of the incident investigation must be devoted to a critique of the emergency response itself. Detailed recommendations for improvements to the Emergency Response Plan and/or to Contingency Plans should be made.

13. POST INCIDENT REVIEW

The Company requires that a post-incident review be conducted to examine the Company's response to the emergency incident.

The Incident Commander or the On-Scene Commander shall convene the review within forty-eight hours of the Incident conclusion. Those attending shall include the Manager Process Safety & QEHS, Emergency Response Coordinator, and all employees who participated in the incident. Minutes shall be kept. The review shall determine:

- ☐ Were employees properly informed of Company procedures?
- ☐ Did employees respond according to Company procedures?
- ☐ Were employee's responses timely?
- ☐ Are the procedures adequate?
- ☐ What problems were encountered during the response activities?
- ☐ What improvements can be made?
- ☐ How can similar events be avoided in the future?

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

All recommendation and feedback received from the post incident review shall be tracked and follow up by Emergency Response Coordinator. The status update of the action items shall kept in the share drive and communicate to all duty rota members. However, the update status of the actions shall be updated at least 2 times/year by incorporating with the exercise feedback highlight update and sharing.

14. APPENDIX

APPENDIX A ROLES AND RESPONSIBILITIES

1. Incident Commander (IC)**Who:** PD Shift Supervisor on shift**Report to:** Duty manager**Location:** EOC (Fire Station)**Emergency level:** 1A, 1B, 2, 3**Roles:** To control all activities during emergency**Responsibilities:** On receiving the emergency alarm:

- ☐ Switch radio to emergency channel
- ☐ Inform PU manager of affected area
- ☐ Set up contact with OSC and inform Security Shift Officer
- ☐ Ensure that the ERT on duty are the person who fit for duty
- ☐ Initiate site head count (Reference Appendix F)
- ☐ Organize and control all activities in the EOC until the Duty Manager arrives.
- ☐ Ensure a log is kept of all activities.
- ☐ Decide with OSC the level of emergency, and initiate call-in.
- ☐ Receive situation reports from the OSC and take appropriate actions.
- ☐ If needed ensure that the fire pump has started and that the fire panel is monitored.
- ☐ Liaise with outside 3rd parties until the communications team is formed.
- ☐ Contact other companies who may be affected by the incident.
- ☐ Arrange for refreshments to be delivered to the incident scene via the EOC Team.
- ☐ Provide regular situation reports to all relevant groups via telephone or messenger.
- ☐ Arrange for relief teams to be sent to the incident scene as required.
- ☐ For external requests for assistance from Mutual Aid Partners, determine if possible to assist and provide Fire Truck driver as circumstance warrant.

The PD Shift Supervisor shall notify Duty Manager, Production Unit manager of affected areas, EHS and External Affairs duty persons if the following incidents occur:

- Injuries requiring hospitalization (transfer to a hospital).
- Oil Pollution.
- Air Pollution.

2. On Scene Commander (OSC)**Who:** Senior Operator of area affected / EST (G/H)**Report to:** Incident Commander**Location:** At the scene of the incident.**Emergency Level:** 1A, 1B, 2, 3**Roles:** To control all activities at the scene of incident.**Responsibilities:** On receiving the emergency alarm;

- ☐ Go to incident scene immediately and consider activate the emergency level.
- ☐ Switch to Emergency channel.
- ☐ Set up a command point (OSC Vehicle) at a safe location, wearing the Full Fire bunker gear, OSC helmet.
- ☐ Assigned the operator drive the OSC vehicle to command post.
- ☐ Establish radio contact with the Incident Commander (IC) and supply situation reports.
- ☐ Account for all personnel at the scene of the incident.
- ☐ Scenario **briefing and setup** the strategy, tactics, resources to all responders prior go to the **incident scene**.
- ☐ Assigned the responder record the SCBA & incident log at the OSC vehicle.
- ☐ Control all rescue and first aid activities at the scene of the incident.
- ☐ Apply Leak Response Protocol for unit shutdown.
- ☐ Asked agreement from Shift Supervisor for unit shutdown.
- ☐ Cooperated with boardman for plant condition and emergency shutdown.
- ☐ Establish casualty control area when required.
- ☐ Considered raise or reduce an emergency level
- ☐ Assess the situation is safe for responding, if the situation is raised to high risk must command ERT-Leader to retract to a safe location.
- ☐ Assigned 2 ERT Leader to lead response the situation (1 person from PN and 1 person from PD)
- ☐ Liaise with mutual aid focal point person when called.
- ☐ Set up Hot Zone and assure personnel have proper PPE
- ☐ Required the HAZMAT Suit in case of toxic/hazardous substance spill/leakage.
- ☐ Request ambulance if needed and arrange for casualty treatment and evacuation.
- ☐ Deactivate the emergency when it is considered that the emergency has been contained, and satisfactorily overcome in all respects with consult IC

Remark the OSC who passed the area cross-training must have well the knowledge of Unit Isolation, Unit Shutdown, and Start-up.

3. Production Unit Shift Supervisor of affected area

Who: Shift Supervisor of affected area on shift

Report to: Incident Commander

Location: CCB or the scene of incident

Emergency Level: 1A, 1B, 2, 3

Role: To control overall plant operation.

Responsibilities:

- ☐ Switch radio to emergency channel
- ☐ Coordinate with IC and OSC
- ☐ Make decision with OSC on plant emergency operation such as shutdown the unit, bypass equipment followed Leak response Protocol
- ☐ Back up IC or OSC
- ☐ Ensure sufficient manpower available, call extra operators if required.

4. Emergency Response Team Leader (ERT-Leader)

Who: 2 persons Assigned by OSC (1 from PN & 1 from PD)

Report to: On Scene Commander

Location: At the scene of the incident.

Emergency Level: 1A, 1B, 2, 3

Roles: Front line Responder at the scene

Responsibilities: On receiving the emergency alarm;

- ☐ Switch radio to Emergency channel.
- ☐ Go to incident scene and report to OSC.
- ☐ Response the incident as directed by the OSC.
- ☐ Control the ERT followed OSC's mission, objectives, and strategy.
- ☐ Keep feedback communication of situation and mission to OSC
- ☐ Ensure all the ERT are safe during response.
- ☐ Ask resources support to achieve the mission, strategy.
- ☐ Assess the situation is safe for responding, if the situation is raised to high risk must command ERT to retract to a safe location.
- ☐ Required the HAZMAT Suit in case of toxic/hazardous substance spill/leakage.

5. Emergency Response Team (ERT)

Who: Nominated on shift operators

Report to: Emergency Response Team Leader

Location: At the scene of the incident.

Emergency Level: 1A, 1B, 2, 3

Roles: Front line Responder at the scene

Responsibilities: On receiving the emergency alarm;

- ☐ Switch radio to Emergency channel.
- ☐ Go to incident scene and report to OSC.
- ☐ Response the incident as directed by the ERT-Leader.
- ☐ Assure proper PPE must be wearied related incident Fire / Chemical Spill case
- ☐ Keep the mission complete safely.
- ☐ Reported to ERT Leader and retract to the safe location if the situation raised to high risk.
- ☐ Act to Rescuer

6. Fire Truck Drivers

Who: Nominated on shift operators (PN=1, PD=1), under the control of the OSC

Report to: On Scene Commander

Location: Fire Station and the scene of the incident

Emergency Level: 1A, 1B, 2, 3

Responsibilities

On receiving the emergency alarm;

- ☐ Switch radio to emergency Channel.
- ☐ Requested the safe route and command post location from OSC.
- ☐ FTD 1: Go immediately to fire station and take the first fire truck to the scene of the incident when requested by OSC.
- ☐ FTD 2: Go immediately to the fire station and wait for instructions.
- ☐ Contact the OSC and report location.
- ☐ Operate the fire trucks as directed by the OSC.
- ☐ Competency to operate Fire Truck and able to discharge foam as required.
- ☐ Able to estimate time of foam consumption table when required foam top up.

7. Duty Rota Team

Who: 1) Duty Manager,
2) Operation Duty,

- 3) External Affairs,
- 4) EHS,
- 5) Emergency Response Coordinator,
- 6) Historian (Marine),
- 7) Mechanical, and
- 8) Instrument & Electrical Duty Persons

Location EOC (Fire Station).

Emergency level 1B, 2, 3

Roles To support all activities as requested by IC and contact third parties during emergency.

General Responsibilities

- ☐ **First person to arrive must establish contact with Incident Commander and act as Duty Manager until the Duty Manager Arrives**
- ☐ Keep a register of all personnel present.
- ☐ Keep a log of all activities.
- ☐ Ensure all personnel who are not directly involved in the emergency, including personnel at assembly areas, are kept informed.
- ☐ Ensure that a head count is done.
- ☐ Inform shareholders.
- ☐ Prepare a preliminary statement.
- ☐ Report to Authorities in accordance with statutory requirements.
- ☐ Liaise with local, national and international authorities.
- ☐ Liaise with the media.
- ☐ Liaise with local industries.
- ☐ Liaise with the local hospitals regarding any casualties.
- ☐ Answer queries from relatives of staff on site.
- ☐ Control all communications in and out of the refinery.
- ☐ Call on any other specialist organizations as required.
- ☐ Arrange for food and drink for emergency teams.
- ☐ Arrange for extra security.

7.1 Duty Manager

Role

- To handle on-site emergency activity and ensure appropriate emergency procedures are activated. Act as site spokesperson for enquiries, including the media, if required.
- To lead the EOC organization through the emergency, and to manage the activities of the Duty Team, concentrating primarily on strategy development and monitoring management of all activities.

Responsibilities

- ☐ Set up EOC and adjust, as appropriate, as the situation develops.
- ☐ Co-ordinate the efforts of the Duty Team.
- ☐ Take only those decisions, which cannot be delegated.
- ☐ Authorize commitments, deviations from normal procedures, press releases (in conjunction with the Public Affair Manager, the Initial Response Statement is in appendix G), etc., as required.
- ☐ Appoint the Company spokesperson.
- ☐ Ensure that all personnel not directly involved in the emergency are kept informed.
- ☐ Notify IEAT and update on the status.

Specific Tasks

- ☐ Implement site Emergency Response Plan.
- ☐ Notify the CEO, DO and ensure that PN, PD are communicated.
- ☐ Notify to all related stakeholders, (Refer to Section 8.2 Notification and Reporting to Stakeholder) and also communicate to all SPRC Staff by e-mail.
- ☐ Provide a regular update on the status of the emergency to CEO, DO and Shareholders and establish the frequency for update briefings.
- ☐ Maintain a log of important events, commitments, decisions, etc., and pass hourly to CEO and Secretarial Services. Monitor external communications and ensure that these take place at an adequate level of frequency.
- ☐ Set up teams to address the short-term reinstatement or permanent restoration.

Checklist

- ☐ Ascertain what has happened
 - reason
 - scope
- ☐ Establish resources required
 - organization type
 - mobilizes
- ☐ Establish information flow
 - who is the Incident commander
 - injuries/deaths
 - frequency of update reports
 - authorities involved
 - who is spokesperson
- ☐ Establish timetable for;
 - Internal briefing
 - Media briefing (if necessary)
 - Management strategy
- ☐ Commence strategy development

Plus 1 hour

- ☐ Ascertain what has happened.
- ☐ Are resources sufficient and have been notified.
- ☐ Is there sufficient field support.
- ☐ Where is the media activity center?
- ☐ Are all sources of information being monitored.
- ☐ What are the emerging issues?
- ☐ Has a public release been made?
- ☐ Are we supporting the authorities sufficiently?

Plus 5 hours

- ☐ Review what has happened.
- ☐ Review resources (both Emergency Operation Center Team) and determine need to establish shifts.
- ☐ What is our media strategy and is the Company being proactive.
- ☐ What commitments have been made and are deadlines being met.

5 Hours and beyond

- ☐ Every three hours revisit the Plus 5 hours checklist.

DUTY MANAGER

- PRIORITIES:**
1. **Preservation of human life, health and well being**
 2. **Protection of the environment**
 3. **Protection of Company Asset**
 4. **Restoration of disrupted utilities**
 5. **Resumption of normal production**

Aide Memoir Level 1B/2/3 Emergency

1. **Nominate historian**
2. **Consider incident:**
 - ☐ What happened?
 - ☐ Victims? (Fatalities, injuries)?
 - ☐ Personnel missing? (All personnel accounted for?)
 - ☐ Medical assistance required?
 - ☐ Current process status?
 - ☐ Any toxic/radioactive releases?
 - ☐ Weather conditions? (wind direction)
 - ☐ Road barriers set up?
 - ☐ Authorities and/or other outside parties informed?
 - ☐ Time?
 - ☐ Escalation possibilities? (Safety/Health/Environmental)
3. **Consider possibilities:**
 - ☐ What kind of equipment do we need?
 - ☐ Enough personnel available? (ERT in attendance/additional operators for running units/ fitters/instrument technicians?) Any personnel called in?
 - ☐ What kind of extinguishing agents do we need and how much?
 - ☐ Do we need assistance (mutual aid)?
4. **Be in control:**
 - ☐ Think about relief and refreshments for crew.
 - ☐ Keep an eye on drainage systems.
 - ☐ Check procedures, prioritize and delegate.
5. **Notifications**
 - ☐ Shareholders
 - ☐ Authorities
 - ☐ CEO, DO
 - ☐ SPRC Staff
6. **After the incident:**
 - ☐ Think about protection of open flammable and/or toxic products
 - ☐ Think about protection of collapsing structures.
 - ☐ Debrief / interview involved personnel
 - ☐ Maintain / secure incident site for investigation
 - ☐ Deal with emotional stress to employees / families / responders particularly if deaths or significant injuries occurred
 - ☐ Restock emergency response equipment (firefighting, first aid, HAZMAT, PPE)
 - ☐ Check equipment and clean it.
 - ☐ Reload and refuel truck.
 - ☐ Clean protective clothing

7.2 Operation Duty**Report to:** Duty Manager**Role**

To provide support to Shift Supervisor on all operational matters during emergency when emergency level 1B, 2, 3 at EOC.

To be the Operation Support Team member when emergency level 3

Responsibilities

- ☐ Call in other staff member of Operation Duty.
- ☐ Inform PN/PD as considered appropriate.
- ☐ Be aware of operational requirements and issues during emergency.
- ☐ Provide assistance by operational experience and liaison with the operating units an appropriate plan of action in emergencies. Contact operations personnel that may provide additional information.

7.3 External Affair Duty - Corporate Affairs Issues**Report to** Duty Manager**Role**

- To provide a link with the Duty Manager on corporate affairs aspects associated with the emergency and establish information flows and timings of briefings.
- To keep an open line of communication with appropriate organizations / national authorities.

Responsibilities

- ☐ To maintain a log of issues and identify key information which is likely to be required by the Emergency Operations Team.
- ☐ In conjunction with the Duty Manager to establish a pro-active media liaison and public affairs strategy.
- ☐ To brief the Duty Manager / CEO on media interest, issues developing and requests from the media for information.
- ☐ To assist in developing/delivering a response to the media as directed by the Duty Manager / CEO
- ☐ Inform appropriate organizations on aspects of the crisis that may affect them.
- ☐ Obtain from affected organizations, information that may be of assistance to the Company.
- ☐ Coordinates and processes to buy additional resources including foods, refreshment, and other facilities to support Emergency Response Team in event of Emergency. These responsibilities can ask support from Mechanical / Instrument & Electrical Duty to help by mobilizes additional resource. The list of vendor/supplier are defined in External Contact List (AM-OT-CA-012)

Specific Tasks

- ☐ Call in other staff members of CA/HR and EA Duty
- ☐ Maintain a log of media activity identifying the line of questioning being adopted by the media and community and issues developing. Pass this information to the Duty Manager /CEO on a regular pre-agreed frequency.
- ☐ Establish contact numbers where the media can call for information.
- ☐ Enact the requirements and requests of the Duty Manager.
- ☐ Prepare media, community, and staff briefing material as requested by the Duty Manager.

- Check contacts listed in Appendix P (Emergency Telephone Numbers) against the type of emergency being managed, and ensure appropriate liaison links are established and maintained, including precautionary contact.
- Consider, in conjunction with the Duty Manager, additional organizations with whom liaison should be established.
- Determine whether liaison officers should be sent to outside organizations and advise the Duty Manager, arrange accordingly.
- Report regularly to the Duty Manager.
- Keep a record of contact with authorities and pass to Secretarial Services hourly.
- Coordinate with CA AD to make the rooms available for presses and media.
- In case of any tanks fire occurred, inform to the Department of Energy Business
- To support on cash box and arrangement.

7.4 External Affair Duty - Human Resource Issues

Report to Duty Manager

Role

- To provide advice to Duty Manager on personnel/welfare aspects associated with the emergency, and establish information flows and timings of briefings.
- To provide and maintain appropriate legal advice regarding Human Resources' aspects as required.

Responsibilities

- To brief the Duty Manager on personnel and welfare issues relating to staff.
- Maintain a list of personnel on site and the status of casualties.
- Enact Company personnel policies relating to staff welfare.
- Co-ordinate with hospitals for the treatment of injured persons provides additional support of required.
- Ensure appropriate legal advice is available for the Duty Manager when making critical decisions and press releases.

Specific Tasks

- Call in other staff members of CA/HR and EA Duty
- Establish a list of personnel on site and forward to the Duty Manager on a regular basis.
- Establish the names of casualties and forward to the EOC Team and the CEO on regular basis or when significant information becomes known.
- Identify welfare requirements and seek direction on a response strategy.
- If required make arrangements to advise or visit the next of kin of any casualties.
- Arrange for the movement of staff dependents to be with injured employees.
- Arrange for the co-ordination of grief counseling.
- Establish the relatives contact numbers at SPRC, and in Bangkok, and advise to staff and relatives so that they can receive information on assistance and status of family members.
- Monitor the quality of medical treatment being given to injured staff to ensure it is appropriate.

- Coordinate and ensure the switchboard operator is aware of the incident and fully manned.
- Make a room and telephones available for answering incoming calls.
- Ensure that all personnel not directly involved in the emergency are kept informed, including personnel at the assembly areas.

Policy for Notification of Next of Kin

Notification of Death

The responsibility for notification of next of kin lies with the company for staff and with the contractor for contract staff. Any enquiries related to the physical well being of SPRC staff, contractors, etc., will be directed to the appropriate employer.

Every endeavor should be made for a senior representative from the Company to be present when notifying the next of kin.

Notification of Injuries

The responsibility for notification of next of kin lies with the Company for staff and with the contractor for contract staff. Any enquiries related to the physical well being of SPRC staff, contractors, etc., will be directed in the first instance to SPRC Management.

- ** No name of injured or death person should be given to the media until it is verified that next of Kin have been informed.**

7.5 EHS Duty

Report to Duty Manager

Role

- Provide advice on EHS related aspects to the Duty Manager, identify reporting and liaison requirements to the Public Affair focal point.

Responsibilities

- Advise on EHS requirements to assist in the containment of any physical situation.
- Identify parties (authorities, neighbors) to be contacted or advised of the situation as dictated by statutory and other requirements.
- Advise to the Duty Manager of any investigation required by authorities and any associated requirements.

Specific Tasks

- Call in other members of the EHS personnel.
- Provide technical advice on EHS equipment and other resources to be utilized to control any situation and contain its impact.
- Advise the requirements under the various EHS regulations and other statutory reporting requirements.
- Advise to the OSC through IC about suspension of emergency response operation when the scene atmosphere result in a IDLH level and/or to involve an imminent danger condition
- Advise to the OSC through IC to decrease level of respiratory protection when the air monitoring at the scene result that the situation is safe to decrease level of protection (refer to [EHS-SP-QS-0017 Respiratory Protection Program.doc](#))
- Provide technical data as is required by the emergency response organization and the Duty Team.
- Call in the company Radiation Safety Officer (RSO) in case of radiation incident (Khun Suchart B (IR/2) Tel.087-833-8957
- Keep monitoring and tracking of an injured person and head count details (to update to the Duty Team members)

7.6 Emergency Response Coordinator (Duty)**Report to** Duty Manager**Roles** To provide advice to Duty Manager /OSC on all Emergency Response aspects.

To be member of Emergency Support Team when emergency level 3

Location Emergency Level 1B at the EOC.

Emergency Level 2 / 3 report to Duty Manager and Act to leader of Emergency Support Team also between EOC with Fire Station.

Responsibilities

- ☐ Call in other staff members of ERC Duty.
- ☐ Advise on using all firefighting equipment.
- ☐ Advise the OSC through IC on strategy, objective, tactics, and resources.
- ☐ Brief the situation to ERC member when they arrived.
- ☐ Record the external communication and information.
- ☐ Assign Emergency Response Coordinator member go to incident scene to assist OSC on control activities at the scene if level 2 or 3.
- ☐ Coordinate with Mutual Aid Teams.
- ☐ Assign Emergency Response Coordinator member to be the Mutual Aid Coordinator and Staging Officers when emergency level 2 or 3.
- ☐ Evaluate and calculate the needed resources to control the situation.
- ☐ Coordinate more resources from EMAG and Government.
- ☐ Assigned the QS/31 or QS/32 go to incident scene to assist OSC on level 1B (if required on a working day).

Note: When a community evacuation is recommended, Map Ta Phut Fire Department and the Rayong Disaster Prevention and Mitigation office (PorPor) will be notified by Emergency Response Coordinator during on hours.

7.7 Marine Duty**Report to** Duty Manager**Role**

To provide marine technical and marine pollution advice in general, give support to the Duty manager on all emergencies.

Responsibilities

- ☐ Call in members of Marine Duty.
- ☐ Be aware of the planned ship movements.
- ☐ Give marine technical advice to Duty manager on all marine matters, which are outside the normal operational routine.
- ☐ Advise the Trading Department of ship acceptance criteria for anticipated ship chartering requirements
- ☐ Act as the historian (in case of not related to the marine incident)

7.8 Mechanical / Instrument & Electrical Duty**Report to** Duty Manager**Role**

To coordinate and direct mechanical / I&E maintenance and Logistic Concerns (facilities, foods, etc.) to support Emergency Response Team in event of emergency.

Responsibility

- ☐ Call in other staff members of the Maintenance
- ☐ Assists Duty Manager on logistics / equipment issues.
- ☐ Provide mechanical, electrical and instrument assistance.
- ☐ Assigns work locations and preliminary work tasks to section personnel.
- ☐ Identifies services and support requirements for plan and expected operations.
- ☐ Provide support to External Affair Duty for mobilizing additional resources including foods, refreshment, and other facilities to support Emergency Response Team in event of Emergency.
- ☐ Reviews Incident Action Plan and estimate section requirement for next operation period.
- ☐ Assist in developing a recovery plan.
- ☐ Provide specialized maintenance / construction services as required.
- ☐ Coordinate equipment inspectors as needed.
- ☐ Coordinates turnaround-planning capabilities to assist with the orderly restoration of services.
- ☐ Provide specialized services relating to engineering drawing, documentation of equipment, operational procedures relevant to the process involved.

In event of process plant and /or off sites equipment breakdown, the mechanical /I&E duty person shall do the following additional:

- ☐ Respond promptly (establish verbal response where possible) to a request for assistance from the Operations and determine, as far as possible, the scope of the work and the skill(s) required.
- ☐ Inform the relevant maintenance area supervisor(s) the next working day about detail of maintenance action taken during call out and required follow up action.
- ☐ Inform PN/PD Superintendence Mechanical of serious matters as soon as possible.

8. Operations Support Team

Who Affected area Manager, off-shift Shift Supervisors, off-shift Senior Operator, Process engineers

Location CCB

Emergency level 3

Responsibilities

Main priority is to support, and take over some of the responsibilities

- ☐ Keep a register of all personnel present.
- ☐ Provide technological to the operating shift.
- ☐ Provide panel assistance.
- ☐ Provide supervisory assistance as requested by the IC/ OSC or operating shift.
- ☐ Provide assistance / relief for the On Scene Commander if requested.
- ☐ Provide assistance for the Incident Commander / On Scene Commander if requested.
- ☐ Assist outside operators to bring plants to a safe condition.

9. Emergency Support Team (Day Staffs)**Who** Maintenance group, Emergency Response Coordinator group**Location** Fire Station**Emergency Level** 2, 3**Responsibilities**

☐ **The first person to arrive will establish contact with the IC until the Emergency Response Coordinator arrives. The following responsibilities will be assigned by the Emergency Response Coordinator.**

- ☐ Keep a register of all personnel present.
- ☐ Keep a log of all activities.
- ☐ Assist OSC on control activities at the scene.
- ☐ Advise on using all firefighting equipment.
- ☐ Appoint radio operator and Historian.
- ☐ Collect and register radios as people arrive.
- ☐ Check pool vehicles for availability.
- ☐ Arrange transport for personnel and equipment to go to the incident scene.
- ☐ Provide back up for the ERT at the incident scene as required using trained personnel.
- ☐ Prepare and provide fire-fighting equipment as required from the fire station.
- ☐ Nominate Personnel to assist as Mutual Aid Coordinators.
- ☐ Provide messengers as required by Incident Commander / On scene Commander.
- ☐ Provide guides for outside agencies arriving at the refinery.
- ☐ Assist with traffic control at the main gate and approach roads, as requested by security.
- ☐ Ensure that all communications systems remain operable.
- ☐ Coordinated with REB to Open the workshop and warehouse.
- ☐ Arrange for extra personal protective equipment to be available.
- ☐ Provide transport assistance.

- ☐ Keep all radio transmissions to a minimum.
- ☐ To be the Staging Officers
- ☐ If necessary arrange for 24 hours coverage by splitting team into 2 shifts

All members of this team must bring with them PPE and any radios or pool vehicles assigned to them.

If assigned as the Mutual Aid Coordinator, he will coordinate with Mutual Aid Teams (Refer to Appendix D Mutual AID and Assisting to third parties).

10. Emergency Support Team (EST) PU Operations team**Who** On-shift EST and Off shift EST**Report to** SS**Location** Fire Station**Emergency level** 1B, 2, 3**Responsibilities**

- ☐ Switch radio to Emergency channel and report to OSC
- ☐ Contact fire station for request fire bunker gear with SCBA and dress up.
- ☐ Go to the incident scene and report to OSC
- ☐ Response to the incident as directed by the OSC.

11. Operating Shift**Who** On shift operators, under control of Shift Supervisor of area where the incident occurred**Report to** Shift Supervisor**Location** CCB**Emergency level** 1A, 1B, 2, 3**Responsibilities**

- ☐ Activate Fix fire water system where available.
- ☐ Activate Emergency Isolate Valves to stop fuel source.
- ☐ Liaise with OSC
- ☐ Bring plants / systems to a safe level of operation.
- ☐ Request additional operational resources when necessary.

12. Historian**Who** An assigned Administrative Assistance or Marine Duty (if available)(Assigned by Duty Manager)**Report to** Duty Manager**Location** EOC**Role** To act as official recorder for the EOC**Responsibilities**

- ☐ Ensure that all events are accurately recorded in the EOC logbook as they occur.
- ☐ Liaise with the radio operator to ensure that all information is recorded.
- ☐ Keep the Duty Team informed of any significant events or changes in the status of the emergency.

Specific Tasks

- ☐ Ensure sufficient log sheets are available.
- ☐ Check the whiteboard for up to date information.
- ☐ Record all events accurately and clearly including incident type, location, date and times.
- ☐ Inform the Duty Manager of significant events or changes in the status of the emergency.
- ☐ Liaise with the radio operator so that all events are recorded.

13. Switchboard Operator

Who Receptionist/ Security Shift Officer

Report to: HR

Location Reception table / REB

Role Operate the refinery switchboard.

Responsibilities

- ☐ Separate emergency calls from normal business calls.

Specific Tasks

- ☐ Direct emergency calls to EOC or other numbers as and when directed by the Duty Manager.
- ☐ Direct normal business calls to the requested person or department secretary where possible. If not possible take the name and contact number of the caller.
- ☐ Keep the switchboard as clear as possible for emergency calls.
- ☐ Contact security to attend to unauthorized visitors.

Do not give out any statements about the emergency.

14. Office Wardens

Who Regular building staff who have been assigned

Report to REB

Location Responsible Zone

Roles To ensure all building occupants area safely evacuate during building emergency.

Responsibilities

- ☐ Department heads or managers will nominate wardens and deputies.
- ☐ There will be a minimum of two wardens present at all times on each level of a building.
- ☐ If wardens are going to be absent from the building then they must inform their deputy
- ☐ The building will be separated into sections for checking.
- ☐ Each warden and deputy will have a floor plan showing areas to be checked.
- ☐ If it is safe to do so. On hearing the fire alarm the wardens will ;
Check all the rooms in their area of responsibility, and they will make sure that the occupants have left or are leaving the building.
- ☐ When a room has been checked the warden will close the door.
- ☐ When all the rooms have been checked the wardens will go to the assembly area.
- ☐ They will confirm with each other that the building has been evacuated.
- ☐ They will check with the senior personnel from each department, using the printout from the computer access control system supplied by security, to ensure everybody is accounted for.
- ☐ The wardens will report to the REB or IC with their findings.

Where office wardens have radios, they should be taken with them to the assembly areas.

15. Security

Who All security personnel on site under the direction of the Security Shift Officer

Report to OSC

Location REB

Emergency Level 1A, 1B, 2, 3

Responsibilities

- ☐ Monitor all emergency radio communications.
- ☐ Close the road, which related to the incident and take care of traffic.
- ☐ Ensure emergency radio traffic recorded.
- ☐ Follow instructions of the OSC.
- ☐ Emergency road closing.
- ☐ Emergency gate closing.
- ☐ Site accesses control.
- ☐ Cooperate with law enforcement as required.
- ☐ Keep a log of all activities.
- ☐ Operate the refinery switchboard (out of hours).
- ☐ Call in, as requested by the IC
 - * Duty Rota Team
 - * Mutual aid
 - * Others requested by IC/OSC
- ☐ Get confirmation from duty team members of acknowledging via phone call.
- ☐ Control all traffic into and out of the refinery.
- ☐ Liaise with the police for roadblocks outside property as required.
- ☐ Prepare lists of all personnel on site using access control.
- ☐ Restrict all entry to the Refinery to emergency vehicles and personnel.
- ☐ Keep the incident area free of all non-emergency vehicles and personnel.
- ☐ Ensure that all the master keys are available ready for use at the main gate.

- ☐ Have a mobile security guard ready to open emergency gates if required.
- ☐ Call in extra security guards as required
- ☐ Notify to the stakeholder refer to section 8.2 Notification and Reporting to Stakeholder

16. Staging Officer**Who** Member of the Emergency Response Coordinator Group**Report to** OSC**Location** Staging Areas will be assigned by OSC**Emergency level** 2, 3**Responsibilities**

- ☐ Establish Staging Area Layout.
- ☐ Maintain radio communication with OSC and other Staging Officers.
- ☐ Request maintenance/fuel service for equipment at Staging Area as appropriated.
- ☐ Request and prepare all equipment and make available as required by the OSC and report resource status changes.
- ☐ Maintain Staging Area Resources Form.
- ☐ Maintain Unit Log
- ☐ Assembly and release of fire protection or emergency equipment and supplies to support the emergency response action.

All resources within the designated Staging Areas are under the direct control of the Staging Officer and should be available as soon as possible.

17. Medical Team**Who** Medical Clinic Nurses**Report to** OSC**Location** Medical Clinic and scene of the incident.**Emergency level** 1A, 1B, 2, 3**Responsibilities**

On receiving the emergency alarm;

- ☐ Switch radio to Emergency Channel.
- ☐ Provide first aid as requested by the OSC.
- ☐ Evacuate injured personnel by ambulance.
- ☐ Pass the information of injured or death to External Affair Duty Person / Duty Manager.

18. Legal Advisor**Who** Corporate Legal Counsel and Company Secretary**Location:** EOC (Fire Station)**Emergency level:** 2, 3**Roles:** To be an advisor on legal issues**Responsibilities:**

This person is responsible for the following:

- ☐ Coordinating with outside Thai legal counsel, Shareholder companies, CPC General Counsel and other Chevron in-house counsel (Singapore) on all issues relating to legal liability of SPRC and shareholders.
- ☐ Render legal advice and assistance to the Treasurer's Unit related to Traders Insurance Policy and /or other related insurance policy coverage, claims procedures and on matters related to legal interpretation of scope, degree and type of liability for which insurance will respond.
- ☐ Provide ad-hoc legal advice to Incident Commander on issues, which may have Thai, USA, Chevron or Shareholder legal implications.
- ☐ Ensure appropriate legal advice is available for the Duty Manager when making critical decisions and press release.
- ☐ Assist the Duty Manager and other Emergency Response Team members in respect of legal matters related to Emergency Response aspects
- ☐ Provide and maintain appropriate legal advice as required.

APPENDIX B DUTY ROTA GUIDELINE FOR EMERGENCIES**1. Generic Guidelines**

The Duty Rota is intended to provide support to the operating shifts in resolving Emergency and non-routine matters in various disciplines, outside normal working hours.

Furthermore, all positions of the Duty Rota will be called in the event of a Level 1B or Level 2 or Level 3 emergency.

2. Emergency Duty Rota List

Common group: Duty Manager, Operations, External Affairs, EHS, Emergency Response Coordinator, Marine, Mechanical Duty and Instrument & Electrical Duty.

Note: For Maintenance and Support Groups Duty details refer to the Maintenance and Support Groups Duty Guidelines.

3. Nomination to Duty Rota

Staff are nominated to duty rota for a period 7 consecutive calendar days starting on Friday morning at 0730 hrs.

The duty rota is updated weekly by AD/6 and distributed to all duty holders and other concerned persons. Line managers are responsible for providing AD/6 with the information on forward planning of the duty rota.

Changes during a duty rota week are allowed, and are the responsibility of the person scheduled for duty and must always be communicated by the person requesting the change, to AD/6, Security Shift Officer and Duty Manager. This change must be to another qualified duty person.

Duty Team member who is a lady, there is a Labor Law Protection stated that **no work during 22:00-06:00hrs is allowed when getting pregnant**, as a result, the lady who is getting pregnant will not be on duty.

Note: QS, PU Managers or AS shall approve Qualified Duty Persons. The Duty Rota nomination form is EHS-FO-QS-3011 Duty Rota Nomination Form.doc available in EDMS

4. Communications and Transport

Staff on duty who are the first line of emergency i.e. Emergency Duty Rota, will have a duty vehicle available if required, a mobile telephone, which must be handed over in working order to the next person on duty.

5. Duty Rota Short Message Service (SMS) Test

The Duty Rota SMS test will be happened every Friday at 1930 hrs. The message will be " **9999 Emergency Group Test, phone 038-699090**". When this message is received the duty person must call to REB and confirm his/her SMS reception.

If by 2030 hrs the duty person has not been received SMS, he/she must call REB and inform security shift officer on non-receiving message. Security shift officer will then do an individual SMS test for that particular duty person. In case of SMS failure, SSO will immediately call to all duty rota member.

6. Personal Protective Equipment (PPE)

Staff on duty must have their SPRC standard PPE available when responding to an emergency. PPE should be kept in the duty vehicle for after hour's response.

7. Generic Duty Rota Responsibilities

- ☐ Be within a 60 minutes radius of SPRC at all times.
- ☐ Be available to go directly to the refinery at any time.
- ☐ Carry the duty mobile phone at all times.
- ☐ Be aware of specific responsibilities during an emergency.
- ☐ When receiving SMS, responding as directed by the message.
- ☐ Ensure that the duty mobile telephone is working all times.
- ☐ Immediately report any problems with duty communications equipment to Helpdesk.
- ☐ Inform AD/6 of any changes to the Duty Rota schedule.
- ☐ Must not have a blood alcohol level above 0 mg%
- ☐ Notify AD/6 of any changes in home and mobile phone numbers.
- ☐ When receiving SMS, the duty team members shall call back to REB in order to acknowledge and advise their status of availability.
- ☐ If receiving " All Clear" message during on the way to refinery in case of emergency level 1B/2/3, the duty team should continue to refinery for the summary of situation.

8. Specific Roles and Responsibilities (refer to Appendix A)**APPENDIX C EMERGENCY CONTINGENCY PLAN****1. Hydrogen Sulphide (H₂S) Leak****Hazards of H₂S**

H₂S normally enters the body through inhalation. It is a highly toxic gas with an odor of rotten eggs at low concentrations. The toxic effects of H₂S are rapid, and death can occur very quickly. Many liquid and gaseous hydrocarbons may contain H₂S in sufficient concentrations to present a potential hazard to personnel, and the environment. A small quantity of H₂S in the atmosphere (500 ppm) is enough to render a victim unconscious, and can cause death if rescue does not take place immediately.

REMEMBER:

50% OF PEOPLE KILLED IN H₂S INCIDENTS ARE WOULD BE RESCUERS. THEREFORE ENSURE ALL PRECAUTIONS ARE TAKEN BEFORE ATTEMPTING ANY RESCUE OPERATIONS.

Types of Leak**Minor Leak**

Unlikely to affect any one outside the immediate area involved, and not requiring outside assistance.

Major Leak

Likely to cause a spread of gas affecting surrounding plants and/or the public outside the refinery boundary, or requiring assistance from outside the area involved.

The Shift Supervisor of the area affected will decide on the type of leak.

Notification of leak

- Notify the Shift Supervisor
- Notify Security to stand by.
- Notify the Duty Rota Team in the event of a major leak.

Actions on Minor Leak

- The Senior Operator of affected area becomes OSC will direct the operations to repair the leak.
- Two operators working together in SCBA and personal H₂S monitors will secure the plant boundary.
- Two operators working together in SCBA and with personal H₂S monitors will search the area for casualties, notify Emergency On Scene commander if any are found and begin rescue operations.
- Consider wind direction and evacuation of affected areas including assembly areas.
- All evacuations and movements should be across wind away from the leak.
- All roads in affected area to be closed.
- Isolate and de-pressure the leaking equipment to reduce/eliminate the leak.

Action on Major Leak

- Action as for minor leak plus the alarm is to be sounded for a level 1B or level 2 or level 3 emergency.
- Notify personnel in buildings down wind of the leak.
- All personnel involved in the emergency must be wearing SCBA and carry personal H₂S monitors.

Note: If H₂S detected at the fence line at concentration of 5 ppm. or more, activate Community Evacuation Plan (see 11.3 Community Evacuation of this plan) and refer to EHS-WI-QS-2025 Hydrogen Sulfide Work Instruction.doc

2. Radiation Emergencies**In the event of an emergency such as:**

- Leak or contamination of radiation source.
- Observed or suspected damage to radiation equipment, a radiation source, or its container.
- Observed or suspected malfunction of radiation equipment, or shutter control mechanisms.
- Suspected or actual losses of radiation source.
- Fire explosion or other disaster.

In cases of emergency involving radiation the EHS-SP-QS-0014 Radiation Safety.doc ☒ must be followed.

3. Bomb Threat

Introduction

Bomb threats will usually be made directly to the refinery, but may also be made through the news media, police or other third party.

Threats may come from:

- Misguided practical jokers.
- Malcontents presently or previously employed by the Company or a Contractor deliberately causing inconvenience and disruption to production without sinister motivations for injury or damage.
- Extremist organizations operating primarily in the fields of local or national politics with malicious intent.

Threats are usually made by:

- Telephone to the refinery usually to the switchboard operator.
- Telephone to the local police or other authorities.
- Communication to the local news media.
- Anonymous Letters
Note; Letters containing information on the alleged placing of a bomb should be handed to the police for any action they think is required. The letter should be handled as little as possible and by the minimum number of people.

NO BOMB THREAT CAN BE IGNORED

The decision to evacuate some or all personnel must rest with the OSC / Incident Commander presents when the message is received. Duty manager must be informed.

Handling bomb threat calls

The most like persons to receive the call are:

During Normal Working Hours

- Switchboard Operators.
- Managers.
- Secretaries.

After Hours

- Security Personnel.
- Control Room Operators.

Responsibilities

The person receiving the bomb threat call shall;

- Ask questions from caller
- Immediately notify Security

Security Shift Officers:

- Notify the Shift Supervisor who will then establish an evaluation team.
- Contact the police.
- Follow Bomb Threat Instruction in Security Work Instruction.

Evaluation Team:

Evaluation Team is consisted of OSC, IC, and ERT. Duty Manager must be informed. Upon notification the evaluation team will proceed directly to the EOC. The person receiving the threat will meet with the team on its arrival.

The Evaluation Team will:

- Evaluate the threat.
- Decide on a course of action in conjunction with the advice of the police.
- Call in Duty Manager and key personnel to assist in a search if required.
- Reconvene with the police and other parties upon discovery of a suspected, or actual, device to discuss decision/action.
- Advise the Control room not to use portable radios until further notice.

Searching Procedures

- When a decision has been made to search, the OSC will designate the personnel most familiar with the target area to carry out a systematic search including with the Security Shift officer (or competence person).
- Communications will be by telephone (desk phone), radios or 'runners'.
- If a suspicious object is located then it must not be touched, its location conveyed to the Duty Manager and the area cordoned off.
Firefighting equipment should be set up in strategic positions.
Duty Manager will contact the local police or bomb disposal squads (by assistance of Security Shift Officer), if they are not already on site. Notify all staff.

Remark: The mobile is not allow to use during searching

3.1 BOMB THREAT CHECKLIST

NAME OF EMPLOYEE _____ TIME _____ DATE _____

QUESTIONS TO ASK

1. Has a bomb been placed or is the caller threatening to place one? _____
1. Was it mailed? _____
2. Where is bomb going to explode? _____
3. Where is bomb right now? _____
5. What kind of bomb is it? _____
6. What does it look like? _____
7. Why did you place the bomb? _____
8. Where are you calling from? _____

WRITE OUT THE MESSAGE IN ITS ENTIRETY USING EXACT WORDING

CALLER'S IDENTITY

Male ___ Female ___ Adult ___ Juvenile ___ Accent ___ Approximate Age ___

ORIGIN OF CALLLocal ___ Long Distance ___ Booth ___ Unknown ___ Internal ___ (From within
SPRC) if internal leave line open for tracing the call.**LANGUAGE**

Excellent ___ Good ___ Fair ___ Poor ___ Foul ___ Other ___

SPEECH

Fast ___ Slow ___ Lisp ___ Distinct ___ Distorted ___ Slurred ___ Stutter ___ Nasal ___ Other ___

ACCENT

Foreign ___ Race ___ Local ___ Not Local ___ Region ___

BACKGROUND NOISESAnimals ___ Airplanes ___ Bedlam ___ Factory Machines ___ Music ___ Mixed ___
Office Machines ___ Traffic ___ Trains ___ Party Noise ___ Voices ___ Quiet ___**VOICE CHARACTERISTICS**

Loud ___ Soft ___ Deep ___ High Pitch ___ Raspy ___ Pleasant ___ Intoxicated ___ Other ___

MANNERCalm ___ Angry ___ Rational ___ Laughing ___ Irrational ___ Coherent ___ Incoherent ___
_Deliberate ___ Emotional ___ Righteous ___Link to Telephone bomb threat form [EHS-FO-QS-3050 Telephone Bomb Threat Form.doc](#) ☐**3.2 Mail Bomb Recognition Checklist****Mail bombs have exhibited unique characteristics, which should be helpful in identifying a suspect item. The following could be of assistance when opening mail:****Envelope**

- ❖ Envelope will be lopsided or uneven in weight or packaging with possible cutting or pasting.
- ❖ Excessive use of securing materials such as sealing tape or string.
- ❖ Feelings of springiness or sponginess in the top, bottom or sides.
- ❖ Protruding wires, tinfoil or string.
- ❖ Oily stains or discoloration ("Sweating" of plastic explosive).
- ❖ Peculiar odor. Sometimes smells like almonds.
- ❖ Sloshing, buzzing or ticking sounds. Inks, particularly reds and blues may bleed, staining the envelope.

Weight

- ❖ Heavier than usual for its size.
- ❖ Weight uneven or volume distribution uneven with possible bulging.
- ❖ Heavier than usual for its class of mail. (For example, an airmail envelope weighing more than 2 ounces).

Rigidity

- ❖ Greater than normal, particularly along its center length.

Thickness

- ❖ Not uniform, or with bulges.
- ❖ For medium size envelope, the thickness of a small book and fairly rigid.
- ❖ For larger envelopes, bulkiness, an inch or more in thickness.

Address

- ❖ No return address.
- ❖ Hand printed or poorly printed or typed address.
- ❖ Incomplete or erroneous destination address.
- ❖ Foreign, poor or disguised handwriting.
- ❖ Restrictive markings such as Private, Confidential, Personal, or Eyes-Only.
- ❖ Marked (written or stamped) airmail, Special Delivery, Certified or Registered.
- ❖ Mail designated Rush, Handle with Care or Fragile.
- ❖ Misspelled words, particularly those in common business usage.

IF YOU SUSPECT A MAILING AND ARE UNABLE TO VERIFY THE CONTENTS:

- ❖ **DO NOT OPEN THE ARTICLE.**
- ❖ Isolate the mailing and secure the immediate area.
- ❖ Notify Supervisor and Shift Security Officer.
- ❖ **DO NOT** put the article in water or confined space such as a desk.
- ❖ If possible, open windows and doors in the immediate area to assist in venting potential explosive gases

4. Marine Terminal / SPM Emergencies

4.1 Marine Terminal Emergency

All Jetty operations must stop and product flows must be isolated

In case of fire in Marine Terminal Area, Senior Operator of Marine Terminal will be OSC and control all activities at the scene of incident and report to Incident Commander (PD Shift Supervisor) at EOC. ERT Team will be mobilized from Marine Terminal Areas. If the incident is associated with oil spill, the OSC should call Marine on Duty person to deal with oil spill.

In the case of a fire on a ship the SPRC emergency organization will assist as requested by the person in charge of the ship.

It is not necessary to wait for a formal request from the ship before action is taken.

Command

In the case fire on the jetty itself, the command will be referred to Emergency Response Plan. In the case of a fire on a ship, the command will be the ships master and or the harbor master. The refinery emergency organization will assist as requested.

Notification

1. In case of fire on ship, the following parties shall be notified by Ship Master
 - Ship agency
 - Ship Charterer
 - Ship Owner
2. SP Department will notify off taker/Charterers

Additional resources

In case of additional resources such as ships should be requested via MTP Port Authority

4.2 SPM Emergency

4.2.1 Emergency situation " Fire on the tanker which secured at the SPM "

The following steps must be taken;

- The tanker must raise alarm consisting of a series of long blast on the ship's whistle, each blast being not less than 10 seconds in duration.
- Mooring Master on board the tanker inform to Marine control building & towing tug to be on stand by and inform to Marine Manager.
- Marine Manager will inform to duty Manager & Oil Movement - Dispatch Manager for the situation at the SPM.
- All cargo, bunkering or ballasting operations must be stopped.
- Tanker's main engines & steering gear brought to stand by condition.
- Activated fire-fighting team on board the vessel.
- Discussion between the Master and the Mooring Master whether the tanker can move under her own power or not.
- If the tanker can move under her own power, then the towing tug can be released from the stern of the tanker to assist in Fire Fighting. SPM maintenance vessels need to have all firefighting equipment in ready to use including foam compound as well.
- If the tanker cannot move under their own power so the decision have to be made between the team whether or not require assistance from firefighting tug or assistance from Refinery ERT team.
- Mooring Master needs to have a close communication with the MCB regarding the outside assistance from the tugboat, rescue launches, medical aid and ambulance, port authority.

Emergency Removal of a Tanker from a berth.

- If a fire on a tanker which secured at the SPM cannot be controlled. It may be necessary to consider whether or not the tanker should be removed from the berth.
- Planning for such an eventuality may requires consultation between Master, Mooring Master, Marine Manager, Emergency Response Coordinator and Oil Movement & Dispatch Manager.
- The safe location for anchoring is 3 miles South of SPM.

Rescue Launch

- The work boat on the SPM maintenance vessel will act as a rescue launch for the recovery of personnel who may be in the water or the evacuation of personnel who may injured from the fire.

Launch detailed of these duties should have the following equipment;

- A communication link capable of being integrated into the control center communication system (Marine band or mobile phone)
- Fixed or portable search lights for operations during darkness or periods of reduced visibility.
- Self contained breathing apparatus
- Resuscitation equipment
- The crews of the rescue launch should have knowledge of first aid and know how to use artificial respiration.

Communication

- Via Marine band ch. 67 , UHF trunk radio in emergency channel or by mobile phone.
- SCM tug boat on Marine band ch. 11 or by telephone (038) (684556-9)

4.2.2 Emergency situation “ Fire on the SPM “**Fire on the SPM which no tanker berthing at the SPM**

- SPM maintenance vessel will be on standby, activated firefighting team on the vessel and make firefighting equipment ready to combat with the fire.
- Communicate to MCB and Marine Manager . Approaching to SPM and sprayed water to SPM as soon as possible.
- Marine Manager will inform to duty Manager & Oil Movement - Dispatch Manager for the situation at the SPM .
- Mooring Master will travel to SPM by SPRC speed boat if the weather permit.
- SPM maintenance vessel will send the photo via e mail so Marine duty team can assess the situation from time to time. and discussion have to be made between the team whether or not require assistance from firefighting tug or assistance from Refinery ERT team.
- After the fire stopped, the Marine team need to investigate for the cause of the fire and check for the condition of the SPM whether fit for purpose or not and may be need to launch the procedure “ contingency plan when SPM being out of order “

Fire on the SPM which tanker still discharging at the SPM

- The tanker must raise alarm consisting of a series of long blast on the Ship's whistle, each blast being not less than 10 seconds in duration.
- Mooring Master on board the tanker inform to Marine control building & towing tug to be on stand by and inform to Marine Manager.
- Marine Manager will inform to duty Manager & Oil Movement - Dispatch Manager for the situation at the SPM
- All cargo, bunkering or ballasting operations must be stopped.
- Tanker's main engines & steering gear brought to stand by condition and Released towing tug to be stand by as firefighting tug.
- Activated fire-fighting team on board the vessel.
- The ship's fire main should be pressurized and water fog applied to the SPM and tanker 's forecastle.
- Marine duty team can assess the situation from time to time. And discussion have to be made between the team whether or not require assistance from SC firefighting tug or assistance from Refinery ERT team.
- Mooring Master need to ask our rigger to stand by at the ship's manifold and ready for hose disconnection if necessary.
- Ensuring the unmooring equipment on the tanker must be brought to state of immediate readiness and ready for use.

Communication

- Via Marine band ch. 67 , UHF trunk radio in emergency channel or by mobile phone.
- SCM tug boat on Marine band ch. 11 or by telephone (038) (684556-9)

4.2.3 Emergency situation “ Tanker grounding during maneuvering at the SPM Area prior Mooring Master boarding “

The following step must be taken;

- Tanker need to inform to Ship's owner & agent.
- The agent will inform to MCB and Mooring Master in charge of that tanker.
- If the grounding area is not within the Map Ta Phut SPM area (3 mile south of SPM then the Marine team need to assess the situation via the ship's agent
- If the grounding cause the spill, Please see oil spill plan scenario “ vessel grounding “
- If the grounding area is within the Map Ta Phut SPM then Mooring Master will ask the SPM maintenance vessel to search around the ship.

- Tanker must check the sounding of all cargo tank , ballast tank and fuel tank whether the quantity was still the same or not. The sounding of the tank need to check from time to time until the situation was improved.
- The ship's owner must contact to the outside tug assistance for assisting from aground position by discussing with the Mooring Master as well.
- Mooring master can feed initial information for the tide table and the current direction.
- When vessel afloat again, the diving inspection need to be done to confirm for the condition of the vessel and the class surveyor need to be approved for the fitness of the ship before the decision of berthing the tanker at the SPM had been made.

4.2.4 Emergency situation “ Vessel grounding during maneuvering at the SPM Area during Piloting by SPRC Mooring Master“

The following step must be taken;

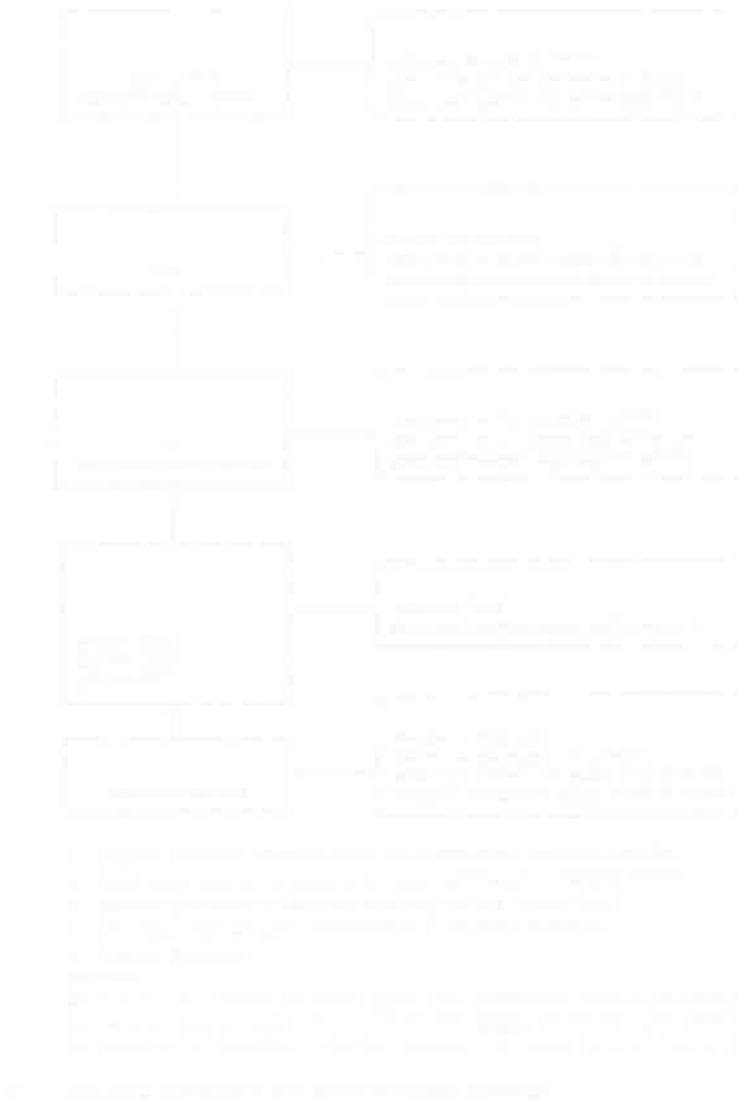
- Stopped maneuvering on the tanker and inform to MCB and Marine Manager to know the initial condition.
- Marine Manager will inform to all concerned parties and call for standby.
- Tanker must check the sounding of all cargo tank , ballast tank and fuel tank whether the quantity was still the same or not. The sounding of the tank need to check from time to time until the situation was improved.
- During the tanker check the sounding of all tank, the maintenance vessel can check around the tanker whether have an oil spill or not.
- If oil spill occurred, activated oil spill response plan as per SPRC OSRP.
- If no oil spill occurred, the Master & Mooring Master need to discussion with SPRC Marine team.
- Time of high water, the assistance of the SC tug, assistance from SPM maintenance vessel need to be considered to assist the tanker to afloat condition.
- When vessel afloat again, the diving inspection need to be done to confirm for the condition of the vessel and the class surveyor need to be approved for the fitness of the ship before the decision of berthing the tanker at the SPM had been made.

Control Center

During the emergency at the SPM , MCB conference room will act as control center and discussion have to made between the Marine team and the emergency team from the refinery . The final decision will come from Duty Manager & Oil Movement – Dispatch Manager.

Remark : Reliable communications are essential in dealing successfully with emergency situations. Because of their importance, consideration

should be given to setting up a secondary system to take over if the main system is put out of action.



6. TLT Emergencies

In event of an emergency at the Tank Truck Loading Terminal area the response will be as for all other refinery emergencies.

7. SPRC pipelines Emergencies

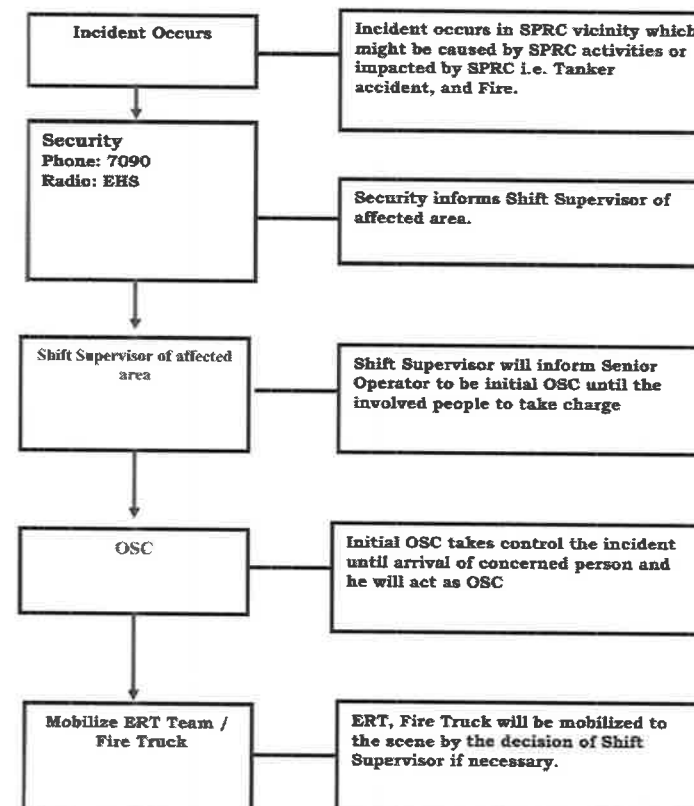
In event of an emergency at pipelines which are SPRC responsibility (see Appendix O) the response will be as for the refinery emergency as following:

- On receiving an emergency call, the PD Senior Operator (Tank Farm) will go to the scene and act as On Scene Commander.
- The ERT will be mobilized to the scene.
- The OSC will set up a command post at the scene and direct firefighting and rescue operations.
- OSC coordinated with OSC-EFT (Eastern Fluid Transportation)
- The PD Shift Supervisor will act as IC sets up the EOC.
- OSC report situation to IC.

8. Off Site Facilities Incident in SPRC Vicinity

In event of an emergency off site facilities in SPRC vicinity which might be caused by either SPRC activities or not SPRC activities, but nearby SPRC perimeter (i.e. Tanker accident, Fire). The guidelines have to be carried out as follows:

- Inform Security
- Security informs Shift Supervisor of location affected.
- Senior Operator of affected area will be the initial OSC.
- ERT team will be mobilized by Shift Supervisor consideration.
- Inform involved persons who are responsible to be in charge.



9. Off Site Road Accidents Involving Product from SPRC

The tanker drivers must be aware of the actions to be taken in an emergency. It is the responsibility of the Road Tanker-Depot Manager of each company (PTT, Caltex, and Shell) to ensure that the drivers are aware of their instructions in the actions to be taken in an emergency.

In the event of SPRC being contacted about an incident concerning a Road Tanker, which was loaded at SPRC terminal, the following procedure should be followed:

In case of incident occurs in IEAT-MTP Area:

Truck Accident:

- The person who is aware of the incident should inform the SPRC TTLT Operation Coordinator and Security Shift Officer at Refinery Entrance Building (REB). Then REB inform to Emergency Response Coordinator
- The TTLT Operation Coordinator will then inform the Depot Managers of Off takers and Security Shift Officer
- SPRC will assist when receiving a request from an Authority or Customer
- The TTLT Operation Coordinator considers assisting by consulting with PD Manager in Day working hour and keep inform Duty Manager.
- The TTLT Operation Coordinator considers assisting by consulting with Duty Manager in Off hour and keep inform PD Manager.
- The TTLT Operation Coordinator will coordinate with SPRC concern party to assist the Truck accident and keep inform to PD Manager or Duty Manager

Truck Fire:

- The person who is aware of the incident should inform the SPRC TTLT Operation Coordinator and Security Shift Officer at Refinery Entrance Building (REB). Then REB inform to Emergency Response Coordinator
- The TTLT Operation Coordinator will then inform the Depot Managers of Off takers and Security Shift Officer
- SPRC will provide a Fire Truck to assist when receiving a request from an Authority
- The TTLT Operation Coordinator request support from Emergency Response Coordinator
- Emergency Response Coordinator considers assisting by consulting with Duty Manager for get approve to send SPRC Fire truck to support and keep inform to Duty Manager.
- The decision to supply this equipment will be with Duty manager.

In case of incident occurs out of IEAT-MTP Area:

- SPRC will provide a Fire Truck to assist when receiving a request from an Authority
- Emergency Response Coordinator considers assisting by consulting with Duty Manager.
- The decision to supply this equipment will be with **Duty manager.**

Emergency Contact Numbers.

TTLT Operation Coordinator:

Office: 038-699289

Mobile phone: 081- 863-8023 (TTLT Coordinator)

Security Shift Officer: 038-699090

For others referred to [EHS-OT-QS 3003 Emergency Telephone Number.doc](#)

10. Failure of SPRC Trunked Radio system procedures

10.1 Fall Back Mode

There are three fall back modes available on SPRC Trunked Radio System:

- Zone Isolated Wide Area Trunking
- Local Site Trunking
- Direct Mode Operation

For zone isolated wide area and local site trunking, the radios will switch to available site automatically, and radios will work as normal.

SPRC defines the direct mode in detail of EHS-OT-QS-3010 Trunk Radio Emergency Procedure.doc (Page 5).

10.2 Direct Mode Operation (DMO)

If all connections to the Radio Network Infrastructure are lost (CAT main site, SPRC backup sites, and SPRC site down), each SPRC radio can enter into direct mode operation (DMO). This means that the radio will use its own antenna and amplifying power to communicate with other radios that support DMO and are within range of 0.5-1 kilometer.

During DMO mode operation, radios at SPRC site will not be able to connect to those at MCB, except one fixed radio at Area 5 panel (Backup MCB machine). Similarly, MCB radios will not be able to communicate with SPRC site radios, except one fixed radio at MCB Operation Board panel (SPRC Area 5 Backup) machine.

In case of incident occur during radio total fail (Direct mode)

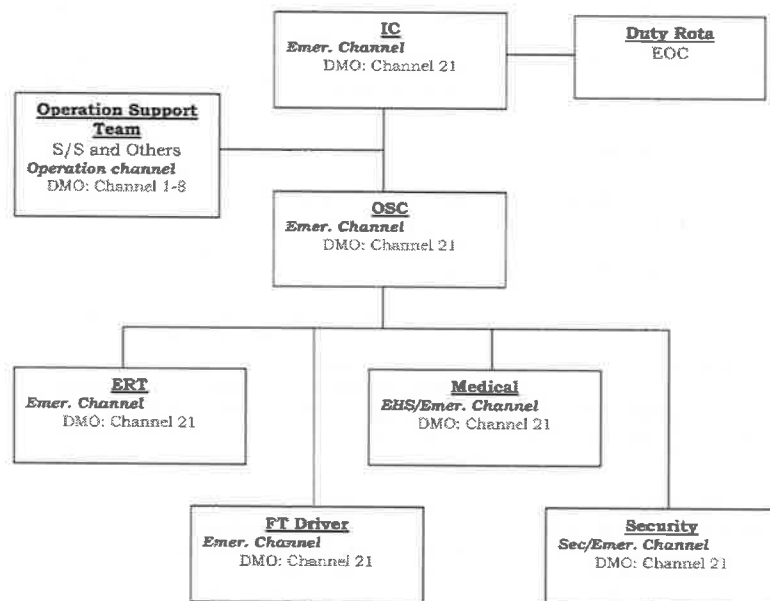
When all available network is lost, the radio displays channel indicates "No Service" word

Incident commander informs REB for announcement

REB announce by radio each direct mode channel to switches the radio to **"DMO"** and selects **emergency channel** for direct mode in case of trunk radio is totally failed.

During trunk fail period, minimize the usage of radio communication is required. The command to response action is mainly conduct from on scene commander on site, incident commander or duty manager to first intervention team and support team.

10.3 Workflow of communications to related trunk radio partial or total failure (Direct Mode) during incident or emergency cases will be by following methods;



Note:

1. IC will get the process information by contacting with Area Shift Supervisor via internal telephone (extension number).

2. The followings are the recommendation emergency exercise programs

Exercises

- | | | |
|---------------|--|--------------|
| ▪ Level 1A/1B | Operation on shift | Weekly |
| ▪ Level 2 | Emergency Response Teams /EMAG | 2 times/year |
| ▪ Level 3 | Emergency Response Teams /EMAG/Rayong Province | 1 time/year |

Evacuation Building Occupants 1 time/year/Building zone

It shall be set up the mandatory emergency exercise at least once a year with practice the trunk radio failure for ensuring all back up mode of radio system (Wide area backup-Local site and DMO mode) has good reliability of communication.

3. The link is the trunk radio emergency procedure, which is provided the operation guideline to shift staff on the principle of trunk radio system including emergency

response action during trunk radio failed EHS-OT-QS-3010 Trunk Radio Emergency Procedure.doc

10.4 SPRC Portable Radio Channel Configuration

Trunk Radio " Normal "	Use Wide Area of Local Site Trunking	Area/Location
↓	<ul style="list-style-type: none"> - Talk groups run on radio frequency channel. - North site has 16 talk groups opposite. - Controller monitors anyone making a call. - Intrinsically safe (use color stickers). - 2 batteries provided per radio. - Battery conditioning required every 3 months. - North site: REB CCB W/S TTLT - Helpdesk handles all repairs, returns, transfers etc 	A1 A2 A3 A4 A5 Marine TTLT PNM PDM RELIB CTM CTM Project Tank/OSI/NM Paint/Civil Scaff/Insula Rigging 1 Rigging 2 Taxi 1&2 EHS/SEC/MED Security EMER
" Direct Mode"	## Failure of all radio networks: Use DMO mode	North Site
↓	<ul style="list-style-type: none"> - Manually switch to DOM - Point to point" conversation only. - Limited distance e.g. 500 - 1 km. - Sensitive to obstructions e.g. walls etc. - Only use when "controller & base" have failed - On screen radio will show "DMO" - On Screen radio will show symbol "I->I" - Standby at appropriate channel. - Monitor channel before calling. 	DMO-A1 DMO-A2 DMO-A3 DMO-A4 DMO-A5 DMO-Marine DMO-TTLT DMO-PNM DMO-PDM DMO-RELIB DMO-CTM DMO-CTM Project DMO-Tank/OSI/NM DMO-Paint/ Civil DMO-Scaff/Insula DMO-Rigging 1 DMO-Rigging 2 DMO-Taxi 1&2 DMO-EHS/SEC/MED DMO-Security DMO-EMER

11. Product Contamination Procedure

In event of SPRC products which become off specification either at the refinery or at discharging port of customers. The response will be referred to **Non Conforming Products Procedure**

12. Oil /Chemical Spill/Release and Leak on land

The response of Oil / Chemical Spill/ Release on Land will be referred to **EHS-WI-QS-3003 Hazardous Material Release, Spill and Leak.doc**

13. Marine Oil Spill

The response of Marine Oil Spill Plan will be referred to **EHS-WI-QS-3001 Oil Spill Response contingency Plan.doc**

APPENDIX D MUTUAL AID and ASSISTING TO THIRD PARTIES

The following mutual aid has been agreed, to provide assistance in case of an emergency at installations in the industrial estate.

1. Assistance to SPRC

In the case of SPRC requiring assistance from outside sources the following is a list of resources in the order to be called in:

The Emergency Mutual Aid Group (EMAG) is consisted of SPRC, ROC, PTTGC2 (PTT-Chem I1) , PTTGC3 (former PTTChem-I4), PTTGC4 (former PTTARO-1), PTTGC5 (former PTTAR2-RIL) and PTTGC6 (refinery), PTT (gas Separation Plant), VNT, Covestro (Thailand), IRPC, TPE and MOC

On arrival at the refinery mutual aid teams will stand by at REB for PN until they are required by the OSC or IC. The Mutual Aid coordinator will take them to the incident scene and liaise with the OSC.

2. SPRC Assistance to Other Companies**2.1 Agreement Companies**

In the case of a request to SPRC for mutual aid from one of the EMAG members, SPRC has to immediate provide for the equipment. The mutual aid company will call assistance via the REB and/or SPRC EMAG representative (Lead Emergency Management and Emergency Management Specialist)

The equipment will be supplied and the decision to supply this equipment will rest with the **Shift Supervisor** at the time.

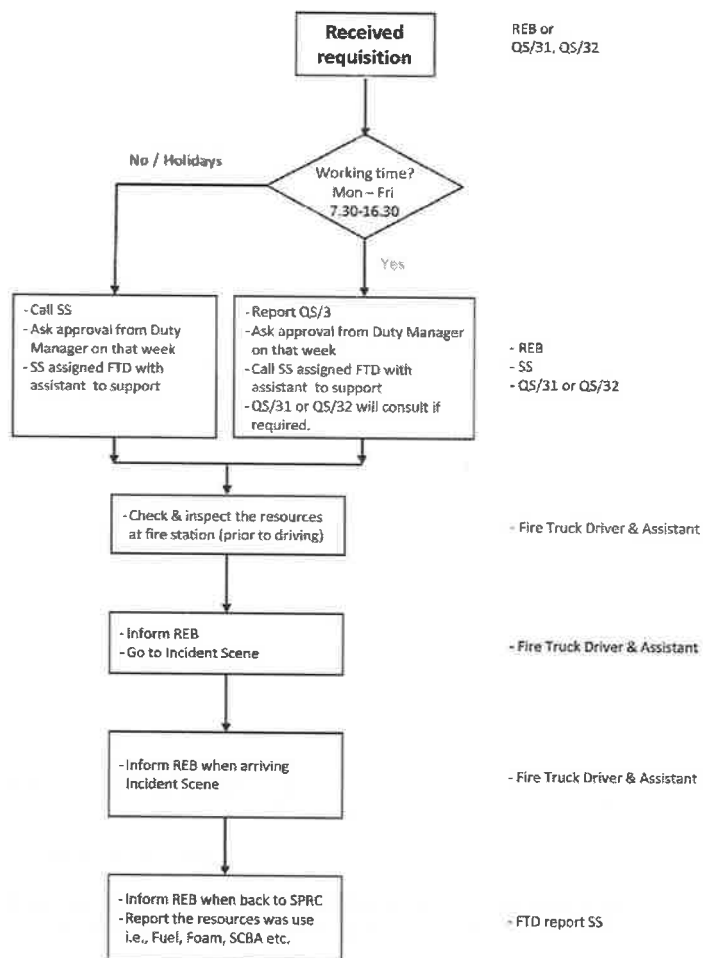
For Fire Truck driver and an assistant or other personnel if needed will be arranged by **Shift Supervisor**. More consult or advice will be supported by Emergency Management Specialist if required.

2.2 Non Agreement Companies

In case of the other companies which not in agreement need assistance from SPRC. SPRC will provide a Fire truck and necessary equipment. Fire Truck driver and an assistant or other personnel if needed will be arranged by Lead Emergency Management (**should not be Operators**)

The decision to supply this equipment will be with Duty manager.

SPRC will provide a Fire Truck, driver and Fire Truck operator plus other equipment and personnel as necessary to either Agreement Companies or Non Agreement Companies.

Flowchart of SPRC Assistance to Other Companies

Noted

- Record information & resources was to requested.
- Use Fire Truck check list for resources clarification with EMAG or other company requester
- In case of the other companies which not in agreement need assistance from SPRC will be arranged by Lead Emergency Management (should not be Operators)

3. Mutual Aid Coordinators

ERC members or persons nominated from the Emergency Support Team will be assigned and wear a **reflective vest marked "MC"**

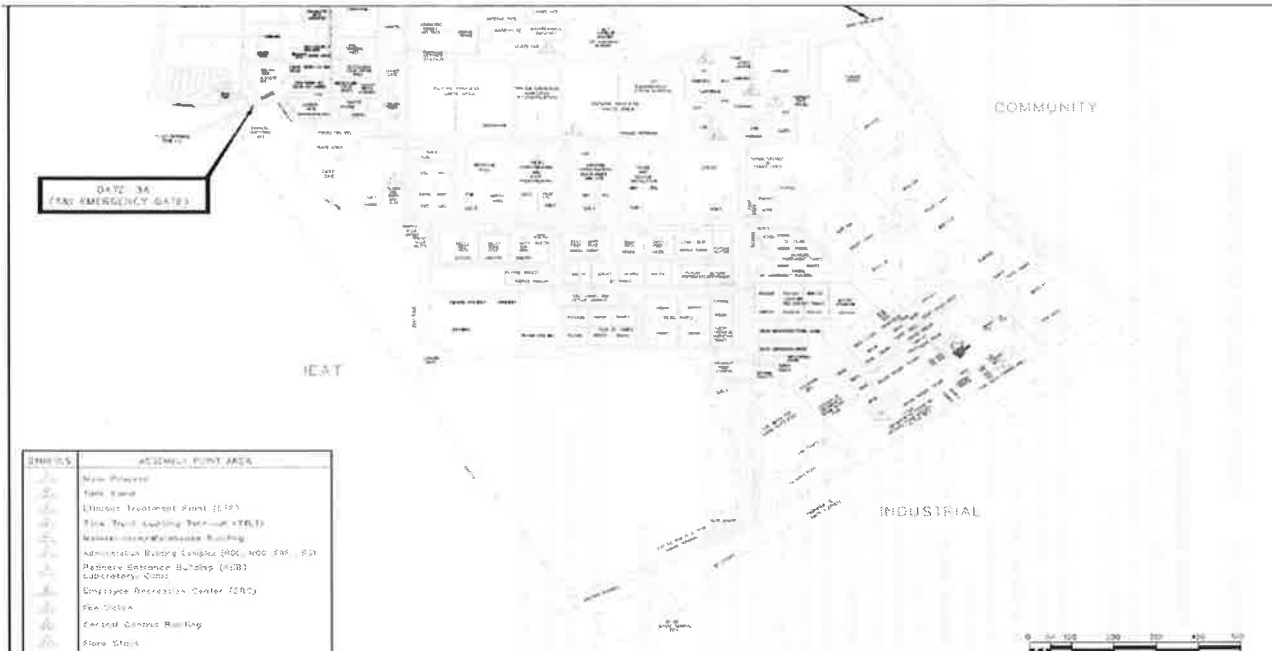
Mutual aid fire trucks should be parked in the vicinity of REB for PN in a safe location. If mutual aid fire trucks are required on site they must be accompanied at all times by SPRC personnel.

Mutual Aid Coordinator should log in equipment, personnel, and quantity of foam of Mutual Aid Team. Brief of emergency situation should be made to Mutual Aid Teams.

Note: At the first stage of emergency if needs assistance from Mutual Teams, the security personnel will be the Mutual Aid Coordinators until ERC members arrive.

APPENDIX E EMERGENCY ASSEMBLY AREAS

Refinery Assembly Areas

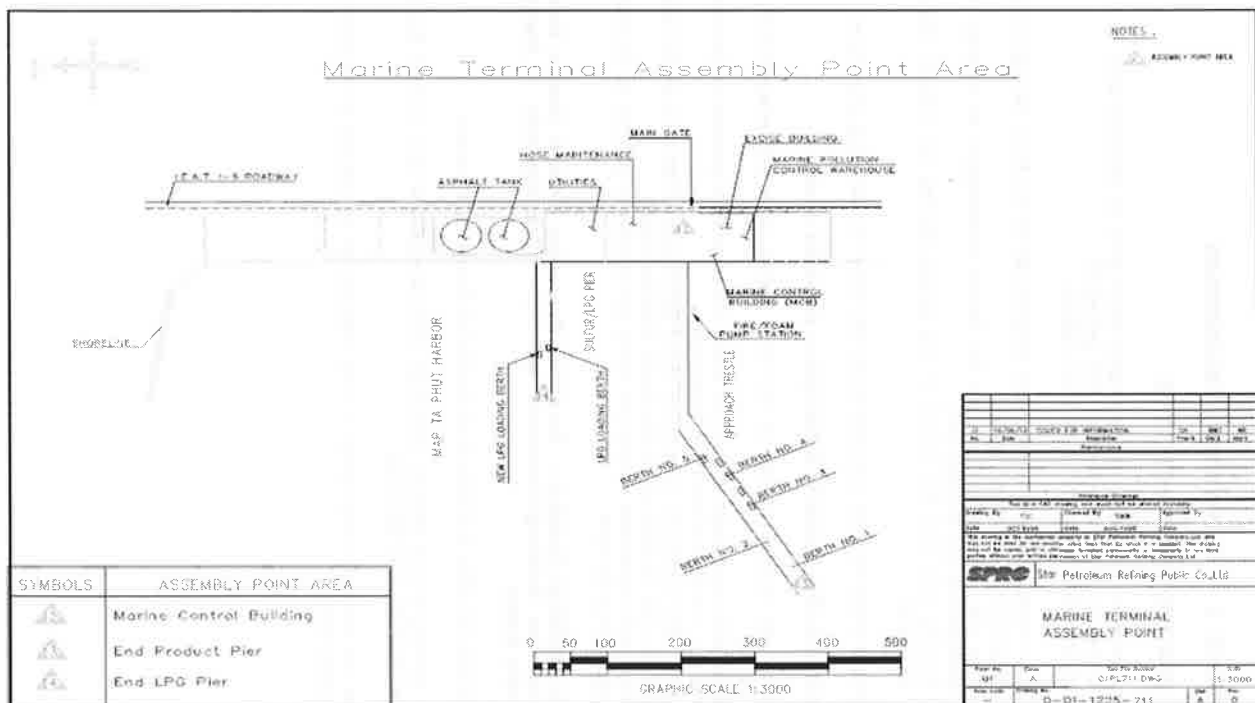


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Marine Terminal Assembly Areas



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APPENDIX F HEAD COUNT PROCEDURES

1. HEAD COUNT PROCEDURES

All personnel not involved in the emergency must go to an assembly area.
Contractors are responsible for their own personnel.
SPRC personnel are responsible for their visitors.

- It is responsibility of the Incident Commander or the Duty Manager to assign the person to do a head count.
- It is the responsibility of the On Scene Commander to account for all personnel in the incident area.
- Security will take the names of any person leaving the refinery during an emergency.

The person assigned to do the head count will follow the following procedure:

Process Area (See Appendix E Emergency Assembly Areas)

1. Check the number of jobs in the work permit from the permit rooms (COS shelters).
2. Check with supervisor of each job about the number of persons at the assembly area No. 1 in front of the CCR/Platformer.
3. Check with supervisor of each job about the number of persons at the assembly area No. 2 at the west of Oil Movement Building (OMB).
4. Check with supervisor of each job about the number of persons at the assembly area No. 3 at the ETP.

Admin. Building Complex / Employee Recreation Center/ Marine Building/ Construction Building/Warehouse and TTLT (See Appendix E Emergency Assembly Areas)

Check with the office wardens for personnel at the assembly areas.

When moving around between assembly areas always take into account the type of incident and the wind direction.

Inform the Incident Commander / Duty Manager of the results of the head count and action taken.

APPENDIX G PRESS RELEASES GUIDELINES

1 PRESS RELEASES GUIDELINES

Communicating in an emergency/a crisis Public attention in the event of an emergency or a crisis, particularly media attention, can be overwhelming so bear these points in mind:

- **Concern:** show that the company cares for those affected
- **Clarity:** adopt a clear media response statement
- **Co-ordination:** ensure that it is widely understood who is the spokesperson
- **Co-operation:** maintain a good working relationship with the media and other agencies
- **Consistency:** ensure that you come across clearly and without contradiction and that your facts are verified at source
- **Consultation:** if a joint-venture partner or contractor is involved, consult them before any statement are made
- **Control:** centralize and control the flow of information by
 - Response statement cleared by Duty Manager
 - Prepared answers to expected media questions
 - Regular news briefing if appropriate
 - Factual information to offset rumor using every means of communication
 - No unauthorized interviews or statements
 - Only ONE spokesperson at any one time to avoid confusion

CAUTION – don't

- Admit legal liability unless specifically empowered to do so
- Lie or try to hide behind " NO COMMENT"
- Blame anyone or anything
- Release details of cost estimate of damage or loss

2. INITIAL RESPONSE STATEMENT

(To be completed by Duty Manager then pass on to External Affairs Duty)

When: Date _____ Time _____

What happened: _____

Where exactly: _____

Any fatality/injured: _____

How many people are
on site: _____

What actions being taken: _____

What effects will the incident
have on operation/production: _____

SPRC is still investigating the cause of this incident and at this point in time is not able to provide any details until the investigation is complete.

Completed by: _____ (Duty Manager)

3. MEDIA AND OFFICIALS OFFICES

PA department designates the offices for the media and officials for working during an emergency when they needed as following:

Officials: Room Number R-106

Media: Room Number R 106

External Affairs to request IT duty person to set appropriate equipment, but cover the following as minimum:

- ◆ Facsimile Machine
- ◆ Telephones
- ◆ Computer
- ◆ Copy machine

APPENDIX H FOAM SUPPLIERS**2.1 Red Alert Service (National Foam Inc.- Kidde Fire Fighting)**

Tel: + 610-363-1400

2.2 Ansul

Tel: Local distributor TTK: (+66 or 0) 2704 6430

2.3 Chemguard

Tel: +1-817-473-9964

2.4 National Foam Universal Gold 1/3%

Tel: +668-9079-9448 or 02-026-0470-92 # 506

APPENDIX I DRINKING WATER AND REFRESHMENTS

The drinking water for emergency support is kept in the Fire Station storeroom both sites call security for the keys.

In case of long period of incident, which need cash for arranging refreshments and/or meal, External Affair duty will be the person to support.

APPENDIX J TRANSPORTATION

In case of emergency the duty vehicles and TAXI will be parked at the car park nearby the fire stations and leave the key in the ignition sockets

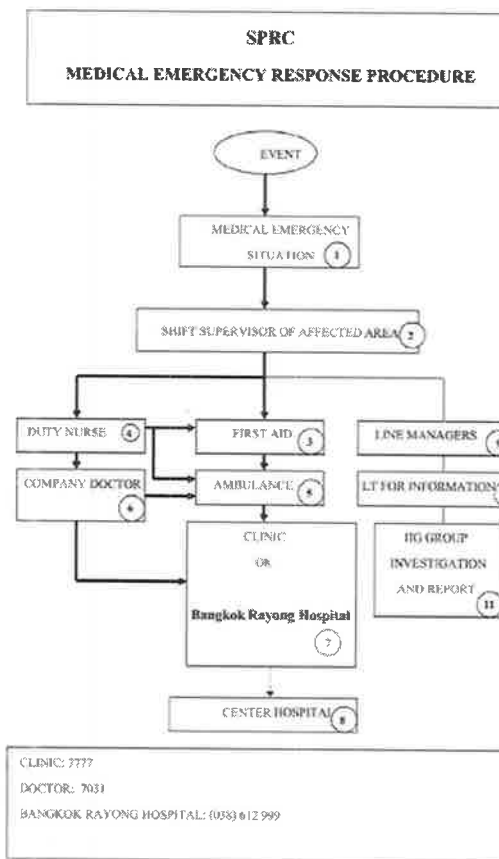
There is a driver available (stand by Lab) during off-hours at the shelter and vans are parked in the car parking shelter with the key are left in the ignition socket. Phone Number **7089**

During off hours and holiday Taxi (pick up truck) will be parked beside the REB and key will be kept at REB.

APPENDIX K EMERGENCY ALARM TEST

The emergency alarms will be tested each Wednesday at 1330 hrs. Follow by the All clear.

The Emergency telephone 7191 will be tested after the emergency alarm test, Security room, Medical Clinic and also the Fire station when manned.

**APPENDIX L MEDICAL ERP PROCEDURE**

In cases of emergency involving medical needed the EHS-WI-QS-2005 Medical Emergency Response Plan.doc must be follow

APPENDIX M EMERGENCY TRAINING AND EXERCISES

All personnel working in the refinery must be trained in emergency response. The type of training will depend on the individuals work location and job. The followings are the recommendation training and exercise programs.

Training Course as list:

- Basic Fire Fighting
- Basic Office Fire Fighting
- Advanced Fire Fighting
- Fire Command (For OSC and IC)
- Breathing Apparatus
- Hazmat
- Rescue
- Fire Truck Driver

Refer to EHS-OT-QS-001 EHS Standard Training Program

Exercises	Operation on shift	Weekly
▪ Level 1A or 1B		
▪ Level 2	Emergency Response Teams /EMAG	2 times /year
▪ Level 3	Emergency Response Teams /EMAG/Rayong Province	1 time/year
Evacuation	Building Occupants	1 time/year/Building zone
Refer to <u>EHS-OT-QS-3005 Emergency Response Exercise Guidance.doc</u>		

Note: For Oil Spill response training refer to EHS-OT-QS-0001 EHS Standard Training Program

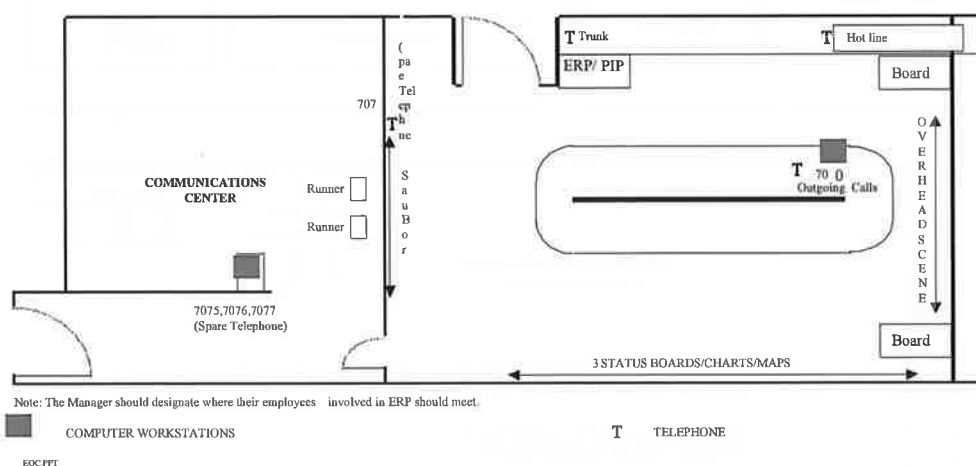
Revision No.:14
Date: 7 June 2021

Copy No. 00

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APPENDIX N EMERGENCY OPERATION CENTER LAYOUT

EMERGENCY OPERATIONS CENTER (EOC) LAYOUT PLAN
(FIRE STATION TRAINING ROOM F-115)



Revision No.:14
Date: 7 June 2021

Copy No. 00

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APPENDIX P EMERGENCY TELEPHONE NUMBERS

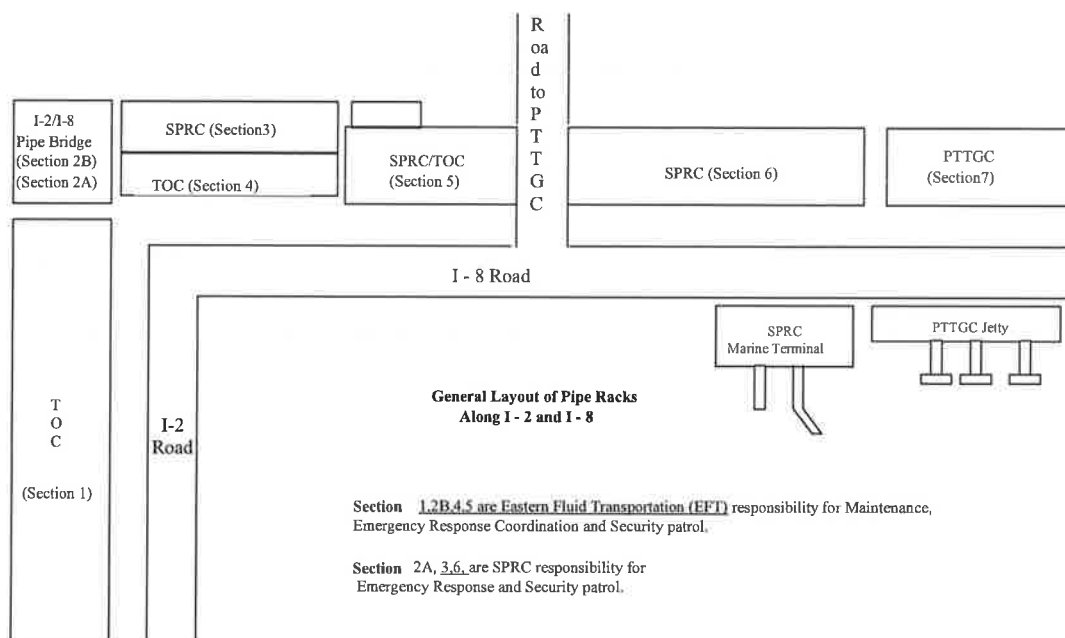
The Corporate Affairs and Emergency Response Coordinator are responsible for obtaining and updating a list of applicable local and national government contacts, with support and supervision by QEHS. This list is updated six monthly or when changed as detailed at [EHS-OT-QS-3003 Emergency Telephone Number.doc](#)

APPENDIX Q SPRC FLU PANDEMIC BUSINESS CONTINUITY PLAN

The Flu Pandemic Business Continuity Plan is the plan to control the possible impact of Flu Pandemic and monitor the phase of Pandemic plan, which is recommended by WHO or Shareholder.

Influenza pandemics result in serious health effects to large proportions of the population with significant disruption to the community, economy and businesses. See more details in [EHS-OT-QS-3017 SPRC Flu Pandemic Business Continuity Plan](#).

APPENDIX O PIPE LINE LAY OUT



APPENDIX R MUTUAL AID AGREEMENT BETWEEN SPRC & PTTGC-6

In order to support each other in case of emergency, the followings have been discussed and agreed to be a guideline for both SPRC and PTTGC-6

1. Emergency Support Team;

- Both companies will support 2 operation staff (ERT Team members) to be the ERT back up team for each other in case of calling and can support. All members will equip with full bunker gears or other personal protective equipment that suit for the emergency case.
- All ERT team members support will be under supervision of on scene commander of the incident happening company.

2. Communication channel:

- In case of need support ERT back up from the other site shall PD shift supervisor (SPRC) or RM shift supervisor (PTTGC6) as Incident commander (IC) notify to Shift Security Officer on shift (SPRC REB) or Security Leader (PTTGC-6 Security Center) to call to the other Site (REB or Security Center) for requesting help via Hot Line.
- Incident Commander (IC) shall specify other equipment need beyond full bunker gears that need support such as Fire truck, Ambulance, Foam Truck, Oil spill equipment or others to the Shift Security Officer (SSO) or Security Leader during calling too.

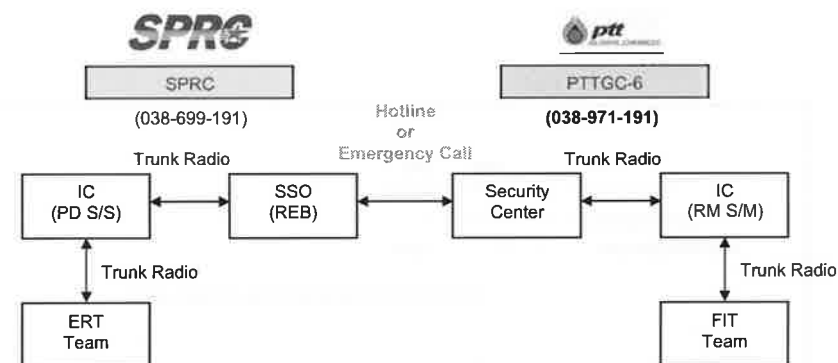
Exercise:

To ensure reliability of guideline implementation, we agreed;

- Do testing the communication channel and ERT team according agreed by emergency exercise together (schedule will be combined in to existing master exercise schedule in each site).
- Do the communication testing to ensure that the channel set is work: Every Friday (19.30 hrs) each site by SSO will ring the hotline provide to do the test to ensure it work and record status of testing under SMS call back from emergency duty Rota team.

Remark;

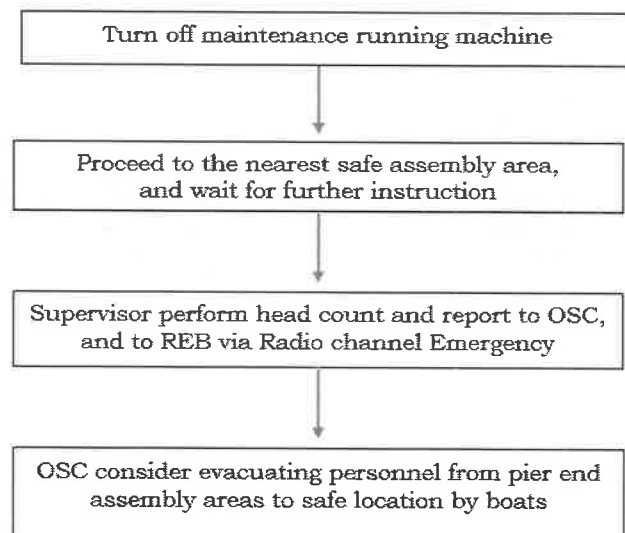
- It is the right of the company to deny on supporting of ERT team when request in case that there is an emergency case happen at site or other site which have agreed to provide support.



APPENDIX S PIER EVACUATION GUIDELINE

Personnel evacuating from product pier and LPG pier can go to either:

- assembly point 12 (near MCB main gate), or
- pier end assembly areas, if it is not safe to go to assembly point 12 (e.g. fire on pier or on ship alongside)



Remark 1) Under circumstances, OSC may consider evacuate all personnel at the marine terminal to pier end assembly areas, e.g. the shore assembly point 11 is unsafe for such.

2) Boat crew will provide life vests or other kinds of flotation devices to personnel embarking.

APPENDIX T The Reporting form to the Labour Protection Welfare

แบบ สปข. ๕

แบบแจ้งการเกิดอุบัติเหตุร้ายแรง หรือการประสบอันตรายจากการทำงาน
ตามมาตรา ๑๗ (๑) และ (๒) แห่งพระราชบัญญัติความปลอดภัย อาชีวอนามัย และสภาพแวดล้อมในการทำงาน พ.ศ. ๒๕๕๔

(๑) ชื่อสถานประกอบการ.....
เลขทะเบียนการค้า.....ประเภทกิจการ.....
ที่ตั้งเลขที่.....หมู่ที่.....ตำบล/แขวง.....
อำเภอ/จังหวัด.....รหัสไปรษณีย์.....โทรศัพท์.....
จำนวนลูกจ้างทั้งหมด.....คน

(๒) ความเสียหายจากการเกิดอุบัติเหตุร้ายแรง หรือการประสบอันตรายจากการทำงาน

☐ เสียชีวิต จำนวน.....ราย ตามบัญชีแนบท้าย (ระบุชื่อ - สกุล อาวุโส ตำแหน่ง)

☐ บาดเจ็บ/เจ็บป่วย จำนวน.....ราย ตามบัญชีแนบท้าย (ระบุชื่อ - สกุล อาวุโส ตำแหน่ง)

☐ ทรัพย์สินเสียหาย จำนวน.....บาท

☐ มีการหยุดการผลิต

(๓) สถานที่เกิดเหตุ.....
วัน/เดือน/ปี ที่เกิดเหตุ.....เวลา.....น.

(๔) สาเหตุของการเกิดอุบัติเหตุร้ายแรง หรือการประสบอันตรายจากการทำงาน.....
.....
.....

(๕) การดำเนินการแก้ไขและป้องกันภาวะเกิดซ้ำ กรณีเกิดเหตุตามมาตรา ๑๗ (๒).....
.....
.....

ข้าพเจ้าขอรับรองว่าข้อความข้างต้นเป็นความจริงทุกประการ

ลงชื่อ.....นายจ้าง/ผู้รับผิดชอบงาน
.....
ตำแหน่ง.....
วันที่.....เดือน.....ปี.....

APPENDIX U IEAT-MTP Emergency Reporting Form

แบบรายงานแจ้งเหตุการณ์ผิดปกติ / เหตุฉุกเฉิน เบื้องต้น
ของผู้ประกอบการพื้นที่นิคมอุตสาหกรรมและท่าเรืออุตสาหกรรมมาบตาพุด

เรียน ผู้อำนวยการศูนย์เฝ้าระวังและควบคุมคุณภาพสิ่งแวดล้อม (EMCC)
สำเนาเรียน ☐ ผอ. สนธ. ☐ ผอ. สทพ.

ขอรายงานแจ้งเหตุการณ์ผิดปกติ / เหตุฉุกเฉิน เบื้องต้น ดังนี้

ลักษณะเหตุการณ์
☐ ไฟไหม้ ☐ ระเบิด ☐ รั่ว/สารเคมีอันตรายรั่ว ☐ น้ำมันหกทั่วโหล ☐ อื่นๆ ระบุ _____

ชื่อโรงงาน/บริษัท ที่เกิดเหตุ _____ **นิคมฯ** _____

ความรุนแรง
☐ เล็กน้อย ☐ ปานกลาง ☐ มาก ☐ อื่นๆ _____

เหตุการณ์เบื้องต้น (ระบุเหตุการณ์ที่เกิดขึ้นคร่าวๆ เกิดอะไรขึ้น ที่ไหน ผลกระทบต่อภายนอก)
 วันที่เกิดเหตุ _____ เวลา _____ น.
 เหตุการณ์เบื้องต้น _____

ชื่อผู้แจ้ง (ตัวบรรจง) _____ หมายเลขโทรศัพท์ที่ติดต่อกลับได้ _____

ศูนย์สื่อสารและรับแจ้งเหตุ

☐ สนท./EMCC Fax: 0-3304-7041 Fax: 0-3868-3941 โทร: 0-3868-3933 มีดึก 0-81732-3485 Line ID: admkemcc

☐ สนธ. Fax: 0-38017-496 โทร: 0-3868-5778

☐ สทพ. Fax: 0-3868-3176 โทร: 0-3868-5110 มีดึก 0-88452-426

☐ RIL Fax: 0-38915-316 โทร: 0-38915-285

สำหรับ: เจ้าหน้าที่ศูนย์เฝ้าระวังและควบคุมคุณภาพสิ่งแวดล้อม (EMCC)

ผู้รับแจ้งเหตุ (ตัวบรรจง): _____ **เวลาที่รับแจ้ง** _____ น.

การดำเนินการ

☐ แจ้งเจ้าหน้าที่เวร กณ. ☐ รายงาน ผอ. นิคมฯ

☐ ออกตรวจดูเหตุที่เกิดขึ้น

☐ แจ้งเตือนโรงงาน/ชุมชน ที่อาจได้รับผลกระทบ

☐ แจ้งขอความช่วยเหลือจากหน่วยงานที่เกี่ยวข้อง

☐ คัดลอก

☐ โรงพยาบาล

☐ ตำรวจ

☐ อื่นๆ _____

หมายเหตุ:

1. ผอ.สนท. หมายถึง ผู้อำนวยการสำนักงานนิคมอุตสาหกรรมมาบตาพุด

2. ผอ.สทพ. หมายถึง ผู้อำนวยการสำนักงานท่าเรืออุตสาหกรรมมาบตาพุด

3. ผอ.สนธ. หมายถึง ผู้อำนวยการสำนักงานนิคมอุตสาหกรรมร่วมด้านนิคมอุตสาหกรรมมาบตาพุด

สำหรับที่แจ้งเหตุ: นิคมอุตสาหกรรมมาบตาพุด (มาบตาพุด) หรือท่าเรืออุตสาหกรรมมาบตาพุด (ท่าเรือมาบตาพุด)

นิคมอุตสาหกรรมมาบตาพุด, นิคมอุตสาหกรรมร่วมด้าน, นิคมอุตสาหกรรมมาบตาพุด โทร: 1666

ฉบับปรับปรุง: MTP_Rev 4 10 Jun 19

APPENDIX V MTP- Port Abnormal Situation and Emergency Reporting Form

แบบรายงานแจ้งเหตุการณ์ผิดปกติ / เหตุฉุกเฉิน เบื้องต้น
ของผู้ประกอบการพื้นที่นิคมอุตสาหกรรมและท่าเรืออุตสาหกรรมมาบตาพุด

เรียน ผู้อำนวยการศูนย์เฝ้าระวังและควบคุมคุณภาพสิ่งแวดล้อม (EMCC)
สำเนาเรียน ☐ ผอ. สนธ. ☐ ผอ. สทพ.

ขอรายงานแจ้งเหตุการณ์ผิดปกติ / เหตุฉุกเฉิน เบื้องต้น ดังนี้

ลักษณะเหตุการณ์
☐ ไฟไหม้ ☐ ระเบิด ☐ รั่ว/สารเคมีอันตรายรั่ว ☐ น้ำมันหกทั่วโหล ☐ อื่นๆ ระบุ _____

ชื่อโรงงาน/บริษัท ที่เกิดเหตุ _____ **นิคมฯ** _____

ความรุนแรง
☐ เล็กน้อย ☐ ปานกลาง ☐ มาก ☐ อื่นๆ _____

เหตุการณ์เบื้องต้น (ระบุเหตุการณ์ที่เกิดขึ้นคร่าวๆ เกิดอะไรขึ้น ที่ไหน ผลกระทบต่อภายนอก)
 วันที่เกิดเหตุ _____ เวลา _____ น.
 เหตุการณ์เบื้องต้น _____

ชื่อผู้แจ้ง (ตัวบรรจง) _____ หมายเลขโทรศัพท์ที่ติดต่อกลับได้ _____

ศูนย์สื่อสารและรับแจ้งเหตุ

☐ สนท./EMCC Fax: 0-3304-7041 Fax: 0-3868-3941 โทร: 0-3868-3933 มีดึก 0-81732-3485 Line ID: admkemcc

☐ สนธ. Fax: 0-38017-496 โทร: 0-3868-5778

☐ สทพ. Fax: 0-3868-3176 โทร: 0-3868-5110 มีดึก 0-88452-426

☐ RIL Fax: 0-38915-316 โทร: 0-38915-285

สำหรับ: เจ้าหน้าที่ศูนย์เฝ้าระวังและควบคุมคุณภาพสิ่งแวดล้อม (EMCC)

ผู้รับแจ้งเหตุ (ตัวบรรจง): _____ **เวลาที่รับแจ้ง** _____ น.

การดำเนินการ

☐ แจ้งเจ้าหน้าที่เวร กณ. ☐ รายงาน ผอ. นิคมฯ

☐ ออกตรวจดูเหตุที่เกิดขึ้น

☐ แจ้งเตือนโรงงาน/ชุมชน ที่อาจได้รับผลกระทบ

☐ แจ้งขอความช่วยเหลือจากหน่วยงานที่เกี่ยวข้อง

☐ คัดลอก

☐ โรงพยาบาล

☐ ตำรวจ

☐ อื่นๆ _____

หมายเหตุ:

1. ผอ.สนท. หมายถึง ผู้อำนวยการสำนักงานนิคมอุตสาหกรรมมาบตาพุด

2. ผอ.สทพ. หมายถึง ผู้อำนวยการสำนักงานท่าเรืออุตสาหกรรมมาบตาพุด

3. ผอ.สนธ. หมายถึง ผู้อำนวยการสำนักงานนิคมอุตสาหกรรมร่วมด้านนิคมอุตสาหกรรมมาบตาพุด

สำหรับที่แจ้งเหตุ: นิคมอุตสาหกรรมมาบตาพุด (มาบตาพุด) หรือท่าเรืออุตสาหกรรมมาบตาพุด (ท่าเรือมาบตาพุด)

นิคมอุตสาหกรรมมาบตาพุด, นิคมอุตสาหกรรมร่วมด้าน, นิคมอุตสาหกรรมมาบตาพุด โทร: 1666

ฉบับปรับปรุง: MTP_Rev 4 10 Jun 19

15. REFERENCE LIST

The following references were used for this document:

Chevron: Global Manufacturing Loss/ Near Loss Classification and Reporting Metrics

Rayong Province Emergency Response Plan

IEAT-IEAT-MTP Port Emergency Response Plan B.E.2558

Chevron Leak Response Protocol June 2015

ภาคผนวก ข.23

Oil Spill Response Drills

**MARINE TERMINAL - OIL SPILL RESPONSE DRILL****Schedule to practice drill for each shift A, B, C, and D**

Equipment	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Oil Spill Boom	A	B	C	D	A	B	C	D	A	B	C	D
Weir Skimmer - MiniMax	A	B	C	D	A	B	C	D	A	B	C	D
Boat Dispersant Refill/Spray	A	B	C	D	A	B	C	D	A	B	C	D

Notes: Events can be simulated as if the boom had been launched and deployed at spill location. Skimmer can be launched with means of ropes at boom ramp or at berth as appropriate. Boat can help transport or slowly tow the skimmer to desired location. Be advised to prime Spate Pump with water for quicker suction. Boat dispersant refill is to be simulated with fresh water. *** Clean/rinse and dry off equipment before storing ***

Date/Time	24/07/2022 15:00-16:10	WF Shift	C	SC Shift/Foreman	PRAKOB
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SCENARIO

Spill Location	Berth 2			
Product/Quantity/Area Size	Black oil / Area 20 m ²			
Wind Direction/Speed	210 deg / 7 knot	Tide	1.2 meter still	
OSR Equipment	Boom 200 x 2 m , Ro boom 1000 600m, Ro boom 1300 900 m			
General Scenario	Fuel oil No.5 amount 20 m3 spilled to water at product piers			

EVENTS

Time	Description
15:00	Operator calling to MCB for emergency stop loading fuel oil at berth 2 due to ship manifold broken at port side during alongside at berth#1
15:01	MCB Panel man stop loading and all valves closed.
15:05	Berth operator go to berth and found cargo FO-5 come out from the loading arm and spilled to the sea and direction to water intake of power plant company.
15:07	OSC informed to IC and REB for announce Oil spill respons Tier 1
15:15	ERT arrive MCB and setting team for prepare Oil spill equipments and dispersant.
15:18	Notify Uniwise rayong and SC Management Tug by VHF ch.67
15:25	OSC request SC foreman and ERT commenced deploy boom by tug boat RS-18 & SC22
15:40	Boom 200x2 m. was deploying to spilled area at water intake of power plant and contain oil spill in U-shape boom.
15:50	Recover the oil by using skimmer and apply dispersant after get approve from PCD
	Assign RS-14,RS-18 and RS-27 to spray dispersant.
15:10	<ul style="list-style-type: none"> - Exercised over. - Clean Boom with fresh water.

**Comments/Remarks:**

MARINE TERMINAL - OIL SPILL RESPONSE DRILL

Schedule to practice drill for each shift A, B, C, and D

Equipment	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Oil Spill Boom	A	B	C	D	A	B	C	D	A	B	C	D
Weir Skimmer - MiniMax	A	B	C	D	A	B	C	D	A	B	C	D
Boat Dispersant Refill/Spray	A	B	C	D	A	B	C	D	A	B	C	D

Notes: Events can be simulated as if the boom had been launched and deployed at spill location. Skimmer can be launched with means of ropes at boom ramp or at berth as appropriate. Boat can help transport or slowly tow the skimmer to desired location. Be advised to prime Spate Pump with water for quicker suction. Boat dispersant refill is to be simulated with fresh water. *** Clean/rinse and dry off equipment before storing ***

Date/Time	27 Aug 22 / 09:30-11:30	WF Shift	D	SC Shift/Foreman	Mr. Prakob
-----------	-------------------------	----------	---	------------------	------------

SCENARIO

Spill Location	Berth 2		
Product/Quantity/Area Size	Black oil (FO-5) / 0.5 M3 / Area 20 m ²		
Wind Direction/Speed	155 deg / 17 knot	Tide	1.7 meter still
OSR Equipment	Boom 25 M x 4 set		
General Scenario	Fuel oil spilled by overflow from ship's mast riser while loading at berth no. 2		

EVENTS

Time	Description
09:30	Ship "MT Kanok Muthalong" calling to MCB for emergency stop loading fuel oil at berth 2 due to overflow from ship's mast riser.
09:32	MCB Panel man stop loading and all valves closed.
09:35	Berth operator go to berth no.2 and found black oil spill to ship deck and overflow to sea around 20 m ² at port side of ship.
09:40	Senior operator informed to Shift Supervisor, Marine duty, Port control and inform to SP team. Senior operator act as onscene commander announce Oil spill respons Tier 1.
09:50	Shift Sup & O/C setting team for prepare Oil spill equipments and requeste MCB panel man to stop load all ship loading operation at Product pier.
10:00	Onscene request SC foreman commenced deploy boom by tug boat RS-14, RS-18 & SC22
10:15	Boom 25 m x 4 set. SC Team was deploying to spilled area at berth # 2 and contain oil spill in J-shape & U shape boom.
10:20	Team responds use oil spill equipment for minimize contain oil spill on the sea and observer all time.
10:30	Onscene contract with SC foreman calling tugboat RS-24/RS-38/RS-22 swaying around film oil
11:20	Berth operator do survey around all berth and all LPG pier for find out another oil slick & Film Oil.
11:30	<ul style="list-style-type: none"> Exercised over. Clean Boom with fresh water.

Comments/Remarks:



Comments/Remarks:


MARINE TERMINAL - OIL SPILL RESPONSE DRILL

Schedule to practice drill for each shift A, B, C, and D

Equipment	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Oil Spill Boom	A	B	C	D	A	B	C	D	A	B	C	D
Weir Skimmer - MiniMax	A	B	C	D	A	B	C	D	A	B	C	D
Boat Dispersant Refill/Spray	A	B	C	D	A	B	C	D	A	B	C	D

Notes: Events can be simulated as if the boom had been launched and deployed at spill location. Skimmer can be launched with means of ropes at boom ramp or at berth as appropriate. Boat can help transport or slowly tow the skimmer to desired location. Be advised to prime Spate Pump with water for quicker suction. Boat dispersant refill is to be simulated with fresh water. *** Clean/rinse and dry off equipment before storing ***

Date/Time	11 Sep 22 / 14:30-16:30	WF Shift	A	SC Shift/Foreman	Mr. Prakob
-----------	-------------------------	----------	---	------------------	------------

SCENARIO

SCENARIO			
Spill Location	Berth 2		
Product/Quantity/Area Size	Black oil (FO-5) / 1 M3 / Area 20 m ²		
Wind Direction/Speed	155 deg / 10 knot	Tide	1.7 meter still
OSR Equipment	FoamBoom 25 M x 4 set		
General Scenario	Fuel oil spilled by overflow from ship's mast riser while loading at berth no. 2		

EVENTS

Time	Description
14:30	Ship Officer calling to MCB for emergency stop loading fuel oil at berth no.2 due to overflow from ship's mast riser.
14:32	MCB Panel man stop loading and all valves closed.
14:35	Berth operator go to berth no.2 and found black oil spill to ship deck and overflow to sea around 20 m ² at port side of ship.
14:40	Senior operator informed to Shift Supervisor, Marine duty, Port control and inform to SP team. Senior operator act as onscene commander announce Oil spill respons Tier 1A.
14:50	Shift Sup & O/C setting team for prepare Oil spill equipments and requeste MCB panel man to stop load all ship loading operation at Product pier.
15:00	Onscene request SC foreman commenced deploy Foamboom by tug boat RS-14, RS-18 & SC22
15:15	FoamBoom 25 m x 4 set. SC Team was deploying to spilled area at berth # 2 and contain oil spill in J-shape & U shape boom.
15:20	Team responds use oil spill equipment for minimize contain the oil spill on the sea and observer all time.
15:30	Onscene contract with SC foreman calling tugboat RS-24/RS-38/RS-22 to swaying around film oil
16:20	Berth operator do survey around all berth and all LPG pier for find out another oil slick & Film Oil.
16:30	- Exercised over.

Comments/Remarks:



Comments/Remarks:



**MARINE TERMINAL - OIL SPILL RESPONSE DRILL**

Schedule to practice drill for each shift A, B, C, and D

Equipment	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Oil Spill Boom	A	B	C	D	A	B	C	D	A	B	C	D
Weir Skimmer - MiniMax	A	B	C	D	A	B	C	D	A	B	C	D
Boat Dispersant Refill/Spray	A	B	C	D	A	B	C	D	A	B	C	D

Notes: Events can be simulated as if the boom had been launched and deployed at spill location. Skimmer can be launched with means of ropes at boom ramp or at berth as appropriate. Boat can help transport or slowly tow the skimmer to desired location. Be advised to prime Spate Pump with water for quicker suction. Boat dispersant refill is to be simulated with fresh water. *** Clean/rinse and dry off equipment before storing ***

Date/Time	30 Oct 22 / 09:30-11:40	WF Shift	B	SC Shift/Foreman	Mr. Prakob
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SCENARIO

SCENARIO

Spill Location	Berth 1		
Product/Quantity/Area Size	Black oil (FO-5) / 100lts / Area 30 m ²		
Wind Direction/Speed	247 deg / 8 knot	Tide	1.0 meter still
OSR Equipment	FoamBoom 25 M x 4 set		
General Scenario	Fuel oil spilled by overflow from ship's mast riser while loading at berth no. 1		

EVENTS

Time	Description
09:30	Ship Officer calling to MCB for emergency stop loading fuel oil at berth no.1 due to overflow from ship's mast riser.
09:34	MCB Panel man stop loading and all valves closed.
09:36	Berth operator go to berth no.1 and found black oil spill to ship deck and overflow to sea around 30 m ² at port side of ship.
09:40	Senior operator informed to Shift Supervisor, Marine duty, Port control and inform to SP team. Senior operator act as onscene commander announce Oil spill respons Tier 1A.
09:50	Shift Sup & O/C setting team for prepare Oil spill equipments and requeste MCB panel man to stop load all ship loading operation at Product pier.
10:00	Onscene request SC foreman commenced deploy Foamboom by tug boat RS-16, RS-18 & SC22
10:18	FoamBoom 25 m x 4 set. SC Team was deploying to spilled area at berth # 1 and contain oil spill in J-shape & U shape boom.
10:20	Team responds use oil spill equipment for minimize contain the oil spill on the sea and observer all time.
10:30	Onscene contract with SC foreman calling tugboat RS-16/RS-18/RS-22 to swaying around film oil
10:40	Berth operator do survey around all berth and all LPG pier for find out another oil slick & Film Oil.
10:40	- Exercised over.



Comments/Remarks:

Comments/Remarks:



ARINE TERMINAL - OIL SPILL RESPONSE DRILL

Schedule to practice drill for each shift A, B, C, and D

Equipment	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Oil Spill Boom	A	B	C	D	A	B	C	D	A	B	D	D
Weir Skimmer - MiniMax	A	B	C	D	A	B	C	D	A	B	D	D
Boat Dispersant Refill/Spray	A	B	C	D	A	B	C	D	A	B	D	D

Notes: Events can be simulated as if the boom had been launched and deployed at spill location. Skimmer can be launched with means of ropes at boom ramp or at berth as appropriate. Boat can help transport or slowly tow the skimmer to desired location. Be advised to prime Spate Pump with water for quicker suction. Boat dispersant refill is to be simulated with fresh water. *** Clean/rinse and dry off equipment before storing ***

Date/Time	11 Nov 22 / 13:35- 14.20	WF Shift	C	SC Shift/Foreman	Mr. Prakob
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SCENARIO

SCENARIO

Spill Location	Berth 2		
Product/Quantity/Area Size	Black oil (FO-5) / 30 m ³ / Area 65 m ²		
Wind Direction/Speed	127.8 deg / 9 knot	Tide	1.4 meter still
OSR Equipment	Foam Boom 25 m x 8 set = 400 m and Disc Skimmer		
General Scenario	Fuel oil spilled by overflow from ship's manifold while loading at berth no. 2		

EVENTS

Time	Description
13.35	Ship Officer calling to MCB for emergency stop loading fuel oil at berth no.2 due to oil leak from ship's manifold.
13.37	MCB Panel man press ESD to stop loading and all valves closed.
13.40	Berth operator go to berth no.2 and found black oil spill to ship deck and overflow to sea around 30 m ² at port side of ship.
13.40	Senior operator informed to Shift Supervisor, Marine duty, Port control and inform to SP team. Senior operator act as onscene commander announce Oil spill respons Tier 2.
13.45	Shift Sup & O/C setting team for prepare Oil spill equipments and requeste MCB panel man to stop load all ship loading operation at Product pier.
13.50	Onscene request SC foreman commenced deploy Foamboom by tug boat RS-14, RS-18, RS-27 & S.C. 23
13.55	FoamBoom 25 m x 8 set. SC Team was deploying to spilled area at berth # 2 and contain oil spill in U shape boom at scene 200 m and prevent the water intake at Glow Power Plant 200 m.
14.00	Responds team use Disc skimmer for recover the oil to Fast tank and observer all time.
14.05	Onscene commander contract with SC foreman calling tugboat RS-14, RS-18 and S.C. 23 to check around oil spill area.
14.20	Berth operator do survey around all berth and all including LPG pier for find out another oil slick & Oil film.
14.20	- Exercised over.



Comments/Remarks:

-1 working got heat stroke ambulance take care
-1 Disc skimmer damage swop to new one.

Comments/Remarks:

MARINE TERMINAL - OIL SPILL RESPONSE DRILL

Schedule to practice drill for each shift A, B, C, and D

Equipment	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Oil Spill Boom	A	B	C	D	A	B	C	D	A	B	C	D
Weir Skimmer - MiniMax	A	B	C	D	A	B	C	D	A	B	C	D
Boat Dispersant Refill/Spray	A	B	C	D	A	B	C	D	A	B	C	D

Notes: Events can be simulated as if the boom had been launched and deployed at spill location. Skimmer can be launched with means of ropes at boom ramp or at berth as appropriate. Boat can help transport or slowly tow the skimmer to desired location. Be advised to prime Spate Pump with water for quicker suction. Boat dispersant refill is to be simulated with fresh water. *** Clean/rinse and dry off equipment before storing ***

Date/Time	17 Dec 22 / 09:20-12:00 hr.	WF Shift	D	SC Shift/Foreman	Prakob & Pisarn J.
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SCENARIO

SCENARIO			
Spill Location	Berth 2 M/T Kanok Muthalong		
Product/Quantity/Area Size	Black oil (FO-5) / 0.5 M3 / Area 20 m ²		
Wind Direction/Speed	147 deg / 9 knot North to South	Tide	2.0 meter still
OSR Equipment	SPRC Boom 4*25 M		
General Scenario	Fuel oil spilled by overflow from ship's mast riser while loading at berth no. 2		

EVENTS

Time	Description
09:30	Ship "MT Kanok Muthalong" calling to MCB for emergency stop loading fuel oil at berth 2 due to overflow from ship's mast riser.
09:32	MCB Panel man stop loading and all valves closed.
09:35	Berth operator go to berth no.2 and found black oil spill to ship deck and overflow to sea around 20 m ² at port side of ship.
09:40	Senior operator informed to Shift Supervisor, Marine duty, Port control and inform to SP team. Senior operator act as onscene commander announce Oil spill respons Tier 1.
09:50	Shift Sup & O/C setting team for prepare Oil spill equipments and requeste MCB panel man to stop load all ship loading operation at Product pier.
10:00	Onscene request SC foreman commenced deploy boom by tug boat RS-16, RS-18 & SC23
10:15	Boom 25 m x 4 set. SC Team was deploying to spilled area at berth # 2 and contain oil spill in J-shape & U shape boom.
10:20	Team responds use oil spill equipment for minimize contain oil spill on the sea and observer all time.
10:30	Onscene contract with SC foreman calling tugboat RS-24/RS-38/RS-22 swaying around film oil
11:20	Berth operator do survey around all berth and all LPG pier for find out another oil slick & Film Oil.
12:00	- Exercised over. Clean Boom with fresh water.

Report to: PD S/S, PD/1B, PD/11B, PD/78, PD/72, PD/7A6

Rev.0.1 22/12/2020

Comments/Remarks:



Report to: PD S/S, PD/1B, PD/11B, PD/78, PD/72, PD/7A6

Rev.0.1 22/12/2020

ภาคผนวก ข.24

การฝึกซ้อมการโต้ตอบสถานการณ์ฉุกเฉิน

Emergency exercise with EMAG on Aug 26, 2022



1

SPRC

Emergency Exercise in 2022

Exercise

- Level 1A / 1B Weekly on Monday night
- Level 2 Twice per year
- Level 3 One time per year
- Friday Table-Top by weekly
- Evacuation 1 time per year per occupant building



3

EMAG's operation training course on Nov 16, 2022



2

SPRC

Emergency Exercise level 2 CCR, Jun 2022



4

Emergency Exercise Level 2, 60D255, July 2022



Emergency Exercise Level 3, 60D341, September 2022



5

6

Building Evacuation Exercise in 2022



7

Oil Spill Exercise in 2022 with IESG Rayong 7-8 Sep.



Rayong Oil Spill Response Exercise (ROSE'22)



8

Oil Spill Exercise in 2022 with IESG Rayong 7-8 Sep.



Rayong Oil Spill Response Exercise (ROSE'22)

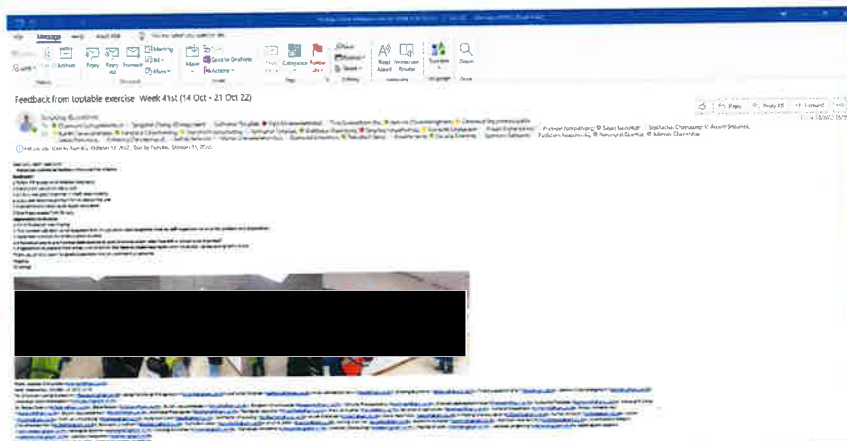


วันที่ 7 กันยายน 2565 : การอบรมเพื่อทบทวนความรู้ของผู้นปฏิบัติงานในการจัดการน้ำมัน

Oil Spill Exercise in 2022 with IESG Rayong 7-8 Sep.



Tabletop Exercise



Emergency Level 1 Drill Report PN Area 3 D shift

Date: Aug 22, 2022

Time: 23:05

Name of unit: SRU Plant 31

Exact Location: 31G102B

Scenario: 31G102B discharge upstream flange bad leak cause high concentration H2S & sour water release.

Drill Format:

- ☐ Wet drill
☒ Dry run
☐ Table top
☐ Full functional drill

Drill Notification:

- ☐ Un announcements drill
☒ Announcements before drill

Objective:

1. To Test response of our fit team such as;

- ☒ Received the message of level 1 incident
☒ Arrive at scene within 5 min minimum.
☒ Reports to OSC when you are arrive at the Scene.
☒ Bring fire bunker gear bag to the scene by your self
☒ By fire bunker gear at the fire command vehicle
☒ Understand situation from OSC before the activities being assigned by OSC
☒ Dress up fire bunker gear with SCBA as required (selfish) within 3 min.
☒ Confirm activities and feedback with leader or OSC

2. To Test Response of OSC such as:

- ☒ Understanding situation and be size up.
☒ Inform ERT team to meeting point
☒ Corroborate fire driver are at fire station
☒ Switch radio to emergency channel and contact IC
☒ Go to the scene with full set of OSC jacket
☒ Briefing situation to ERT team and define hot zone and safe zone
☒ Make sure ERT teams are safe condition with full set of fire bunker gear or SCBA
☒ Counting for all personal at the scene and report to IC
☒ Inform REB for others require such as road closure, activate level, pager call in etc
☒ Assign ERT team to acting leader if more activities
☒ Follow up situation and keep continue report to IC for importance activities
☒ Contact with CCB or CCR for plant operation
☒ Contact clinic team to standing by in the safe place area
☐ Confirm with area owner of fire pump are proper operating
☐ Consult IC if situation might effect to communities or other concern
☐ Coordinate with area near by if need evacuate or effecting.
☐ Recheck fuel of fire truck

3. To test Fire Drivers such as:

- ☒ Inform OSC when arrive fire station and confirm traffic route to the scene
☒ Wearing proper PPE
☒ Setting emergency radio channel
☒ Communicate to OSC during on the way
☒ Parking fire truck on the right position (always facing out)
☒ Make sure wheel type are blocked
☒ Be aware for heat source from exhaust of fire truck.
☒ Coordinate with ERT team for FFE require on fire truck and FFE lay out
☒ Correct operating of fire truck procedure

4. Test familiarization of Fire Fighting Equipment such as :-

- ☒ Fire hose, Nozzles and adapter from Fire Truck or Fire Cabinet.
☐ Fire hose, Nozzles and adapter from Fire Cabinet.

- ☒ SCBA
☐ Steam lance

Emergency Vehicles

- ☒ Fire Truck Number: 01
☐ Foam Truck
☒ OSC Vehicle
☐ Foam Solution Discharged?
☐ Fire Water Discharged?

- ☐ YES / ☒ NO
☐ YES / ☐ NO

Rescue Equipment

- ☐ YES / ☒ NO

Incident Control

Objective	Strategy	Tactics
1. Responder Safe.	1. Approach the incident up wind & zoning	1. Wear full fire bunker gear with SCBA
2. Minimize smell to community down wind.	2. Responder require SCBA.	2. Used fire truck No.1 for standby & connect with hydrant SH139.
3. Minimize environment effect.	3. Evacuate safe.	3. Use fix monitor no SM 160,153,158,157,163 for dilution & protect gas to furnace.
4. Minimize asset damaged.	4. Minimize manning.	4. Evacuate people to safe area.
5. Control and secure the incident.	5. Apply leak protocol.	5. Shut down Plant 31.
6. Minimize ETP effect.	6. Contain toxic gas.	6. Dilute system until gas H2S reading zero.
	7. Prevent toxic escape to furnace.	7. Size survey with H2S detector.
	8. Dilution sour water.	

Sequence of event

Time	Event	Remark
23:05	CCB inform 31A/T01/T02 reading high & outside go to check & found upstream discharge valve flange leaking.	
23:06	OSC informed to contact REB for activated emergency level 1A & road closure No. 7,8,14,15.	
23:07	Inform REB to evacuate people in the plant including JGC warehouse & work shop to go to assembly point No.10 (CCB).	
23:10	DCS inform S/S to shut down plant 31 unit (apply leak protocol).	
23:10	Fire truck No.1 arrived & connected with hydrant SH139.	
23:10	4 ERT arrive and OSC brief the situation. All ERT wear full fire bunker gear with SCBA.	
23:12	1 Leader & 2 ERTs with full bunker gear & SCBA go to open fix monitors No. 160,153,157,158,163 to dilute the sour water & protect the toxic gas got to furnace.	
23:25	CCB inform 31A/T01/T02 reading zero & outside confirm the leak was stopped.	
23:27	1 Leader & 2 ERTs with full bunker gear & SCBA to site survey & found H2S not detected.	
23:30	REB site survey around the outside area & warehouse & found H2S	

- ☐ Portable Fire Extinguisher
☒ SCBA
☒ Escape set.
☒ Gases Detector.
☐ Mobile ground monitor.
☐ Foam carts or Foam Tailor.
☐ Wheel dry chemical
☐ Fire Banker Gear form OSC V
☒ Fixed Monitor.
☐ One-man foam station
☒ Fire hydrants.
☐ Fixed water spray system.
☐ Foam system
☐ Rescue set
☐ Dry riser
☐ Base foam connection
☐ Hose reels
☐ Fire blanket

Participants:

- ☒ Incident Commander: Nuntawut P. (PD/3E)
☒ On Scene Commander: Niran T. (PN/33)
☒ ERT team: Itsara. (PN/33)
Chalichai K. (PN/32)
Kard L. (PN/31)
Aryuwat (PN/34)
Anukit (PD/31)
Kanakorn N(PD/31)

- ☒ Security: Soontorn S. (QS/33D)

- ☐ Clinic:
☒ Observer: Pramual J. (PN/3D)

Equipment Used:

Fixed Equipment

- ☐ Fire Cabinets/ Hose Box No.
☒ Fire Hydrant
☒ Fix Monitor
☐ Block Valve No
☐ One Man Foam Station No
☐ Steam Ring
☐ Water Spray Systems
☐ Water Sprinkler Systems
☐ Fixed Foam Systems
☐ Semi Fixed Foam Systems
☐ Safety Eye Wash / Shower

Moveable Equipment

- ☐ Ground Monitor
☐ Mobile Monitor
☐ Foam Cart
☐ Wheel Dry Chemical
☐ Portable Fire Extinguisher
☒ Bunker Gear
☐ Fire Hose 2.5"
☐ Fire Hose 1.5"
☐ Fire Hose 5"
☐ Nozzle

	reading zero	
23:31	Exercise over.	

Summary of the drill: 25 minutes					
No.	Problem finding	Corrective Action	Action by	Status	Due Date
1	Sport light lift up on OSC vehicle- not work 2 ea.				
Others:					
Report By: Niran T. (PN/33)					

Others:
Report By : Chatree B.

Emergency Level 1 Drill Report
PN Area 1
A shift

Date: 04/10/2022
Time: 23:00
Name of unit: CDU/VDU
Exact Location: 02G119A
Scenario: Short: 02G119A mechanical seal failure causing leakage

Drill Format
☐ Wet drill
☒ Dry run
☐ Table top
☐ Full functional drill

Drill Notification
☐ Unannouncements drill
☒ Announcements before drill

Objective: 1. To test response of our ERT such as:

- ☒ Received the message of level 1A/B incident
- ☒ Arrive at scene within 5 min. minimum
- ☒ Reports to OSC when you arrive at the scene
- ☐ Bring fire bunker gear bag to the scene by yourself
- ☒ Use fire bunker gear at the OSC vehicle
- ☒ Understand situation from OSC before the activities being assigned by OSC
- ☒ Dress up fire bunker gear with SCBA as required (selfish) within 3 min
- ☒ Confirm activities and feedback with team leader or OSC

2. To test response of OSC such as:

- ☒ Understanding situation and be size up
- ☒ Inform ERT member to meeting point
- ☐ Corroborate fire driver are at fire station
- ☒ Switch radio to emergency channel and contact IC
- ☐ Go to the scene with full set of OSC jacket
- ☒ Briefing situation to ERT team and define hot zone and safe zone
- ☐ Make sure ERT member are safe with full set of fire bunker gear or SCBA
- ☒ Counting for all personal at the scene and report to IC
- ☒ Inform REB for others require such as road closure, activate level, phone call in
- ☐ Assign ERT team to acting leader if more activities
- ☒ Follow up situation and keep continue report to IC for importance activities
- ☒ Contact with CCB for plant operation
- ☐ Contact clinic to standing by in the safe location
- ☐ Confirm with area owner of fire pump are proper operating
- ☐ Consult IC if situation might effect to communities or other concern
- ☐ Coordinate with area near by if need evacuate or effecting
- ☐ Recheck fuel of fire truck

3. To test Fire Drivers such as:

- ☒ Inform OSC when arrive fire station and confirm traffic route to the scene
- ☐ Wearing proper PPE
- ☒ Setting emergency radio channel
- ☐ Communicate to OSC during on the way
- ☒ Parking fire truck on the right position (always facing out)
- ☒ Make sure wheel tyre are blocked
- ☐ Be aware for heat source from exhaust of fire truck
- ☐ Coordinate with ERT for FFE require on fire truck and FFE lay out

☒ Correct operating of fire truck procedure

4. Test familiarization of fire fighting equipment such as:

- ☐ Fire hose, nozzles and adapter from fire truck or fire cabinet
- ☐ Fire hose, nozzles and adapter from fire cabinet
- ☐ Portable fire extinguisher
- ☒ SCBA with control board
- ☐ Escape set
- ☒ Gases detector
- ☐ Mobile ground monitor
- ☐ Foam carts or Foam Tailor
- ☐ Wheel dry chemical
- ☐ Fire bunker gear from area fire cabinet
- ☒ Fixed monitor
- ☐ One-man foam station
- ☒ Fire hydrants
- ☐ Fixed water spray system
- ☒ Foam system
- ☐ Rescue set
- ☐ Dry riser
- ☐ Base foam connection
- ☐ Hose reels
- ☐ Fire blanket
- ☐ Rescue set

- ☐ Wheel Dry Chemical
- ☐ Portable Fire Extinguisher
- ☒ Bunker Gear
- ☐ Fire Hose 2.5"
- ☒ Fire Hose 1.5"
- ☐ Fire Hose 5"
- ☐ Nozzle
- ☒ SCBA
- ☐ Steam lance

Emergency Vehicles :
☒ Fire Truck Number: 1
☐ Foam Truck
☒ OSC Vehicle
☐ Foam Solution Discharged? ☐ YES / ☒ NO
☐ Fire Water Discharged? ☐ YES / ☒ NO

Rescue Equipment : ☐ YES / ☒ NO

Sequence of event

Location: Pump 02G119A		
Time	Event	Remark
23:00	<ul style="list-style-type: none">DCS operator inform low pressure barrier oil of pump 02G119A cause pump trip and suction MOV closeOutside operator verify at pump 02G119A and find LPG leak from mechanical seal and develop vapor cloudOutside operator inform CCB and call REB to announce emergency level 1AWind direction from south to northInform REB to road closer 11,12 and 18,19	
23:10	<ul style="list-style-type: none">Outside operator use fix monitor SM105/106 and 112 to contain LPG vapor cloudOutside operator isolate discharge MOV for contain LPG inside pump 02G119A	
23:20	<ul style="list-style-type: none">OSC vehicle, Fire truck and ERT 8 persons arrives at sceneBriefing situation to ERT and define hot/warm zone	
23:40	<ul style="list-style-type: none">Outside operator success to isolate pump 02G119ALPG vapor cloud decrease	
23:50	<ul style="list-style-type: none">Assign 4 ERT with fire bunker gear and SCBA to spray foam solution 1% at ground for prevent LPG catch fire	
23:55	<ul style="list-style-type: none">Leakage stop and no LPG vapor cloudStop fire water and foam solutionERT check gas at down wind with gas detector confirmed LEL is 0% and H2S is 0 ppm	
24:00	<ul style="list-style-type: none">Stop use fix monitorsHead count all ERT memberDeactivate emergency exercise level 1A	

Participants:

☒ Incident Commander: PD/3B Savas
☒ On Scene Commander: PN/31 Soravit
☒ ERT Member: PN/31 Komin
PN/32 Bunluc
PN/33 Pinyo
PN/34 Aryuwat
PD/31 Wuikorn / Sorrasit

☒ Security: QS/33A
☒ Clinic: Stand By
☒ Observer: PN/3A Seriphap

Equipment Used:

Fixed Equipment :
☐ Fire Cabinets/ Hose Box No.
☐ Fire Hydrant
☒ Fix Monitor No. SM105/106/112
☐ Block Valve No.
☐ One Man Foam Station No.
☐ Steam Ring
☐ Water Spray Systems
☐ Water Sprinkler Systems
☐ Fixed Foam Systems
☐ Semi Fixed Foam Systems
☐ Safety Eye Wash / Shower

Moveable Equipment :

☐ Ground Monitor
☐ Mobile Monitor
☐ Foam Cart

Summary of the drill:					
No.	Problem finding	Corrective Action	Action by	Status	Due Date

Others:					
Report By : Soravit P.					

Emergency Level 1A Drill Report

PN Area 3

A - Shift

Date: 28 November 2022
Time: 23:00

Name of unit: Plant 33 Sulphur Recovery Unit
Exact Location: 33F101
Scenario: Short: 33F101 leaking inlet 6" amine acid gas (front)

Drill Format

- ☐ Wet drill
☒ Dry run
☐ Table top
☐ Full functional drill

Drill Notification

- ☐ Un announcements drill
☒ Announcements before drill

Objective: 1. To Test response of our fit team such as;

- ☒ Received the message of level 1A,1B incident
- ☒ Arrive at scene within 5 min minimum
- ☒ Reports to OSC when you arrive at the Scene
- ☐ Bring fire bunker gear bag to the scene by your self
- ☒ by fire bunker gear at the fire command vehicle
- ☒ Understand situation from OSC before the activities being assigned by OSC
- ☒ Dress up fire bunker gear with SCBA as required (selfish) within 3 min
- ☒ Confirm activities and feedback with leader or OSC

2. To Test Response of OSC such as:

- ☒ Understanding situation and be size up
- ☒ Inform ERT team to meeting point
- ☒ Corroborate fire driver are at fire station
- ☒ Switch radio to emergency channel and contact IC
- ☐ Go to the scene with full set of OSC jacket
- ☒ Briefing situation to ERT team and define hot zone and safe zone
- ☒ Make sure ERT teams are safe condition with full set of fire bunker gear or SCBA
- ☒ Counting for all personal at the scene and report to IC
- ☒ Inform REB for others require such as road closure, activate level A,1B, pager call

in etc

- ☒ Assign ERT team to acting leader if more activities
- ☒ Follow up situation and keep continue report to IC for importance activities
- ☒ Contact with CCB or CCR for plant operation
- ☒ Contact clinic team to standing by in the safe place area
- ☒ Confirm with area owner of fire pump are proper operating
- ☒ Consult IC if situation might effect to communities or other concern
- ☒ Coordinate with area near by if need evacuate or effecting
- ☒ Recheck fuel of fire truck

3. To test Fire Drivers such as:

- ☒ Inform OSC when arrive fire station and confirm traffic route to the scene
- ☒ Wearing proper PPE
- ☒ Setting emergency radio channel
- ☒ Communicate to OSC during on the way

- ☒ Parking fire truck on the right position (always facing out)
- ☒ Make sure wheel type are blocked
- ☐ Be aware for heat source from exhaust of fire truck
- ☒ Coordinate with ERT team for FFE require on fire truck and FFE lay out
- ☒ Correct operating of fire truck procedure

4. Test familiarization of Fire Fighting Equipment such as: -

- ☐ Fire hose, Nozzles and adapter from Fire Truck or Fire Cabinet
- ☐ Fire hose, Nozzles and adapter from Fire Cabinet
- ☐ Portable Fire Extinguisher
- ☒ SCBA with Control Board
- ☐ Escape set
- ☒ Gases Detector
- ☐ Mobile ground monitor
- ☐ Foam carts or Foam Tailor
- ☐ Wheel dry chemical
- ☐ Fire Bunker Gear form area Fire Cabinet
- ☒ Fixed Monitor
- ☐ One-man foam station
- ☒ Fire hydrants
- ☐ Fixed water spray system
- ☐ Foam system
- ☐ Rescue set
- ☐ Dry riser
- ☐ Base foam connection
- ☐ Hose reels
- ☐ Fire blanket
- ☐ Rescue set

Participants:

- ☒ Incident Commander: PD/3F Boonyost L
☒ On Scene Commander: PN/33 Sila N
☒ Fit Team:
 PN/31 Norrapon N
 PN/32 Mintada P
 PN/32 Wasan W
 PN/33 Thirada W
 PN/33 Jirasak B
 PN/34 Aryuwat C
 PD/31 Varapun N
 PD/31 Panfah B

- ☒ Security: QS/33A Theeradech S
☒ Clinic: Stand By

Observer: PN/3A Seriphap K
QS/31 Narongrat B

Equipment Used:

Fixed Equipment

- ☐ Fire Cabinets/ Hose Box No.
- ☐ Fire Hydrant
- ☒ Fix Monitor no 145, 146, 155, 156, 160
- ☐ Block Valve No.
- ☐ One Man Foam Station No
- ☐ Steam Ring

- ☐ Water Spray Systems
- ☐ Water Sprinkler Systems
- ☐ Fixed Foam Systems
- ☐ Semi Fixed Foam Systems
- ☐ Safety Eye Wash / Shower

Moveable Equipment:

- ☐ Ground Monitor
- ☐ Mobile Monitor
- ☐ Foam Cart
- ☐ Wheel Dry Chemical
- ☐ Portable Fire Extinguisher
- ☐ Bunker Gear
- ☐ Fire Hose 2.5"
- ☐ Fire Hose 1.5"
- ☐ Fire Hose 5"
- ☐ Nozzle
- ☒ SCBA
- ☐ Steam lance

Other:

Emergency Vehicles:

- ☒ Fire Truck Number: 01
☐ Foam Truck
☒ OSC Vehicle
☐ Foam Solution Discharged? ☐ YES / ☒ NO
☐ Fire Water Discharged? ☐ YES / ☒ NO

Rescue Equipment:

☐ YES / ☒ NO

Incident Control

Object	Strategy	Tactics
Minimize Environment affect	Contain toxic H2S gas.	Use 5 fix monitors SM155, SM156, SM160 SM145 and SM 146 to disperse and contain toxic gas (high H2S&Strong small)

23:27	Completed to isolate valve PSV Desalter and leak stopped Keep fix monitor cooling around hot area.	
23:29	ERT team head count, check gas around area and gas test LEL 0	
23:30	Deactivated emergency level 1A	

Summary of the drill: 40 minutes

No.	Problem finding	Corrective Action	Action by	Status	Due Date

Others:

Report By : NatachaiM.

1st Emergency Exercise Summarize 2022

Level of Exercise Level 2
Date Jun 10, 2022
Time 9.30 – 11.30
Location of Exercise Area 2A : Plant 08 CCR (Catalyst Continuous Regeneration)
Equipment 08C109

Objectives were meet

- Effectiveness & readiness of Duty team, ERT and Concern party
- Effectiveness & readiness of Communication and Public Announcement
- Effectiveness & readiness of Firefighting Equipment

Targets were meet

- » No one get hurt from exercise
- » No complaints or misunderstand of exercise
- » The communication follows MTP procedure in time manner
- » All of the Duty Role Team, ERT and Concern party are followed Emergency response procedure

Participant of Exercise:	Total	62 people
❖ Emergency Response Team	15	people
❖ Duty Role Team	11	people
❖ REB	6	people
❖ Medical Team	3	people
❖ Emergency support team	6	people
❖ Radioactive safety officer	2	people
❖ Corporate social team	4	people
❖ Evacuee	5	people
❖ EMAG team (TPE)	6	people
❖ Observer (SPRC)	4	people

Scenario of Exercise + Photo:

The field operator found the fire at the catalyst transfer pipe of 08C109.

Wind direction from S to N



The flame affected to radioactive source of 08C108.



— ข้อตกลงความร่วมมือ — Exercise ***

แบบรายงานแจ้งเหตุการณ์ผิดปกติ / เหตุฉุกเฉิน เบื้องต้น

ขอแจ้งประตอบทการพื้นที่รับผิดชอบเหตุการณ์และเจ้าหน้าที่ดูแลเหตุการณ์ตามภาค

เรียน ผู้บริหารภาคศูนย์บริการร่วมและระบบสุขภาพจังหวัดเชียงใหม่ (EMCC)

ส่วนราชการ ☒ ผอ. สว. ☐ ผอ. สท. ☐ ผอ. สก.

ขอรายงานแจ้งเหตุการณ์ผิดปกติ / เหตุฉุกเฉิน เบื้องต้น ดังนี้

ลักษณะเหตุการณ์

☒ ไฟไหม้ ☐ ระเบิด ☐ ภัยธรรมชาติ/อันตราย ☐ ป้ายหน้าผิดปกติ ☐ อื่นๆ ระบุ

ชื่อหน่วยงาน/บริษัท/พื้นที่

SPKC

นิยาม

8121(๓๗)๓

กรณีฉุกเฉิน

☒ เลี่ยงภัย ☐ ปานกลาง ☐ นาน ☐ อื่นๆ

เหตุการณ์ต่อเนื่อง (ระบุเหตุการณ์ที่เกิดขึ้นครั้งกว่า เกิดซ้ำ หรือ ผลกระทบต่อคนละ)

วันที่เกิดเหตุ 10/11/2563

เวลา 01:30

ณ

เหตุการณ์เบื้องต้น แจ้งเหตุ 011-011-1111 โทร. 011-011-1111

ผู้แจ้งเหตุ (ตัวจริง)

011-011-1111

011-011-1111

หมายเลขโทรศัพท์มือถือ 011-011-1111

ศูนย์บริการร่วม (ตัวจริง)

☐ ศส.EMCC Fax 0-3004-7941 Fax 0-3069-3941 โทร 0-3063-3933 ต่อที่ 0-6123-5455 Line ID : assistance

☐ สส. Fax 0-30017-408 โทร 0-3000-5776

☐ สส. Fax 0-3064-3176 โทร 0-3060-4110 ต่อที่ 0-6004-420

☐ รร. 1 น. 0-3001-216 โทร 0-3001-205

สำเนา: เจ้าหน้าที่ศูนย์บริการร่วมสุขภาพจังหวัดเชียงใหม่ (EMCC)

ผู้รับผิดชอบ (ตัวจริง) :

เวลาที่เกิดเหตุ

ณ

ภาค/พื้นที่

☐ แจ้งเจ้าหน้าที่ทราบ ณ ☐ รายงาน ผอ. สว.

☐ แจ้งรายงานผู้เกี่ยวข้อง

☐ แจ้งเตือนระบบสุขภาพ ถึง EMCC (กรณีฉุกเฉิน)

☐ แจ้งผลการดำเนินการของหน่วยงานที่เกี่ยวข้อง

☐ ส่งเรื่อง

☐ โทร. 011-011-1111

☐ โทร. 011-011-1111

☐ ส่งเรื่อง

☐ อื่นๆ

ประวัติ

เอกสาร: รายงาน (ผู้รับทราบ) แจ้งเหตุการณ์ผิดปกติตามภาคสุขภาพ
เอกสาร: รายงาน (ผู้รับทราบ) แจ้งเหตุการณ์ผิดปกติตามภาคสุขภาพ
เอกสาร: รายงาน (ผู้รับทราบ) แจ้งเหตุการณ์ผิดปกติตามภาคสุขภาพ
สำเนาที่ส่ง: รายงาน (ผู้รับทราบ) แจ้งเหตุการณ์ผิดปกติตามภาคสุขภาพ

ดำเนินการตามขั้นตอน, ดำเนินการตามขั้นตอน, ดำเนินการตามขั้นตอน

2018-01-01 10:00:00



A photograph showing three firefighters in full protective gear, including helmets and masks, standing in front of a building entrance. They are holding equipment. A green sign with the number '10' is visible on the left.

A group of people, likely students or staff, are working in a computer lab. They are wearing blue uniforms and high-visibility yellow vests. They are seated at long tables with computers, and a large screen displays a presentation. The room has blue walls and a white ceiling with fluorescent lights.

EA submitted Press Release no.1 to External Party and informed all employee by email

SPRC
STAR PETROLEUM REFINING PUBLIC COMPANY LIMITED
บริษัท สตาร์ ปิโตรเลียม รีไฟน์นิ่ง จำกัด (มหาชน)

*****ใช้สำหรับการซื้อแผนฉุกเฉินเท่านั้น*****

แถลงการณ์ฉบับที่ 01

10 มิถุนายน 2565

เกิดเหตุไฟไหม้ที่หน่วยที่นำวัตถุดิบออกหมักด้วยหัวเร่งปฏิกิริยา
บริษัท สตาร์ ปิโตรเลียม รีไฟน์นิ่ง จำกัด (มหาชน)

วันที่ 10 มิถุนายน 2565 เวลา 09.30 น. ได้เกิดเหตุเพลิงไหม้จากการทำงานของหัวเร่งปฏิกิริยาในบริเวณ
หน่วยที่นำวัตถุดิบออกหมักด้วยหัวเร่งปฏิกิริยา ของบริษัท สตาร์ ปิโตรเลียม รีไฟน์นิ่ง จำกัด (มหาชน)

โดยทันทีที่เกิดเหตุ บริษัทฯ ได้นำทีมดับเพลิงจากโรงงานมาดับเพลิงทันที โดยทีมดับเพลิงจากโรงงาน
ได้เข้าควบคุมสถานการณ์ จนเหตุการณ์ที่เกิดขึ้นได้ยุติลงโดยไม่มีผู้บาดเจ็บหรือเสียชีวิต และจากการดำเนิน
กิจกรรมที่เกี่ยวข้องในบริเวณที่เกิดเหตุทั้งหมด

บริษัทฯ ได้แจ้งผู้เกี่ยวข้องหน่วยงานราชการที่เกี่ยวข้อง โดยบริษัทฯ ได้แจ้งหน่วยงานหน่วยงานราชการ
เพื่อรับแจ้งเหตุการณ์ และขอความช่วยเหลือจากหน่วยงานที่เกี่ยวข้อง ประสานและขอความช่วยเหลือจากหน่วยงานที่เกี่ยวข้อง

บริษัทฯ ขอขอบคุณเหตุการณ์ที่เกิดขึ้นและจะร่วมประเมินเหตุการณ์ที่เกิดขึ้นต่อไปภายใต้การควบคุมดูแล

หากต้องการข้อมูลเพิ่มเติม กรุณาติดต่อ :
ศูนย์สื่อสาร โทร: 028-659590

No.1-1 JB Road, Tambol Map Ta Phut, Amphur Muang Rayong, Rayong Province 21150, Thailand Tel: +66 (0) 38 622 955 Fax: +66 (0) 38 622 952
เว็บไซต์ : www.starpetroleum.co.th สำนักงานสาขา : อำเภอเมืองราชบุรี จังหวัดราชบุรี 21100 โทร: +66 (0) 36 629 000 โทรสาร: +66 (0) 36 629 520

To SPRC mailbox.



At the incident scene. The situation was log by assistant



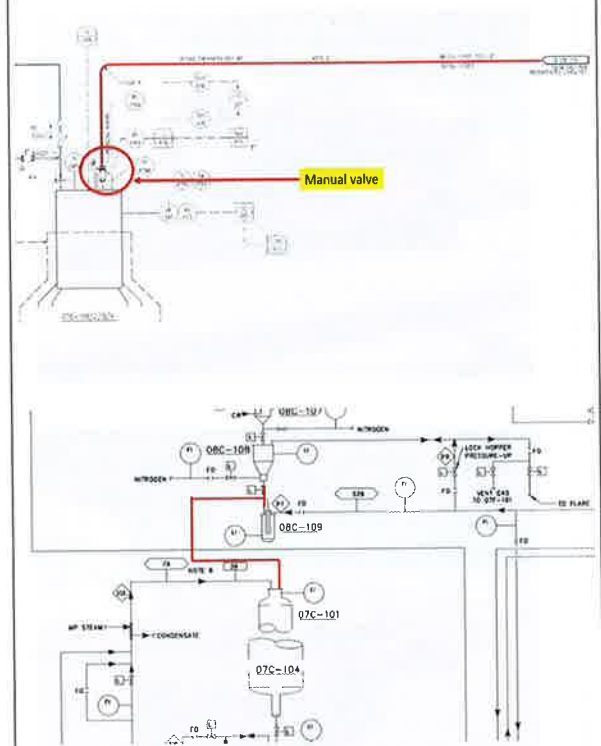
The ERT 3 persons has fatigued. OSC call medical team go to triage area to check and monitor them symptom



OSC request refreshment and SCBA cylinder for ERT from IC
IC coordinated with Duty team support delivery to field



The process system cannot isolate by DCS. The process isolation required ERT / operator go to platform to manual
close valve at 07C101



Valve position at 07C101



OSC activate Emergency level 2 and request ERT support from EMAG

REB contact EMAG focal point

REF Notified to EMCC : Emergency Level 2

[illegible]

EMAG team (TPE) arrived SPRC and go to staging area. OSC brief situation and request support on cooling and safety team for unit isolation.

OSC request RSO support on radioactive survey before going up to close valve at top platform.



Radiation surveying at ground floor before ERT go up to top platform



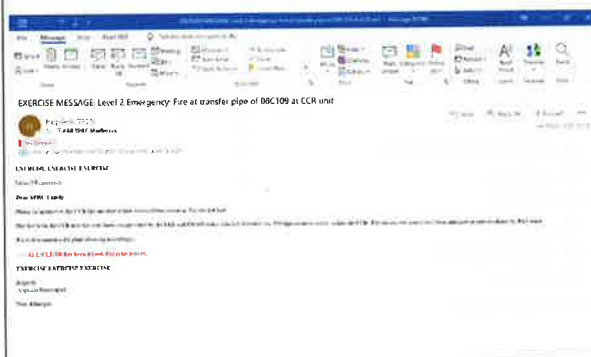
The situation is under control, unit was isolate. A fire was extinguished, continuous cooling structure, radioactive survey: result is no radioactive release



IC, Duty Rota Team and CCT (Crisis Communication Team) meeting for summary the situation



EA submitted Press Release no 2 to External Party and informed all employee by email



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STAR PETROLEUM REFINING PUBLIC COMPANY LIMITED
บริษัท สตาร์ ปิโตรเลียม รีไฟน์นิ่ง จำกัด (มหาชน)

*****ใช้สำหรับกรการซ้อมแผนฉุกเฉินเท่านั้น*****

เอกสารฉบับที่ 02

10 มิถุนายน 2565

เกิดเหตุไฟไหม้พื้นที่ถ่ายเทของเหลวด้วยตัวถังปฏิกิริยา
บริษัท สตาร์ ปิโตรเลียม รีไฟน์นิ่ง จำกัด (มหาชน)

เหตุที่เกิดขึ้นเมื่อวันที่ 10 มิถุนายน 2565 เวลา 09.30 น. ณ บริเวณหน่วยเพิ่มออกเทนด้วยตัวถังปฏิกิริยา ของบริษัท สตาร์ ปิโตรเลียม รีไฟน์นิ่ง จำกัด (มหาชน)

ในขณะนี้ บริษัทฯ สามารถควบคุมสถานการณ์เพลิงไหม้ได้อย่างปลอดภัย และได้ยกเลิกภาวะฉุกเฉินเรียบร้อยแล้ว ทั้งนี้ไม่มีรายงานผู้ได้รับบาดเจ็บหรือผู้เสียชีวิต

บริษัทฯ ขอขอบคุณเหตุการณ์ที่เกิดขึ้นและจะดำเนินการสืบหาสาเหตุของเหตุการณ์ดังกล่าว และหาวิธีป้องกันเพื่อไม่ให้เกิดเหตุการณ์ดังกล่าวขึ้นอีก ทั้งนี้ บริษัทฯ ขออภัย บริษัทฯ ดำเนินการความปลอดภัยของพนักงาน ผู้รับเหมา ขนส่งและสิ่งแวดล้อมรอบข้างเป็นอย่างดี

บริษัทฯ จะรายงานความคืบหน้าของการแก้ไขที่ถูกต้อง เมื่อมีความคืบหน้าเพิ่มขึ้น

หากต้องการข้อมูลเพิ่มเติม กรุณาติดต่อ :
ศูนย์สื่อสาร โทร: 058-699999

No. 1, 1-38 Road, Tambol Map To Phul Amphur Muang Rayong, Rayong Province 21150 Thailand Tel +66 (0) 38 093 000 Fax +66 (0) 38 099 999
เลขที่ : ถนน 1-38 ตำบลมาบตาพุด อำเภอเมืองระยอง จังหวัดระยอง 21150 โทร. +66 (0) 38 099 000 โทรสาร +66 (0) 38 099 999

End of Emergency Exercise

Positive of exercise

No.	Description
1.	All of Siren and Public Announcement as on function
2.	All Firefighting equipment was readiness as on function
3.	New On-Scene Commander is good action and follow role & responsibility.
4.	Duty Rota Team, ERT team follow role responsibility
5.	REB is good communication center to external in time manner
6.	Good record of event and lapse recorder the radio communication during emergency event
7.	The message of press release was clear
8.	Good cooperation between Duty Manager with EA for press release
9.	Good teamwork of Duty Team at EOC
10.	Good coordinated between EA team with CCT. And good preparedness of press release
11.	OSC has briefed the situation to ERT before command
12.	All of press release was shown at Notification Board
13.	Good practice for radioactive monitoring and report to Office of Atoms for Peace: OAP
14.	The information of DUTY team has complied the emergency exercise
15.	Al REB, the telephone number of external parties was up to date.

Opportunity for Improvement

Method of Practice

No.	Description	Correction	Responder	Plan
1	Setup training course of Mobile ground monitor instruction for ERT	Add in refresh rescue training course	QS/31	In Jun 16, 22, 24 & 28

Resources / Facility

No.	Description	Correction	Responder	Plan
1	Prepare the briefcase, handheld radio and MC vest for MC at REB	Provide the new briefcase for MC	QS/31	Within Jul 2022
2	Radio communication has a problem in the first period of exercise	Request IT stand on exercise	QS/31	Within Jul 2022

Others

No.	Description	Correction	Responder	Plan
1	Should set up the checklist for emergency exercise observation	Create new checklist for observation	QS/31 and PN/7 team	Within Jul 2022
2	CA Mgr. did not get the SMS of exercise	Test send SMS to CA Mgr.	REB	Done on Jun 10, 2022

Emergency exercise report level 3,2022

Emergency level 2
 Date 22 July 2022
 Time 9:30 – 12:00
 Location Tank farm
 Equipment number 60D255 (F), Diesel Feed Tank, PD

Objective

- 1 Readiness of Emergency Response Team, Duty team and support team
 - 2 Readiness of emergency alerting system
 - 3 Readiness of Pre-Incident Plan 62D255(F) EHS-OT-QS-3327(F)
 - 4 Readiness of mutual aid team EMAG (Emergency Mutual Aid Group) and other support
- Achieve the objective**
- No one get hurt
 - No complain and misunderstanding
 - Message notification follow Maplapahut JEAT agreement
 - Readiness of Emergency Response Team and Duty team follow emergency response plan

They are 80 persons participate in emergency exercise level 3

❖ Emergency response team	16
❖ IC	1
❖ Operation	2
❖ Duty team	10
❖ Communication center and security	5
❖ Medical team	4
❖ Audit team	3
❖ Contractors	27
❖ Emergency response team	4
❖ TKFS team	5
❖ External affair team	8

Exercise scenario - Photograph



Road closer



Emergency Handling Plan 60D255(F)



Fire truck connected with semi fixed foam system (TPF)



The incident from lightning strike roof tank cause full surface fire at 60D255

The lightning strike at the top roof of 60D255, (Diesel feed tank) explosion, roof flips over the side of tank as a result full surface fire at 60D255 create big fire and back smoke which affected community and environment



Fire truck driver ask for safe route from OSC to command post between 19 and 20



Fire truck & OSC vehicle on the way to command post



OSC vehicle & Ambulance arrived the command post within 5 minutes



On scene did scenario brief and response plan to ERT to handle the emergency



OSC assign 2 team leaders to accomplish the mission follow the plan

- 1 First team rescue the patient
- 2 Second team connect foam from fire truck to foam connector of 60D255



The patient was transferred by rescue team to safe zone



Medical team assessment the patient and transfer to clinic



ERT lay down 7 fire water hose from fire truck with standby foam truck foam concentration top up



ERT connected 7 fire water hose from fire truck with foam connector of 60D255



Fire truck driver on servo command system to discharge foam solution to 60D255 refer from foam concentration requirement



Fire truck driver discharge foam solution to 60D255 as required flow rate 1,750 gpm, discharge time 30 minute



X

Foam truck stand by foam concentration top up fire truck which require 1,500 gallons



Fire brigade team from GC6 arrived SPRC main gate



Fire brigade team connect fire water hose with SPRC hydrant to support cooling 60D256



Fire truck discharge cooling shell side of 60D256

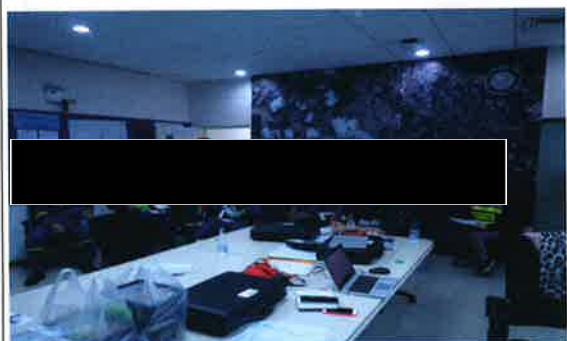
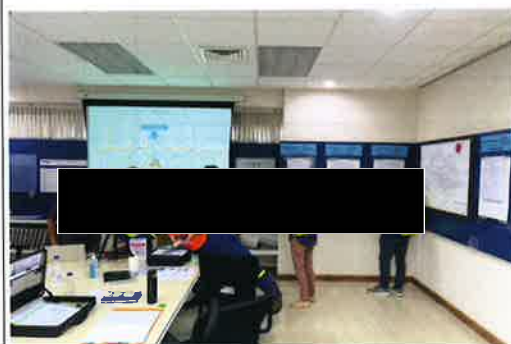


CBF and CR evacuated to assembly point np.10, did head count and report to RED



Duty team week#29 was call to EOC room for support IC





IGAT Fax no. 038-583041-683937



500 15 0000000 2585

បរិវត្តន៍ប្រជាជន

- [illegible]

ชื่อ นามสกุล ผู้ให้บริการและหน่วยงาน: คุณสุวิภา บุญรอด ตำแหน่ง: ผู้จัดการแผนกต้อนรับและลูกค้าสัมพันธ์
โทรศัพท์: 038-699-060 ต่อ 1400 โทรสาร: 038-699-090

4430

คำแนะนํา ผู้รับทราบฝ่ายกิจการสัมพันธ์

From: "Neil Linden" <neil@cs.cmu.edu>
Sent: Friday, July 11, 2003 09:35
To: "Pavel" <pavel@cs.cmu.edu>; "Markus Vetter" <markus.vetter@tu-berlin.de>; "No original domain" <No original domain@cs.cmu.edu>; "All" <All@cs.cmu.edu>; "John" <John@cs.cmu.edu>; "Raj" <Raj@cs.cmu.edu>; "Chris" <Chris@cs.cmu.edu>

၂၆.၂၀၀၈ ခုနှစ်ကုန်ဆုံးအထိ

As shown in Figure 1, the Mn^{2+} concentration

1997-2000

www.ijerph.com

முதுவதில் ஈடுபட்டிருக்கிறார்கள்.

Monterey and Lawrence 1996

Dear SFHC Family,

Yoon, GJ, 2004, 277 and

© 2004 Blackwell Publishing Ltd *Journal of Internal Medicine* 255: 103–110

● 2010年10月1日起，凡在中华人民共和国境内销售货物或者提供加工、修理修配劳务以及进口货物的单位和个人，均应按照《中华人民共和国增值税暂行条例》及实施细则缴纳增值税。

[illegible]

100

11

100

Получено 07.08.2012

[illegible]

(1) can be performed if at

The entire book is

The results are easily

1. Greenpeace Ring
On Screen, X, B

2. **Identifying** the
3. **Supporting** the
4. **Rebuilding** the

100

[illegible]Action: [Go to New York](#)


1. The personnel involved in the project.

It is the response

Thanks for your letter.

Practice Problems & Q&A

[illegible]



กรมการศึกษานานาชาติ
International Study Commission

ขอเชิญโรงเรียนที่มีนักเรียนต่างชาติ (นักเรียนต่างชาติ) เข้าร่วมโครงการแลกเปลี่ยนวัฒนธรรมระหว่างโรงเรียน (School Exchange Program) ประจำปี ๒๕๖๓

โรงเรียน: ☐ วิทยาลัยนานาชาติ ☐ โรงเรียนนานาชาติ ☐ โรงเรียนนานาชาติ ☐ โรงเรียนนานาชาติ

วัตถุประสงค์: ☐ เพื่อส่งเสริมความสัมพันธ์ระหว่างโรงเรียน ☐ เพื่อส่งเสริมความสัมพันธ์ระหว่างโรงเรียน ☐ เพื่อส่งเสริมความสัมพันธ์ระหว่างโรงเรียน

โรงเรียน: ☐ วิทยาลัยนานาชาติ ☐ โรงเรียนนานาชาติ ☐ โรงเรียนนานาชาติ ☐ โรงเรียนนานาชาติ

วัตถุประสงค์: ☐ เพื่อส่งเสริมความสัมพันธ์ระหว่างโรงเรียน ☐ เพื่อส่งเสริมความสัมพันธ์ระหว่างโรงเรียน ☐ เพื่อส่งเสริมความสัมพันธ์ระหว่างโรงเรียน

โรงเรียน: ☐ วิทยาลัยนานาชาติ ☐ โรงเรียนนานาชาติ ☐ โรงเรียนนานาชาติ ☐ โรงเรียนนานาชาติ

วัตถุประสงค์: ☐ เพื่อส่งเสริมความสัมพันธ์ระหว่างโรงเรียน ☐ เพื่อส่งเสริมความสัมพันธ์ระหว่างโรงเรียน ☐ เพื่อส่งเสริมความสัมพันธ์ระหว่างโรงเรียน

โรงเรียน: ☐ วิทยาลัยนานาชาติ ☐ โรงเรียนนานาชาติ ☐ โรงเรียนนานาชาติ ☐ โรงเรียนนานาชาติ

วัตถุประสงค์: ☐ เพื่อส่งเสริมความสัมพันธ์ระหว่างโรงเรียน ☐ เพื่อส่งเสริมความสัมพันธ์ระหว่างโรงเรียน ☐ เพื่อส่งเสริมความสัมพันธ์ระหว่างโรงเรียน

Good point

No.	Description
1	Emergency alerting system and public announcement work well and effectiveness
2	Firefighting equipment work well and effectiveness such as Fire truck Servo command system, Fixed monitor, Fire pumps
3	OSC follow PIP EHS-OT-QS-3327 guide the exercise
4	Contractor evacuate to the assembly no.10 follow REB announcement and supervisor did head count
5	On scene did scenario brief and explain plan how to handle the situation to ERT Team
6	On scene raise the emergency level match with emergency criteria
7	Emergency team response as strategy and plan which is effectiveness
8	16 emergency response team (ERT) are properly to handle the job effectiveness (line up 7 fire hose to foam connector and rescue the patient)
9	Medical team did assessment the patient before transfer to clinic
10	Medical team response in timely manner 5 minute arrived on site
11	Good cooperation from PTY GC6 support cooling affected tank
12	Communication center (REB) notify in 1 st and 2nd notification message to TEAT communication center in timely manner
13	Communication center (REB) notify in 1 st and 2nd notification message to duty team in timely manner
14	Good communication between OSC, IC, REB, Medical team, GC6
15	OSC raise emergency level 1B2 in properly situation and deactivate when the situation is under control
16	Press release statement from EA is easy to understand
17	External affair release 1 st , 2 nd official statement covers this incident
18	External affair attached 1 st , 2 nd official statement on EA's board
19	ESR Duty support SDS information and cooperate for patient transfer to the hospital
20	MC has done resource check list when support team arrive main gate and report to IC
21	Mech & IE Duty support all resource request and delivery to site
22	OPS Duty notify PD
23	Press release statement from EA was recheck with duty manager before communicating to local media, community and government
24	Duty team works effectiveness
25	Good cooperate with ER (ER duty, MC, OSC assistance)

Opportunity to develop

Human & Method

No.	Description	Correction	Responder	Plan
1.	OSC did not define zoning for ERT which require SCBA in hot zone	Alignment with OSC for the purpose of zoning which protect the ERT in term of safety responder	OSC	Done
2.	OSC did not define zoning for mutual team which allows ambulance access close to hot zone to receive the patient	Alignment with OSC for the purpose of zoning which protect the ERT and other team in term of safety responder	OSC	Done
3.	Suction fire hose 5" leak	Replace new 5" suction fire hose	Fire Management Specialist	Done
4.	Rescue team fatigue require more rescue support during transfer the patient to ambulance	Require more rescue support	Fire Management Specialist & IC&OSC	Done

Resource

No.	Description	Correction	Responder	Plan
1	No CCTV provide to cover incident area	Carry on CCTV project	Q&S	On going
2	Some group of ERT did not get refreshment	Logistic team must ask to OSC for location to delivery to ERT in every area	Logistic	Done

Other

No.	Description	Correction	Responder	Plan
1	SPRC should arrange SPRC representative for media interview	CEO has nominated designated person to be SPRC representative	Crisis Management Team	Done
2	EA should arrange media interview to test SPRC Representative	Set up yearly plan for press conference mockup for spokesperson CE&DO default training by CVX PN, PD, QS has been trained for spokesperson since these area owner has high risk of the incident	Crisis Management Team	Done

รายงานสรุปผลการซ้อมแผนฉุกเฉินระดับ 3 ประจำปี 2565

ระดับความรุนแรง ระดับ 3
วัน เดือน ปี 23 กันยายน 2565
เวลา 9:30 – 12:00
พื้นที่ทำการซ้อมแผน คลังน้ำมัน
หมายเหตุ 60D341 (กลุ่มประภาณ้ำมันเคซีเค)

วัตถุประสงค์การซ้อมแผน

1. ความพร้อมของทีมตอบโต้ภาวะฉุกเฉิน (Emergency Response Team) และทีมอำนวยความสะดวกสนับสนุนทีมตอบโต้ภาวะฉุกเฉิน (Duty team)
2. ความพร้อมของอุปกรณ์ตอบโต้ภาวะฉุกเฉินและระบบเตือนภัย
3. ทดสอบแผนตอบโต้ภาวะฉุกเฉิน (EHS-OT-QS-3358) เพื่อให้งานบรรณน้ำมันเคซีเคดำเนินการตามแผนเลข 60D341
4. ความพร้อมของกลุ่มสนับสนุนตอบโต้ภาวะฉุกเฉิน EMAG (Emergency Mutual Aid Group) และทีมดับเพลิงเทศบาลนครหาดใหญ่

บรรลุวัตถุประสงค์การซ้อมแผน

- ไม่มีผู้ได้รับบาดเจ็บจากการซ้อมแผนครั้งนี้
- ไม่มีการแจ้งเรื่องเรียนและการเข้าไต่ถามจากการซ้อมแผนครั้งนี้
- การสื่อสารและการแจ้งเหตุฉุกเฉินเป็นไปตามข้อกำหนดของงานนี้ตามมาตรฐาน
- ความพร้อมของทีมตอบโต้ภาวะฉุกเฉิน (Emergency Response Team) และทีมอำนวยความสะดวกสนับสนุนทีมตอบโต้ภาวะฉุกเฉิน (Duty team) ทำตามแผนฉุกเฉินที่ได้เตรียมไว้
- ความพร้อมของทีมสนับสนุนตอบโต้ภาวะฉุกเฉิน EMAG (Emergency Mutual Aid Group) และทีมดับเพลิงเทศบาลนครหาดใหญ่

หน่วยงานเข้าร่วมฝึกซ้อมแผนฉุกเฉินระดับ 3 ครั้งนี้ทั้งหมด 157 คน

ทีมตอบโต้ภาวะฉุกเฉิน	18 คน
ทีมอำนวยความสะดวกสนับสนุนทีมตอบโต้ภาวะฉุกเฉิน	10 คน
ทีมสื่อสารและรักษาความปลอดภัย	8 คน
ทีมพยาบาล	3 คน
ทีมผู้ประเมิน	4 คน
ทีมอพยพ, ผู้รับเหมา	58 คน

ทีมสนับสนุนทีมตอบโต้ภาวะฉุกเฉิน TKFS	5 คน
ทีมสถานีดับเพลิงเทศบาลนครหาดใหญ่	7 คน
ทีมสถานีดับเพลิง เอจีซี วิทยุไทย	6 คน
ทีมบริหารจัดการแผนฉุกเฉิน	30 คน
ทีมมวลชนสัมพันธ์	8 คน

แผนที่บริเวณ SPRC



แผนที่ปิดถนน



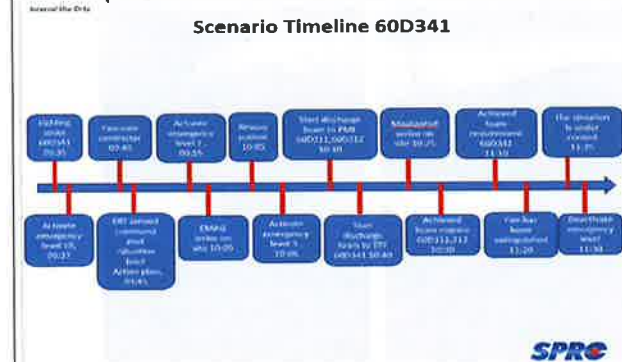
แผนการควบคุมสถานการณ์



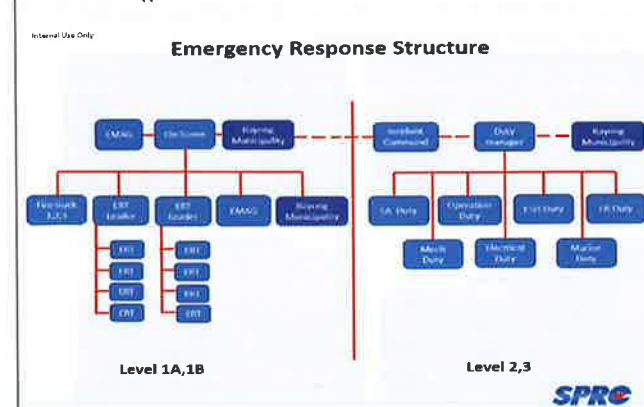
แผนการตอบโต้เหตุการณ์ของพื้นที่



แผนการระงับเหตุกับเวลา



โครงสร้างทีมตอบโต้เหตุการณ์



ภาพสถานการณ์จำลองเกิดเหตุเพลิงไหม้แบบเต็มพื้นที่ผิวบนผิวดัง (full surface fire) เนื่องจากฟ้าผ่า และผิวดังน้ำมันหลุดลงข้างถัง เกิดเพลิงไหม้อย่างรุนแรงและควันดำหนาแน่นอย่างต่อเนื่อง 60D341 เกิดเหตุระเบิดอย่างรุนแรงที่ถังน้ำมันหมายเลข 60D341 (น้ำมันดิบ) ทำให้ผิวดังน้ำมันหลุดลงข้างถังเนื่องจากฟ้าผ่าเป็นเหตุให้เกิดเพลิงไหม้แบบเต็มพื้นที่ผิวบนผิวดัง (full surface fire) เกิดเพลิงไหม้อย่างรุนแรงและควันดำหนาแน่นอย่างต่อเนื่อง



รถดับเพลิงเบอร์ 1,2 รถบรรทุกไฟฟ้า,รถส่งสารและทีมตอบโต้เหตุการณ์มาถึงจุดส่งสาร (Command post) หมายเลข 36



รถดับเพลิงเบอร์ 1,2 รถบรรทุกโฟม,รถส่งการและทีมคอนกรีตถูกนิยามถึงจุดสั่งการ (Command post) หมายเลข 36



ผู้สั่งการ ณ จุดเกิดเหตุจัดริ้วขบวนรถดับเพลิงและรถบรรทุกโฟมในการควบคุมสถานการณ์แก่ทีมคอนกรีตและรถบรรทุกโฟม
ผู้สั่งการ ณ จุดเกิดเหตุตั้งตัวหน้าทีมคอนกรีต 2 นายเพื่อควบคุมทีมปฏิบัติการกิจ

1. ชั่วเหลือผู้ประสบเหตุเป็นอันดับแรก
2. ดับไฟไหม้ถัง 60D341
3. ป้องกันไฟลุกลาม (60D342,60D343,60D311,60D312)



ทีมสนับสนุนขนส่งอุปกรณ์นำส่งไปช่วยเหลือผู้ประสบเหตุที่โรงงาน



7

ผู้ประสบเหตุถูกช่วยเหลือโดยทีมคอนกรีตเคลื่อนย้ายมาในจุดที่ปลอดภัย พยาบาลประเมินอาการและทำการปฐมพยาบาล
เบื้องต้นผู้ประสบเหตุ



ทีมคอนกรีตได้เริ่มทำการเชื่อมท่อสายไฟจนกระทั่งรถดับเพลิงกับจุดเชื่อมต่อของถังที่เกิดเหตุเพลิงไหม้ (60D341)



8

ทีมดับเพลิงจาก เอชซี 7 วิดีโอในกลุ่ม EMAG มาถึง Main Gate, ผู้ประสานงานฉุกเฉิน (MC) ทำการตรวจเช็คทรัพยากร
และรายงานให้ผู้บัญชาการทราบ



ทีมดับเพลิงเทศบาลนครหาดใหญ่ มาถึง Main Gate, MC ทำการตรวจเช็คทรัพยากรและรายงานให้ผู้บัญชาการทราบ



ผู้สั่งการ ณ จุดเกิดเหตุจัดริ้วขบวนรถดับเพลิงและรถบรรทุกโฟมในการควบคุมสถานการณ์แก่ทีมคอนกรีตและรถบรรทุกโฟม
ทีม เอชซี 7 วิดีโอ



9

ทีมคอนกรีตได้หยุดเดินทำการเชื่อมท่อสายไฟ 7 เส้นระหว่างรถดับเพลิงกับจุดเชื่อมต่อของถังที่เกิดเหตุเพลิงไหม้ (60D341)



ทีมคอนกรีตได้หยุดเดินทำการเชื่อมท่อสายไฟ 2 เส้นจากรถดับเพลิงมาเชื่อมกับจุดรับไฟของถังที่ได้รับผลกระทบ
60D311 และ 60D312 เจ้าหน้าที่ขับรถดับเพลิงหมายเลข 2 ทำการจ่ายสารละลายโฟมเข้าถัง 60D311,60D312 โดยอ้างอิง
จากป้ายหน้าถังดับเพลิงปริมาณอัตราการไหล ความดันและเวลาที่กำหนด



10

เจ้าหน้าที่จับรวบดับเพลิงหมายเลข 1 กับการจ่ายสารละลายโฟมเข้าถังที่เกิดเพลิงไหม้ตามบริเวณอาคารโรงกลั่น
และเวลาที่กำหนดอย่างถึงจากซ้ายหน้าถึงที่เกิดเหตุเพลิงไหม้ (60D341) ปริมาณอัตราการไหล 1,750 แกลลอน/นาที ความ
ดันและเวลาที่กำหนด 30 นาที



11

ทีมดับเพลิงมาควบคุมสถานการณ์การปล่อยถังน้ำมันที่ได้รับความเสียหายจากเพลิงไหม้ (60D312)



ทีม CBI & CR3 ร่วมซ้อมแผนอพยพไปให้จุดรวมพลหมายเลข 3, 11 ตามคำสั่งและแจ้งขอความร่วมมืออพยพไปที่ศูนย์สื่อสาร (REB)



12

ทีมอำนวยความสะดวกสนับสนุนเหตุฉุกเฉินที่ห้องบัญชาการฉุกเฉิน



ตัวแทนป้องกันภัยพิบัติของร่วมสังเกตการณ์และกล่าวสรุป



OSC & Team leader ร่วมให้ข้อมูลในเรื่องปัญหาต่างๆที่เกิดจากการซ้อมแผนหลังซ้อมเสร็จ



13

ตัวแทนบริษัทSPRC ชื่นชมแผนฉุกเฉินและให้กำลังใจทีมที่ห้องบัญชาการเหตุฉุกเฉินและขอบคุณทีมสนับสนุนการควบคุม



14

ศูนย์สื่อสาร(REB)ส่งแบบรายงานแจ้งเหตุฉุกเฉินระดับ 1B >2

[illegible]

ศูนย์สื่อสาร

19

(REB)ส่งแบบรายงานแจ้งเหตุฉุกเฉินระดับ 2>3

[illegible]

20

แสดงการนับที่ 1,2,3 ตามลำดับ

EXERCISE ONLY

Statement no 1 September 23, 2022 at 10:00 hrs

Fire at Product Tank
at Star Petroleum Refining PLC
in Map Ta Phut Bayong ("SPRC")

On September 23, 2022 at 9:37 hrs. There was lightning strike caused ignition and fire at the product tank of SPRIC facility locate at Map Ta Phut industrial Estate, Rayong Province.

The Emergency Response Team was established to control the situation accordance with the Emergency Response Plan. All personnel in the affected area are promptly evacuated to the safety points. All activities in immediate area have been stopped in accordance with safety procedure. We reported to related government agencies and informed surrounding communities.

We would like to emphasize our commitment for the safety of all personnel, contractors, nearby communities, and environment.

Further updates will be forthcoming.

For further information, please contact:
Suez Petroleum Refining Public Company Limited
Tel: 032-620-111

Vol. 032-670-111

21

*****EXERCISE ONLY*****

Statement no.02

23 September 2022 at 11:00 hr.

Fire at Product Tank at Star Petroleum Refining PLC. in Map Ta Phut Rayong ("SPRC")

Further to the fire at Product Tank by lightning strike caused ignition and fire on September 23, 2022 at 09:37 hrs.,

SPRC Emergency Response team, Map Ta Phut municipality and Emergency Mutual Aid Group (EMAG) were mobilized to control the situation by applying foam to extinguish the fire and cool down nearby tanks to protect fire spreading.

At the current state, SPRC has been reported one injured person. The injured person had been taken care by doctor and been discharged to the hospital.

SPRC also visited nearby communities to verify impacts to the stakeholders cause by the incident, give advice, and provide basic assistances as request.

We apologize on the incident incurred and will do the investigation to find the root cause on this incident. The company reiterates its commitment for the safety of all personnel, contractors, nearby community and environment.

For further information, please contact:
Crisis Communication Team
Tel. 038-699-111

Tel. 038-699-111

22

Statement no.03

23 September 2022 at 11:30 hr.

Fire at Product Tank and the incident was controlled at Star Petroleum Refining PLC. In Map Ta Phut Rayong ("SPRC")

Further to the fire at Product Tank by lightning strike caused ignition and fire on September 23, 2022 at 09:37 hrs.,

Our emergency response plan was immediately activated, and the situation is under control with our safety procedures. Currently the emergency response has been deactivated.

We apologize on the incident incurred and will do the investigation to find the root cause.

The company still monitor and ready to take every step to take care of the safety of all personnel, nearby communities and minimize environmental impacts.

For further information, please contact:
Crisis Communication Team
Tel: 035 699 111

23

การประเมินการฝึกซ้อมดับเพลิงและฝึกซ้อมอพยพหนีไฟ

หัวข้อ	รายการ	ผลการประเมิน			หมายเหตุ
		ปรับปรุง	พอใจ	ดี	
1.	การปฏิบัติตามขั้นตอนของกฎจ้าง				
	1.1 การสื่อสาร			✓	
	1.2 ลำดับขั้นตอน			✓	
	1.3 การควบคุมสติ			✓	
	1.4 ระยะเวลาในแต่ละขั้นตอน			✓	
	การปฏิบัติตามแผน				
	2.1 ผู้อำนวยการดับเพลิง			✓	
2.	2.2 พนักงานดับเพลิง			✓	
	2.3 พนักงานควบคุมไฟฟ้า			✓	
	2.4 ผู้ประสานงาน			✓	
	2.5 หัวหน้าชุดอพยพ			✓	
	2.6 ผู้นำทางหนีไฟ			✓	
	2.7 ผู้ตรวจสอบจำนวน			✓	
	2.8 หน่วยช่วยชีวิต			✓	
	2.9 ผู้หนีไฟ			✓	
	การใช้อุปกรณ์				
3.	3.1 เครื่องดับเพลิงแบบเคลื่อนย้ายได้			✓	
	3.2 สายฉีดดับเพลิง			✓	
	3.3 อุปกรณ์คุ้มครองความปลอดภัยส่วนบุคคล			✓	
4.	บุคคล				
	การประเมินแผน			✓	
	4.1 แผนดับเพลิง			✓	
	4.2 แผนการอพยพหนีไฟ			✓	

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การประเมินการฝึกซ้อมดับเพลิงและฝึกซ้อมอพยพหนีไฟ

หัวข้อ	รายการ	ผลการประเมิน			หมายเหตุ
		ปรับปรุง	พอใจ	ดี	
1.	การปฏิบัติตามขั้นตอนของกฎจ้าง				
	1.5 การสื่อสาร			✓	
	1.6 ลำดับขั้นตอน			✓	
	1.7 การควบคุมสติ			✓	
	1.8 ระยะเวลาในแต่ละขั้นตอน			✓	
	การปฏิบัติตามแผน				
	2.1 ผู้อำนวยการดับเพลิง			✓	
2.	2.2 พนักงานดับเพลิง			✓	
	2.3 พนักงานควบคุมไฟฟ้า			✓	
	2.4 ผู้ประสานงาน			✓	
	2.5 หัวหน้าชุดอพยพ			✓	
	2.6 ผู้นำทางหนีไฟ			✓	
	2.7 ผู้ตรวจสอบจำนวน			✓	
	2.8 หน่วยช่วยชีวิต			✓	
	2.9 ผู้หนีไฟ			✓	
	การใช้อุปกรณ์				
3.	3.1 เครื่องดับเพลิงแบบเคลื่อนย้ายได้			✓	
	3.2 สายฉีดดับเพลิง			✓	
	3.3 อุปกรณ์คุ้มครองความปลอดภัยส่วนบุคคล			✓	
4.	การประเมินแผน				
	4.1 แผนดับเพลิง			✓	
	4.2 แผนการอพยพหนีไฟ			✓	

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ข้อคิดจากการฝึกซ้อม

ข้อ	รายละเอียด
1	ระบบแจ้งเตือนเหตุฉุกเฉินแบบระบบเสียงสัญญาณแจ้งเตือนและระบบประกาศสาธารณะทำงานอย่างมีประสิทธิภาพ
2	อุปกรณ์เตือนเหตุฉุกเฉินทำงานอย่างมีประสิทธิภาพ ได้แก่ รอดดับเพลิงเบอร์ 1,2,ระบบกันนิโคไฟ, หัวฉีดน้ำประจำพื้นที่,ระบบท่อส่งน้ำ,ปั้มน้ำดับเพลิง,
3	ผู้สั่งการ ณ จุดเกิดเหตุได้ปฏิบัติตามแผนฉุกเฉินหมายเลข PIP EHS-OT-QS-3358
4	ผู้รับหมาย(ผู้อพยพ)เมื่อได้ยินเสียง สัญญาณแจ้งเตือนเหตุฉุกเฉินได้อพยพไปยังจุดรวมพลที่ปลอดภัยตามแผนที่กำหนดและหัวหน้างานทำการนับยอดผู้อพยพและแจ้งไปยังศูนย์สื่อสาร
5	ผู้สั่งการ ณ จุดเกิดเหตุได้สื่อสารสถานการณ์และแผนการตอบโต้ให้ทีมตอบโต้เหตุฉุกเฉินฟังอย่างเข้าใจ
6	ผู้สั่งการ ณ จุดเกิดเหตุได้สื่อสารการแบ่งพื้นที่อันตราย พื้นที่ที่เสี่ยงต้องสวมใส่ชุดดับเพลิงและเครื่องช่วยหายใจในการปฏิบัติงาน
7	ผู้สั่งการ ณ จุดเกิดเหตุชี้แนะแผนฉุกเฉินตามความรุนแรงของสถานการณ์และความต้องการสนับสนุนของอุปกรณ์และทีมดับเพลิง และยกเลิกสถานการณ์เมื่อสถานการณ์อยู่ภายใต้การควบคุม
8	ผู้สั่งการ ณ จุดเกิดเหตุสามารถควบคุมสถานการณ์ภายใต้กรอบเวลาที่กำหนด
9	ทีมตอบโต้ภาวะฉุกเฉินปฏิบัติตามแผนงานที่ได้รับมอบหมายอย่างมีประสิทธิภาพ
10	ทีมตอบโต้ภาวะฉุกเฉินจำนวน 17 นาย เพียงพอต่อการตอบโต้เหตุฉุกเฉินในการซ้อมแผนครั้งนี้
11	พยาบาลมีการประเมินผู้ป่วยก่อนนำส่งโรงพยาบาล
12	ทีมพยาบาลรับผู้ประสบเหตุและนำส่งไปสถานพยาบาลอย่างทั่วถึง
13	การสื่อสารข้อมูลระหว่างของผู้สั่งการ จุดเกิดเหตุ ผู้บัญชาการเหตุการณ์ ศูนย์แจ้งข้อมูลเป็นไปอย่างมีประสิทธิภาพ
14	ได้รับการสนับสนุนเป็นอย่างดีจากทีมสนับสนุนบริษัทวินิไทยและทีมดับเพลิงเทศบาลนครหาดใหญ่ในการช่วยเหลือในพื้นที่เกิดเหตุ
15	ศูนย์สื่อสารเหตุฉุกเฉินแจ้งข้อมูลไปยังศูนย์ตำรวจจังหวัดสตูลมอกุลสาหรณบตามหาบุคคลอย่างรวดเร็วและมีประสิทธิภาพ
16	ศูนย์สื่อสารเหตุฉุกเฉินส่งข้อความฉุกเฉินผ่านระบบ SMS แก่ทีมอำนวยความสะดวกสนับสนุนครบทุกระดับฉุกเฉินอย่างรวดเร็วและมีประสิทธิภาพ
17	มีการกั้นกองข้อมูลระหว่างทีมมวลชนสัมพันธ์และหัวหน้าศูนย์อำนวยความสะดวกก่อนที่จะสื่อสารไปยังสื่อมวลชนและผู้สื่อข่าว
18	มีตัวแทนของบริษัติดูแลการติดต่อสื่อสารกับเทศบาลนครหาดใหญ่(IEC)
19	มีบทเพลงการณัฒน์ปีที่ 1,2,3 ตามลำดับจากทีมมวลชนสัมพันธ์จัดและเข้าใจง่าย

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20	มีการซ้อมร่วมของทีมตอบโต้สื่อมวลชน(CMT)
21	ทีมประชาสัมพันธ์ประสานข้อมูลความปลอดภัย(SDS) และข้อมูลผู้ประสบเหตุในช่วงการส่งผู้ประสบเหตุกับทางโรงพยาบาล
22	ผู้ประสานงานเหตุฉุกเฉิน (MC) ทำการตรวจเช็คอุปกรณ์และทรัพยากรสนับสนุนจากทีมดับเพลิงวินิไทยและทีมดับเพลิงเทศบาลนครมาบตาพุดและแจ้งผู้บัญชาการเหตุการณ์(IC)
23	ทีมอำนวยความสะดวกสนับสนุนฝ่ายขนส่งนำส่งอุปกรณ์ช่วยเหลือชีวิต อาหาร เครื่องดื่มได้ตามที่ร้องขอสนับสนุน
24	ทีมอำนวยความสะดวกสนับสนุนฝ่ายผลิตแจ้งเหตุไปยังผู้อำนวยความสะดวกด้านน้ำมัน
25	ทีมอำนวยความสะดวกสนับสนุนการตอบโต้ภาวะฉุกเฉินแต่ละฝ่ายทำงานอย่างมีประสิทธิภาพ
26	มีการแบ่งหน้าที่ของทีมสนับสนุนตอบโต้ภาวะฉุกเฉิน ER (ER duty, MC, Staging ,OSC assistance)

ข้อปรับปรุงจากการฝึกซ้อม

วิธีการปฏิบัติ

No.	Description	Correction	Responder	Plan
1.	ผู้บัญชาการเหตุการณ์ มีความเข้าใจคลาดเคลื่อนในการร้องขอสนับสนุนรถช่วยชีวิตว่าเป็นชนิดเดียวกับรถที่อยู่โรงพยาบาลเป็นเหตุให้เกิดความล่าช้าในการส่งรถสนับสนุน	ปรับความเข้าใจในจุดประสงค์ของรถช่วยชีวิตกับทีมผู้บัญชาการเหตุการณ์	ทีมฉุกเฉิน QS/3	ทำแล้ว
2.	แผนการแจ้งวิทยุ มีความล่าช้าในส่งสื่อสารให้กับพนักงานในองค์กร	แจ้งเจ้าหน้าที่สื่อสารเร่งด่วนพร้อมส่งแผนการแจ้งเตือนรถตามที่ให้ได้แผนการแจ้ง	ทีมประชาสัมพันธ์องค์กร	ทำแล้ว
3.	ศูนย์สื่อสารเข้าใจคลาดเคลื่อนส่งหนังสือแจ้งเหตุฉุกเฉินระดับ 2 ไปยังเทศบาลนครมาบตาพุด	ปรับความเข้าใจศูนย์สื่อสารว่าการส่งหนังสือแจ้งเหตุฉุกเฉินไปยังเทศบาลนครมาบตาพุดต้องเป็นเหตุฉุกเฉินระดับ 3 เท่านั้น	ทีมฉุกเฉิน QS/3	ทำแล้ว
4.	ไม่มีข้อมูลผู้ประสบเหตุไปยังสวัสดิการคุ้มครองแรงงานจังหวัดระยอง	ให้ตระหนักถึงบทบาทหน้าที่ความรับผิดชอบของทีมสารสนเทศ	ทีมสารสนเทศ	ทำแล้ว
5.	การส่งหนังสือแจ้งเหตุฉุกเฉินระดับ 2 ไปศูนย์เฝ้าระวังสิ่งแวดล้อม อุศาสหกรรมมาบตาพุด ไม่ได้ระบุเวลา	แจ้งเจ้าหน้าที่ศูนย์สื่อสารว่าการส่งหนังสือแจ้งเหตุฉุกเฉินต้องระบุเวลาด่วนทุกครั้ง	ทีมสื่อสาร	ทำแล้ว

ทรัพยากร / กิจกรรม				
No.	Description	Correction	Responder	Plan
1	กล้อง CCTV มีไม่ครอบคลุมทุกพื้นที่	อยู่ในช่วงการพิจารณาการเพิ่มจำนวนกล้อง CCTV	ทีมฉุกเฉิน QS/3	ระหว่างพิจารณา
2	ทีมตอบโต้ภาวะฉุกเฉินบางกลุ่มไม่ได้รับเครื่องเค็ม	ทีมสนับสนุนขนส่งต้องมีเจ้าหน้าที่คอยอำนวยความสะดวกพนักงานอีกทีมเพื่อส่งเครื่องเค็ม ไปในทุกๆจุดหน้างานอย่างทั่วถึง	ทีมสนับสนุนทรัพยากร	ทำแล้ว
3.	หออกรงยังไม่ทำงาน	แจ้งทีมไฟฟ้าช่วยตรวจสอบระบบกระจายเสียง	AS/23	ดำเนินการ
4.	พนักงานขับรถดับเพลิงเทศบาลนครมาบตาพุดไม่สวมเครื่องแบบพนักงานดับเพลิงเข้ามาในพื้นที่โรงกลั่น	แจ้งและสื่อสารไปยังทีมดับเพลิงเทศบาลนครมาบตาพุดต้องสวมใส่ชุดดับเพลิงทุกครั้งเข้าพื้นที่โรงกลั่น	ทีมเจ้าหน้าที่รักษาความปลอดภัย	ทำแล้ว

อื่นๆ

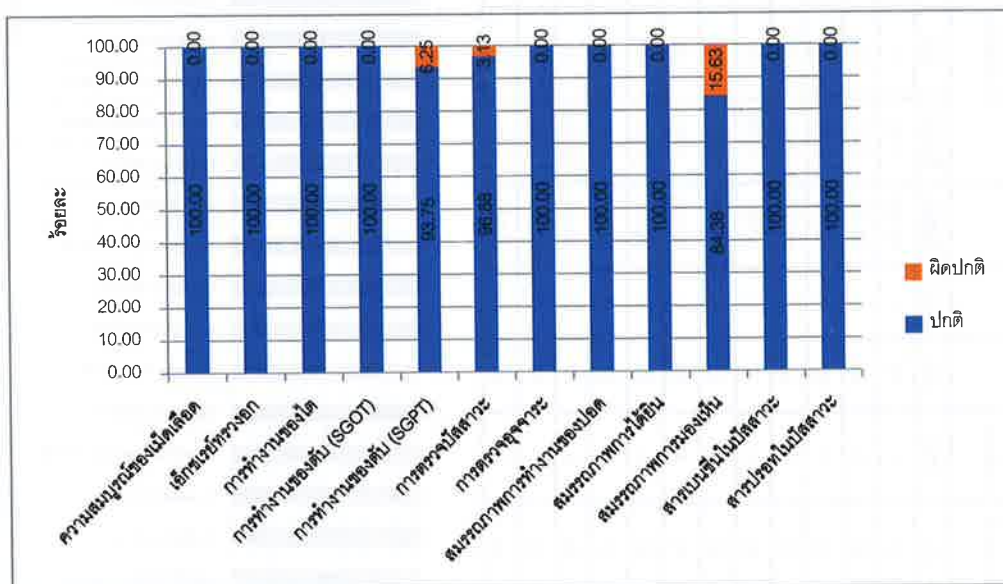
No.	Description	Correction	Responder	Plan
1	ทีมตอบโต้สื่อมวลชน SPRC ควรมีความพร้อมบริษัทที่ทำหน้าที่ให้ข่าวในปริมาณที่เพียงพอในกรณีที่มีการให้ข่าวหลายพื้นที่	ประสานบริษัทเสนอตัวแทนบริษัทพร้อมอุปกรณ์ความพร้อมอยู่เสมอเมื่อมีเหตุฉุกเฉิน	ประสานบริษัททีมตอบโต้สื่อมวลชน	ดำเนินการ
2	ทีมสารสนเทศควรมีการจัดการข้อมูลการให้ข่าวสื่อมวลชนควบคู่ไปกับการเชื่อมโยงแผนฉุกเฉิน	จัดทำแผนเชื่อมโยงประจำปีความถี่กับเชื่อมโยงแผนฉุกเฉิน	ทีมตอบโต้สื่อมวลชน	ดำเนินการ

ภาคผนวก ข.25

การตรวจสอบภาพพนักงาน ประจำปี พ.ศ.2565

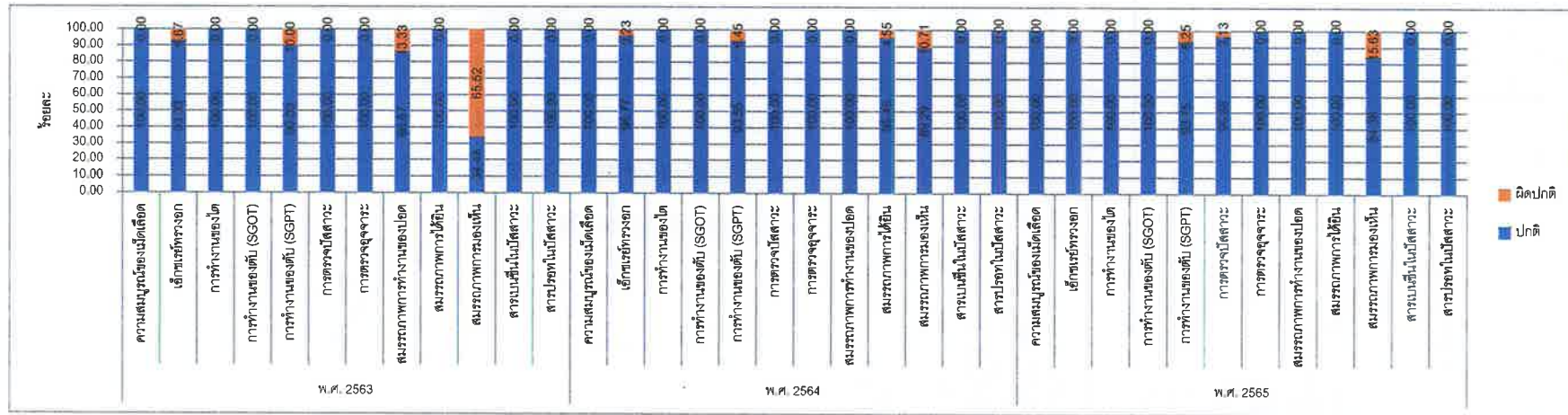
สถิติผลการตรวจสุขภาพพนักงาน ประจำปี พ.ศ. 2565
โครงการทำเทียบเรือ บริษัท สตาร์ ปิโตรเลียม รีไฟน์นิ่ง จำกัด (มหาชน)
โดยโรงพยาบาลอินเตอร์เมดิคัล แคร่ แอนด์ แล็บ จำกัด (มหาชน)

รายการตรวจ	พ.ศ. 2565					
	ผู้เข้ารับ การตรวจ	ไม่เข้ารับ การตรวจ	ปกติ	ผิดปกติ	ปกติ	ผิดปกติ
	(คน)	(คน)	(คน)	(คน)	(ร้อยละ)	(ร้อยละ)
ความสมบูรณ์ของเม็ดเลือด	32	0	32	0	100.00	0.00
เอ็กซเรย์ทรวงอก	32	0	32	0	100.00	0.00
การทำงานของไต	32	0	32	0	100.00	0.00
การทำงานของตับ (SGOT)	32	0	32	0	100.00	0.00
การทำงานของตับ (SGPT)	32	0	30	2	93.75	6.25
การตรวจปัสสาวะ	32	0	31	1	96.88	3.13
การตรวจอุจจาระ	24	8	24	0	100.00	0.00
สมรรถภาพการทำงานของปอด	32	0	32	0	100.00	0.00
สมรรถภาพการได้ยิน	31	0	31	0	100.00	0.00
สมรรถภาพการมองเห็น	32	0	27	5	84.38	15.63
สารเบนซีนในปัสสาวะ	31	0	31	0	100.00	0.00
สารปรอทในปัสสาวะ	31	0	31	0	100.00	0.00



สถิติผลการตรวจสุขภาพพนักงาน ระหว่างปี พ.ศ. 2563-2565
โครงการทำเทียบเรือ บริษัท สตาร์ บิโตร์เลียม รีไฟน์นิง จำกัด (มหาชน)

รายการตรวจ	พ.ศ. 2563						พ.ศ. 2564						พ.ศ. 2565					
	ผู้เข้ารับ การตรวจ	ไม่เข้ารับ การตรวจ	ปกติ	ผิดปกติ	ปกติ	ผิดปกติ	ผู้เข้ารับ การตรวจ	ไม่เข้ารับ การตรวจ	ปกติ	ผิดปกติ	ปกติ	ผิดปกติ	ผู้เข้ารับ การตรวจ	ไม่เข้ารับ การตรวจ	ปกติ	ผิดปกติ	ปกติ	ผิดปกติ
	(คน)	(คน)	(คน)	(คน)	(ร้อยละ)	(ร้อยละ)	(คน)	(คน)	(คน)	(คน)	(ร้อยละ)	(ร้อยละ)	(คน)	(คน)	(คน)	(คน)	(ร้อยละ)	(ร้อยละ)
ความสมบูรณ์ของเม็ดเลือด	30	0	30	0	100.00	0.00	31	0	31	0	100.00	0.00	32	0	32	0	100.00	0.00
เอ็กซเรย์ทรวงอก	30	0	28	2	93.33	6.67	31	0	30	1	96.77	3.23	32	0	32	0	100.00	0.00
การทำงานของไต	30	0	30	0	100.00	0.00	31	0	31	0	100.00	0.00	32	0	32	0	100.00	0.00
การทำงานของตับ (SGOT)	30	0	30	0	100.00	0.00	31	0	31	0	100.00	0.00	32	0	32	0	100.00	0.00
การทำงานของตับ (SGPT)	30	0	27	3	90.00	10.00	31	0	29	2	93.55	6.45	32	0	30	2	93.75	6.25
การตรวจปัสสาวะ	30	0	30	0	100.00	0.00	31	0	31	0	100.00	0.00	32	0	31	1	96.88	3.13
การตรวจอุจจาระ	26	4	26	0	100.00	0.00	20	11	20	0	100.00	0.00	24	8	24	0	100.00	0.00
สมรรถภาพการทำงานของปอด	30	0	26	4	86.67	13.33	28	3	28	0	100.00	0.00	32	0	32	0	100.00	0.00
สมรรถภาพการได้ยิน	29	0	29	0	100.00	0.00	22	8	21	1	95.45	4.55	31	0	31	0	100.00	0.00
สมรรถภาพการมองเห็น	29	0	10	19	34.48	65.52	28	3	25	3	89.29	10.71	32	0	27	5	84.38	15.63
สารเบนซีนในปัสสาวะ	29	0	29	0	100.00	0.00	28	2	28	0	100.00	0.00	31	0	31	0	100.00	0.00
สารปรอทในปัสสาวะ	29	0	29	0	100.00	0.00	28	2	28	0	100.00	0.00	31	0	31	0	100.00	0.00



ภาคผนวก ข.26

กิจกรรมส่งเสริมสุขภาพและความปลอดภัย



กิจกรรมส่งเสริมความปลอดภัย

มิถุนายน – ธันวาคม 2565



*"One family ...
fueling the future
of Thailand"*

มาตรการป้องกันโควิด-19

จัดทำกล่องห่วงใย (Caring box) ซึ่งมีเวชภัณฑ์ที่จำเป็นสำหรับพนักงานและครอบครัวพนักงานที่ติดเชื้อโควิด-19



การตรวจวัดคุณภาพอาหารที่โรงอาหารเป็นประจำทุกเดือน



กิจกรรมส่งเสริมเรื่องสุขภาพ

ทำ Functional Capacity Evaluation เพื่อประเมินสมรรถภาพทีมดับเพลิง



กิจกรรมส่งเสริมเรื่องสุขภาพ

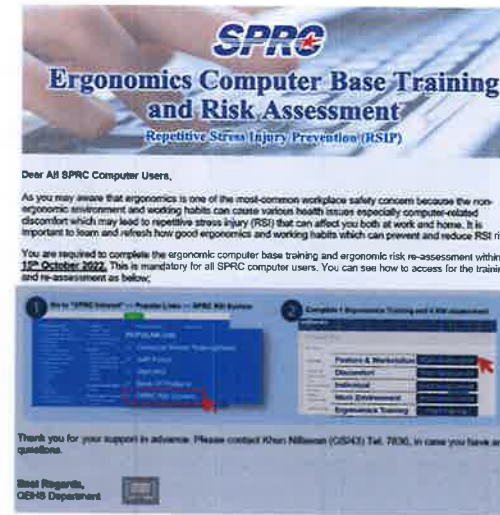
ทำ Fit Test เพื่อประเมินความพร้อมสุขภาพในการทำงานในกิจกรรมที่มีความเสี่ยงสูง เช่น การทำงานในที่อับอากาศ การทำงานที่สูง



SPRC

มาตรการป้องกันโรคออฟฟิศซินโดรม (RSIP)

พนักงานอบรมทบทวนเรื่องการยศาสตร์และทบทวนการประเมินความเสี่ยง



SPRC

การตรวจวัดคุณภาพอากาศในสถานที่ทำงาน



SPRC

กิจกรรม Tool Box Talk ประจำสัปดาห์

เพื่อสื่อสารเกี่ยวกับความปลอดภัยกับผู้รับเหมาทุกวันอังคารที่ 2 ของสัปดาห์



SPRC

จัดกิจกรรมตรวจสอบสภาพประจำปี

ครอบคลุมทั้งกลุ่มพนักงานและผู้รับเหมา ระหว่างวันที่ 6-15 ก.ย. 2565



SPRC

จัดกิจกรรม Big Cleaning Day

เพื่อส่งเสริมการทำความสะอาดพื้นที่การทำงาน 20 ต.ค. , 22 ธ.ค. 2565



SPRC

จัดกิจกรรม Big Cleaning Day

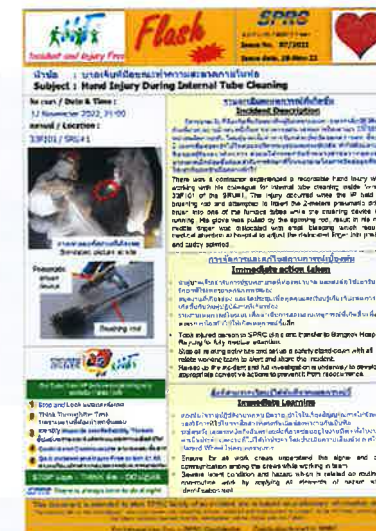
20 ต.ค. , 22 ธ.ค. 2565



SPRC

การสื่อสารประชาสัมพันธ์รับทราบจากอุบัติเหตุที่เคยเกิดขึ้น

เพื่อยกระดับจิตสำนึกด้านความปลอดภัย และเรียนรู้จากอุบัติเหตุที่เคยเกิดขึ้นในอดีต



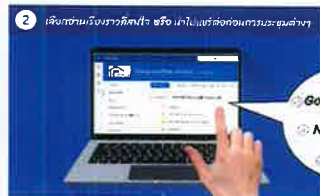
SPRC

การจัดกิจกรรมรณรงค์เรื่องการรายงานอุบัติเหตุบนงาน

ยังคงดำเนินการรณรงค์ส่งเสริมให้รายงาน 24 care and share อย่างต่อเนื่อง

ติดตาม Story บน SharePoint

เพื่อไม่ให้พลาด! เรื่องราวใหม่ ๆ

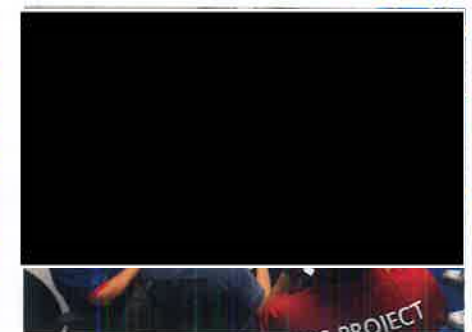


Caring + Sharing = Preventing



SPRC

จัดอบรมหลักสูตรทบทวนความเข้าใจระบบใบอนุญาตการทำงานประจำรอบ 3 ปี ให้กับพนักงานภายใน บริษัทฯ จำนวน 340 คน เพื่อรักษามาตรฐานการทำงานอย่างปลอดภัยอย่างยั่งยืน



SPRC

จัดอบรมหลักสูตร IIF Supervisor Skill Train the Trainer

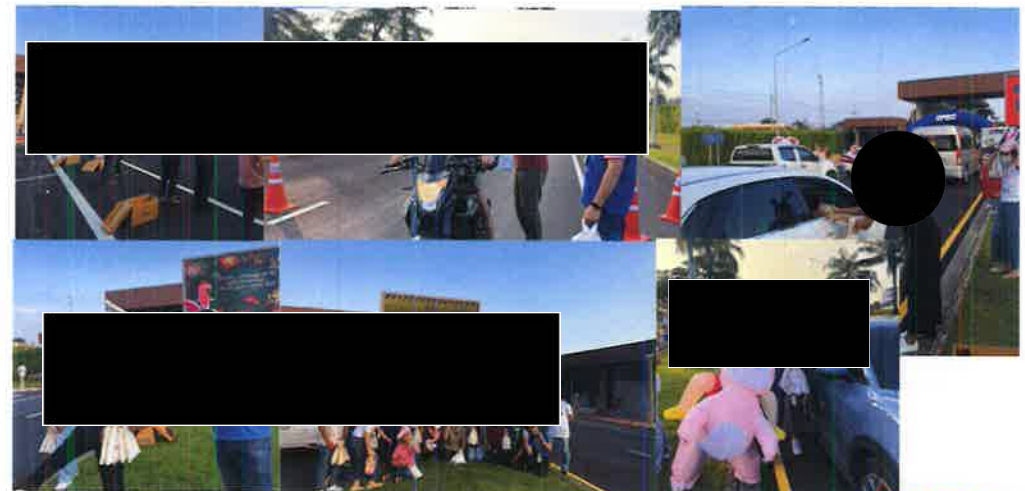
13 ธ.ค. 2565



SPRC

กิจกรรมรณรงค์ขับขี่ปลอดภัยส่งท้ายปี (Care Life Drive Safely 2022)

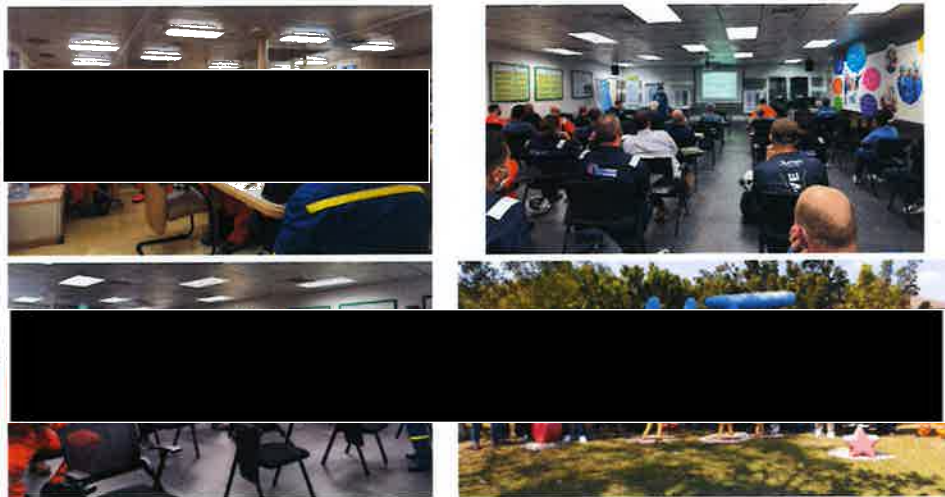
เพื่อส่งเสริมและประชาสัมพันธ์การขับขี่ปลอดภัยก่อนเทศกาลวันหยุดปีใหม่ในวันที่ 15 ธ.ค. 2565



SPRC

จัดอบรมหลักสูตร EHS Induction, HSE Orientation และ Safety Stand Up Workshop
กับทีมผู้ปฏิบัติงานที่จะเข้าซ่อมบำรุงฯแล้วได้ทุกคนถ่ายน้ำดื่มดับกลางทะเล

27 – 28 ธ.ค. 2565



SPRC

ภาคผนวก ข.27

ขั้นตอนการปฏิบัติในการล้างท่อรับน้ำมันและ SPM
ก่อนการซ่อมบำรุงระบบท่อ



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1.2 Notes, Cautions, and Warnings.....	1
2. WATER FLUSHING PROCEDURE	2
2.1 Preparation Prior to Tanker completing cargo discharge operations.....	2
3. FLUSHING PROCEDURE	3
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3.2 For flushing seawater without diving operations.....	4



1. Introduction

1.1 Purpose

This procedure provides the necessary information to carry out a seawater flush of the surface and sub sea hose strings using SPM Maintenance boat pumps. Only seawater will remain in the hoses prior to disconnection for maintenance.

1.2 Notes, Cautions, and Warnings

This procedure uses the following symbols to draw the Operator's attention to the steps in the procedure that are particularly important or may lead to safety hazards if done incorrectly.



NOTE: General information useful to understand a particular step in the procedure.



CAUTION: A step that, if done incorrectly, could cause a safety hazard leading to personal injury, equipment or environmental damage, or a delay.



WARNING: A step that, if done incorrectly, could cause a serious safety hazard leading to death, serious personal injury, major equipment damage, fire or a large environmental release.

2. Seawater Flushing Procedure

To ensure there is no oil pollution or environmental impact when the hose string is disconnected for changing hoses and maintenance of hose ancillary equipment.

2.1 Preparation Prior to Tanker completing cargo discharge operations.



CAUTION: A step that, if done incorrectly, could cause a safety hazard leading to personal injury, equipment or environmental damage, or a delay.

2.1.1 For flushing seawater with diving operations.

- 2.1.1.1 The SPM Maintenance Boat deck to be cleared of obstructions.
- 2.1.1.2 Prepare Permit to Work for Hoses flushing operation and diving operation.
- 2.1.1.3 Sufficient VHF handsets to be available for communications between SPM, Dive control and SPM Maintenance Boat

2.1.2 For flushing seawater without diving operations.

- 2.1.2.1 SPM Maintenance Boat deck to be cleared of obstructions.
- 2.1.2.2 Prepare Permit to Work for Hoses flushing operation.
- 2.1.2.3 Sufficient VHF handsets to be available for communications between SPM and SPM Maintenance Boat

3. Flushing Procedure

On completion of Tanker discharging operations and tanker was un-berthing and clear from the SPM

3.1 For flushing seawater with diving operations.

- 3.1.1 The SPM Maintenance Boat anchor and moor to SPM. Deck port string and deck starboard string. End of starboard string on deck, set up for flushing flange.
- 3.1.2 During this time the shore tank which is to receive the oil from the flush should be measured so that an accurate estimate can be made on completion of the seawater used in the flush.
- 3.1.3 Divers to prepare for diving operations i.e. to close PLEM valves.
- 3.1.4 Close port string butterfly valve and open starboard string butterfly valve (at the hose end on SPM Maintenance Boat)
- 3.1.5 Commence pumping Clean Seawater, from the SPM Maintenance Boat FIFI system down the Starboard hose string. SPM Maintenance Boat to pump at 10 bar (10.2 kg). Estimated quantity pumped = 700 m3. **During this time the diver is to open the Pigging valve No.6 and Crossover valve No.4 for 2 minutes and then close both valves.**

Diver to commence closing 24 inch PLEM valve No 7, prior to stopping pumping from SPM Maintenance Boat.



CAUTION: When commencing to close PLEM valve, while still pumping, ensure SPM pressure gauge reading does not increase above 10 bar (10.2 kg).

- 3.1.6 SPM Maintenance Boat to stop pumping to enable divers to fully close PLEM valve No 7.
- 3.1.7 Close Starboard string butterfly valve and Open Port string butterfly valve on deck of the SPM Maintenance Boat.
- 3.1.8 Repeat the procedure for flushing the Port hose string. Pigging line No.3 will be opened for 2 minutes and then closed. **(DO NOT open Cross over valve No.4)** Closing PLEM valve No. 2 on completion. Estimated quantity pumped = 700 m3
- 3.1.9 Divers to confirm that both PLEM valves are closed.



WARNING: Leaving a PLEM valve open could result in a release of oil when the PLEM hose connections are unbolted.



- 3.1.10 Divers to open 10 inch cross over valve No 4, between 24 inch branch lines.
- 3.1.11 Open both butterfly valves for port & starboard hose string (On the deck of SPM Maintenance Boat)
- 3.1.12 Using FiFi system on The SPM Maintenance Boat flush clean seawater down port string and back to the starboard string via PLEM 10" cross over and discharge to Iso tank on deck of SPM Maintenance Boat for checking whether have oil or not. In case no oil contents, Stop pumping.
- 3.1.13 Close both SPM moon pool 24" valves and both SPM deck 24" valves.



NOTE: The following additional flush may be done.

- 3.1.14 Open SPM deck 10" cross over valve. Close port & starboard 24" SPM deck valve.
- 3.1.15 Using FiFi system on SPM Maintenance Boat flush clean seawater down port string and back to Starboard string via deck 10" cross over and discharge to ISO tank.
- 3.1.16 Take sample of returning seawater at ISO tank to ensure there is no oil content.
- 3.1.17 Stop pumping. Reduce the SPM Maintenance Boat and SPM pressure to zero.
- 3.1.18 Close SPM deck 10" cross over.
- 3.1.19 The shore tank which has received the crude during the flushing, can now be measured and the quantity of the flush received into the tank calculated.

3.2 For flushing seawater without diving operations.

- 3.2.1 SPM Maintenance Boat anchor and moor to SPM. Deck port string and deck starboard string. End of port & starboard string on deck, set up for flushing flange.

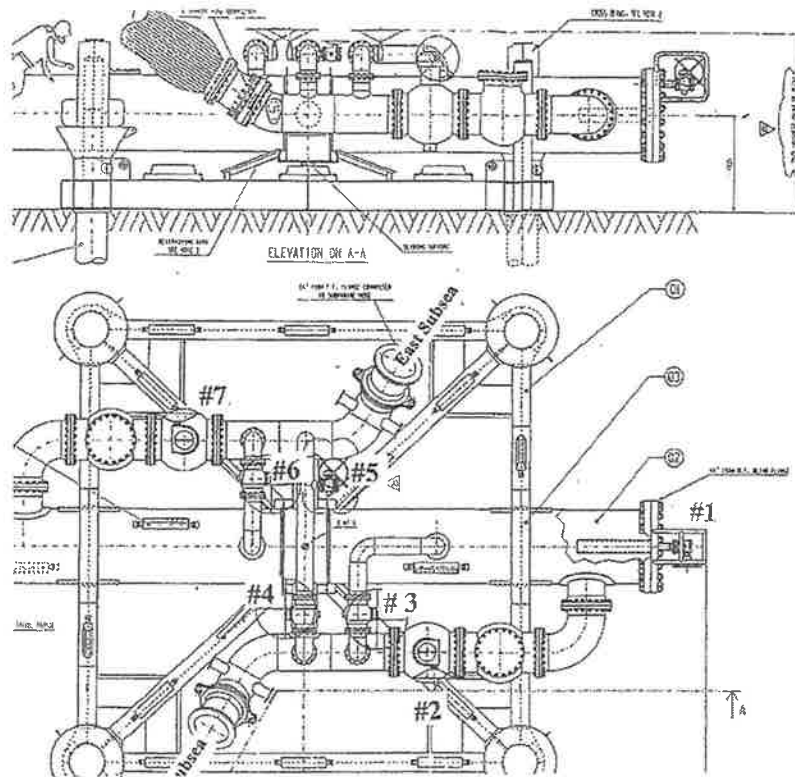


- 3.2.2 The shore tank which is to receive the oil from the flush should be measured so that an accurate estimate can be made on completion of the seawater used in the flush.
- 3.2.3 Close port string butterfly valve and open starboard string butterfly valve (at the hose end on SPM Maintenance Boat)
- 3.2.4 Commence pumping Clean Seawater, from the SPM Maintenance Boat FiFi system, down the Starboard hose string. SPM Maintenance Boat to pump at 10 bar. Estimated quantity pumped = 700 m3.
- 3.2.5 Take sample of the seawater on SPM (for starboard string)to confirm that no oil contents before stop pumping. Stop pumping.
- 3.2.6 Close starboard string butterfly valve and open port string butterfly valve.
- 3.2.7 Pumping clean seawater from the SPM Maintenance Boat FiFi system down the port string. SPM Maintenance Boat to pump at 10 bar (10.2 kg). Estimate quantity pumped = 700 m3.
- 3.2.8 Take sample of the water on SPM (for port string)to confirm that no oil contents before stop pumping. Stop pumping.



NOTE: The following additional flush may be done.

- 3.2.9 Open SPM deck 10" crossover valve. Close port & starboard 24" SPM deck valve.
- 3.2.10 Using FiFi system on SPM Maintenance Boat flush clean seawater down port string and back to starboard string via deck 10" cross over and discharge to Iso tank.
- 3.2.11 Take sample of returning water at Iso tank to ensure there is no oil content.
- 3.2.12 Stop pumping. Reduce SPM Maintenance Boat & SPM pressure to zero.
- 3.2.13 Close SPM deck 10" cross over.
- 3.2.14 The shore tank which has received the crude during the flushing, can now be ullaged and the quantity of the flush received into the tank calculated.



ภาคผนวก ข.28

การตรวจสอบอุปกรณ์การสูบน้ำมันก่อนเรือขนส่งน้ำมันเข้าเทียบท่า

Movement/Dispatches			
Plant 66 Pre Berth Checklist			
Prepared by:	Sawai Paena	Number:	HC-FO-PD-6022
Approved by:	Opas Waiyasatja	Revision:	4.1
Low	Medium	High	

Pre-Berth Checklist

Vessel Name	[REDACTED]
Date	29-Dec-22 @ 22:00 hr
Berth	No. 5

Who	Step	Action	Check
Detailed Activities			
OP	1.	Verify Fire and Foam pumps are available and ready for service. <ul style="list-style-type: none"> 66G701 Electrical Fire Pump 66G702 Diesel Engine Fire Pump 66G704 Foam Pump 67G117 Jockey pump 	<input checked="" type="checkbox"/>
OP	2.	Verify Fire equipment's are available and ready for immediately use. <ul style="list-style-type: none"> Fire monitors are correctly set up Dry powder cart 150 lb International shore fire connection (Bolt, nut, gasget and corrosive check) 	<input checked="" type="checkbox"/>
OP	3.	Verify safety equipments are available and ready for use. <ul style="list-style-type: none"> SCBA Life buoy Fixed Gas detectors. (Product pier Sub. and LPG pier) 	<input checked="" type="checkbox"/>
OP	4.	Verify shore access gangway in stowed position and no damage.	<input checked="" type="checkbox"/>
OP	5.	Verify berth fenders no damage for safe mooring.	<input checked="" type="checkbox"/>
OP	6.	Verify Loading arm and hydraulic system are ready for use. <ul style="list-style-type: none"> Hydraulic oil level/Pump/Pressure/Leak Perform the loading arm function test, check Couplers and O-ring. (For Import/Export shipment) 	<input checked="" type="checkbox"/>

Revision No.: 4.1

Date: 20 August 2018

This is a controlled document and must be used within 7 days of printing 17 December, 2022

HC-FO-PD-6022

Page 1 of 2

		Plant 66 Pre Berth Checklist	Low
Who	Step	Action	Check
OP	7.	Verify loading arm is emptied before connection.	<input checked="" type="checkbox"/>
OP	8.	Verify all vent and drain valves in metering skid are closed.	<input checked="" type="checkbox"/>
OP	9.	Verify injector systems are correctly line up and ready for use. <ul style="list-style-type: none"> Orange dye Green dye Lubricity Marker 	<input checked="" type="checkbox"/>
		NOTE Ensure loading arm drain point and branch line which on service for LSWR/Crude high pour-point are properly flush/drain after discharge completed that to prevent line plug.	
LM	10.	Verify ship vetting status in the Coaster suitability list.	<input checked="" type="checkbox"/>
		CAUTION FOR: New Vessel or First shipment in SPRC Marine terminal	
LM	11.	Verify all ship documents as required for new vessel are available. <ul style="list-style-type: none"> Ship particular Approved of ship's tank table calibration for old ship Pre-approval of ship's tank calibration for new ship (หนังสือขอทำการสอบเทียบปริมาตรความจุของถังเรือ) ใบรับแจ้งเป็นผู้ขนส่งน้ำมันเชื้อเพลิง ตามมาตรา 12 ทวิ ใบอนุญาตใช้เรือของกรมเจ้าท่า (ทะเบียนเรือ) 	<input checked="" type="checkbox"/>
		Check By: [REDACTED]	
END OF TASK			


Revision No.: 4.1

Date: 20 August 2018

This is a controlled document and must be used within 7 days of printing 17 December, 2022

HC-FO-PD-6022

Page 2 of 2

Movement/Dispatches		
 Plant 66 Pre Berth Checklist		
Prepared by:	Sawai Paena	Number: HC-FO-PD-6022
Approved by:	Opas Waiyasatja	Revision: 4.1
Low	Medium	High

Pre-Berth Checklist

Vessel Name	IRENARA
Date	15/12/2022
Berth	4

Who	Step	Action	Check
Detailed Activities			
OP	1.	Verify Fire and Foam pumps are available and ready for service. <ul style="list-style-type: none"> 66G701 Electrical Fire Pump 66G702 Diesel Engine Fire Pump 66G704 Foam Pump 67G117 Jockey pump 	<input checked="" type="checkbox"/>
OP	2.	Verify Fire equipment's are available and ready for immediately use. <ul style="list-style-type: none"> Fire monitors are correctly set up Dry powder cart 150 lb International shore fire connection (Bolt, nut, gasget and corrosive check) 	<input checked="" type="checkbox"/>
OP	3.	Verify safety equipments are available and ready for use. <ul style="list-style-type: none"> SCBA Life buoy Fixed Gas detectors. (Product pier Sub. and LPG pier) 	<input checked="" type="checkbox"/>
OP	4.	Verify shore access gangway in stowed position and no damage.	<input checked="" type="checkbox"/>
OP	5.	Verify berth fenders no damage for safe mooring.	<input checked="" type="checkbox"/>
OP	6.	Verify Loading arm and hydraulic system are ready for use. <ul style="list-style-type: none"> Hydraulic oil level/Pump/Pressure/Leak Perform the loading arm function test, check Couplers and O-ring. (For Import/Export shipment) 	<input checked="" type="checkbox"/>

Revision No.: 4.1

HC-FO-PD-6022

Date: 20 August 2018



Page 1 of 2

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SPRC

Plant 66 Pre Berth Checklist

Low

Who	Step	Action	Check
OP	7.	Verify loading arm is emptied before connection.	<input checked="" type="checkbox"/>
OP	8.	Verify all vent and drain valves in metering skid are closed.	<input checked="" type="checkbox"/>
OP	9.	Verify injector systems are correctly line up and ready for use. <ul style="list-style-type: none"> Orange dye Green dye Lubricity Marker 	<input checked="" type="checkbox"/>
		 NOTE Ensure loading arm drain point and branch line which on service for LSWR/Crude high pour-point are properly flush/drain after discharge completed that to prevent line plug.	
LM	10.	Verify ship vetting status in the Coaster suitability list.	<input checked="" type="checkbox"/>
		 CAUTION FOR: New Vessel or First shipment in SPRC Marine terminal	
LM	11.	Verify all ship documents as required for new vessel are available. <ul style="list-style-type: none"> Ship particular Approved of ship's tank table calibration for old ship Pre-approval of ship's tank calibration for new ship (หนังสือขอทำการสอบเทียบปริมาณความจุของถังเรือ) ใบรับแจ้งเป็นผู้ขนส่งน้ำมันเชื้อเพลิง ตามมาตรา 12 ทวิ ใบอนุญาตใช้เรือของกรมเจ้าท่า (ทะเบียนเรือ) 	<input type="checkbox"/>
		Check By:	ANAWATC.
END OF TASK			


Revision No.: 4.1

HC-FO-PD-6022

Date: 20 August 2018

Page 2 of 2

This is a controlled document and must be used within 7 days of printing 15 December, 2022

Movement/Dispatches		
 Plant 66 Pre Berth Checklist		
Prepared by:	Sawai Paena	Number: HC-FO-PD-6022
Approved by:	Opas Waiyasatja	Revision: 4.1
Low	Medium	High

Pre-Berth Checklist

Vessel Name	
Date	4/12/68
Berth	3

Who	Step	Action	Check
Detailed Activities			
OP	1.	Verify Fire and Foam pumps are available and ready for service. <ul style="list-style-type: none"> 66G701 Electrical Fire Pump 66G702 Diesel Engine Fire Pump 66G704 Foam Pump 67G117 Jockey pump 	<input checked="" type="checkbox"/>
OP	2.	Verify Fire equipment's are available and ready for immediately use. <ul style="list-style-type: none"> Fire monitors are correctly set up Dry powder cart 150 lb International shore fire connection (Bolt, nut, gasget and corrosive check) 	<input checked="" type="checkbox"/>
OP	3.	Verify safety equipments are available and ready for use. <ul style="list-style-type: none"> SCBA Life buoy Fixed Gas detectors. (Product pier Sub. and LPG pier) 	<input checked="" type="checkbox"/>
OP	4.	Verify shore access gangway in stowed position and no damage.	<input checked="" type="checkbox"/>
OP	5.	Verify berth fenders no damage for safe mooring.	<input checked="" type="checkbox"/>
OP	6.	Verify Loading arm and hydraulic system are ready for use. <ul style="list-style-type: none"> Hydraulic oil level/Pump/Pressure/Leak Perform the loading arm function test, check Couplers and O-ring. (For Import/Export shipment) 	<input checked="" type="checkbox"/>



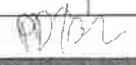
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SPRC		Plant 66 Pre Berth Checklist	Low
Who	Step	Action	Check
OP	7.	Verify loading arm is emptied before connection.	<input type="checkbox"/>
OP	8.	Verify all vent and drain valves in metering skid are closed.	<input checked="" type="checkbox"/>
OP	9.	Verify injector systems are correctly line up and ready for use. <ul style="list-style-type: none"> Orange dye Green dye Lubricity Marker 	<input checked="" type="checkbox"/>
		 NOTE Ensure loading arm drain point and branch line which on service for LSWR/Crude high pour-point are properly flush/drain after discharge completed that to prevent line plug.	
LM	10.	Verify ship vetting status in the Coaster suitability list.	<input checked="" type="checkbox"/>
		 CAUTION FOR: New Vessel or First shipment in SPRC Marine terminal	
LM	11.	Verify all ship documents as required for new vessel are available. <ul style="list-style-type: none"> Ship particular Approved of ship's tank table calibration for old ship Pre-approval of ship's tank calibration for new ship (หนังสือขอทำการสอนเทียบปริมาณความจุของถังเรือ) ใบรับแจ้งเป็นผู้ขนส่งน้ำมันเชื้อเพลิง ตามมาตรา 12 ทวิ ใบอนุญาตใช้เรือของกรมเจ้าท่า (ทะเบียนเรือ) 	<input checked="" type="checkbox"/>
		Check By:	
END OF TASK			

Revision No.: 4.1

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Movement/Dispatches		
SPRC Plant 66 Pre Berth Checklist		
Prepared by: Sawai Paena	Number: HC-FO-PD-6022	
Approved by: Opas Waiyasatja	Revision: 4.1	
Low	Medium	High

Pre-Berth Checklist

Vessel Name	
Date	22 Dec 22
Berth	Nº 5

Who	Step	Action	Check
Detailed Activities			
OP	1.	Verify Fire and Foam pumps are available and ready for service. <ul style="list-style-type: none"> 66G701 Electrical Fire Pump 66G702 Diesel Engine Fire Pump 66G704 Foam Pump 67G117 Jockey pump 	<input checked="" type="checkbox"/>
OP	2.	Verify Fire equipment's are available and ready for immediately use. <ul style="list-style-type: none"> Fire monitors are correctly set up Dry powder cart 150 lb International shore fire connection (Bolt, nut, gasget and corrosive check) 	<input checked="" type="checkbox"/>
OP	3.	Verify safety equipments are available and ready for use. <ul style="list-style-type: none"> SCBA Life buoy Fixed Gas detectors. (Product pier Sub. and LPG pier) 	<input checked="" type="checkbox"/>
OP	4.	Verify shore access gangway in stowed position and no damage.	<input checked="" type="checkbox"/>
OP	5.	Verify berth fenders no damage for safe mooring.	<input checked="" type="checkbox"/>
OP	6.	Verify Loading arm and hydraulic system are ready for use. <ul style="list-style-type: none"> Hydraulic oil level/Pump/Pressure/Leak Perform the loading arm function test, check Couplers and O-ring. (For Import/Export shipment) 	<input checked="" type="checkbox"/>

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SPRC

Plant 66 Pre Berth Checklist

Low

Who	Step	Action	Check
OP	7.	Verify loading arm is emptied before connection.	<input checked="" type="checkbox"/>
OP	8.	Verify all vent and drain valves in metering skid are closed.	<input checked="" type="checkbox"/>
OP	9.	Verify injector systems are correctly line up and ready for use. <ul style="list-style-type: none"> Orange dye Green dye Lubricity Marker 	<input checked="" type="checkbox"/>
NOTE Ensure loading arm drain point and branch line which on service for LSWR/Crude high pour-point are properly flush/drain after discharge completed that to prevent line plug.			
LM	10.	Verify ship vetting status in the Coaster suitability list.	<input checked="" type="checkbox"/>
CAUTION FOR: New Vessel or First shipment in SPRC Marine terminal			
LM	11.	Verify all ship documents as required for new vessel are available. <ul style="list-style-type: none"> Ship particular Approved of ship's tank table calibration for old ship Pre-approval of ship's tank calibration for new ship (หนังสือขอทำการสอบเทียบปริมาณความจุของถังเรือ) ใบรับแจ้งเป็นผู้นำส่งน้ำมันเชื้อเพลิง ตามมาตรา 12 ตรี ใบอนุญาตใช้เรือของกรมเจ้าท่า (ทะเบียนเรือ) 	<input checked="" type="checkbox"/>
Check By:			
END OF TASK			

Revision No.: 4.1

Date: 20 August 2018

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ภาคผนวก ข.29

คู่มือการขนถ่ายน้ำมันดิบ


Movement/Dispatches		
 Plant 60 Crude Oil Import via SPM		
Prepared by: Sarayut Jantima	Number: HC-WI-PD-5391	
Approved by: Nub Tunyasith	Revision: 5.1	
Low	Medium	High

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Purpose

The purpose of this procedure is to be taken for safely crude unloading step and crude tank switching from SPM to SPRC.

System Information

Summary This procedure is explain and instruction covers the operational steps for receiving crude oil import from SPM (Single Point Mooring) which can route to any of the 7 crude oil tanks of SPRC and also can route to PTTGC.

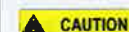
Roles and Responsibility Deviation from the procedure must be stopped and informed a line supervisor or line manager, concerned people for a solution prior to executing this procedure.

- DCS Operator**
 - Verify crude discharge plan
 - Compare the unloading outturn figure with ship and discharge plan
 - Prepare document for custom
 - Verify tank receiving volume hourly with DCS Marine
- Operator**
 - Verify cargo surveyor seal valves and tanks
 - Line up to nominated crude unloading tanks
 - Check leak during tank unloading
 - Prepare crude water drain off for no water present
 - Sample crude for lab analysis lab test report

Precautions



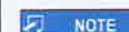
Crude oil contain the high H₂S and Hg, inhalation may cause dizziness, headache and instantly fatal. PPE, organic respirator, mercury vapor cartridge and H₂S monitor must require when working.



The last crude import tank shall leave crude import MOVs valve opened position to prevent crude import lines the thermal expansion.





Crude tank 60D103 - 60D107 allow to receive high pour point crude and demulsifier chemical injection.





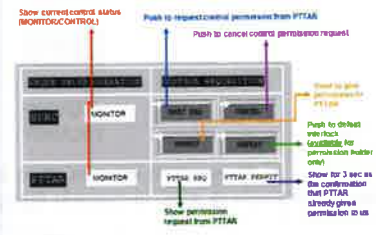
Effective demulsifier chemical reaction with free water in crude requires temperature 38 - 40 degree C, then crude heat up shall operate crude oil and circulate via heater until get the temperature 38 - 40 degree C.

- Prerequisites**
- Crude tank always de water every shift
 - Create sample for LTR in the Star Lim system as method following;
 - ASTM D4007 - 81: Water & Sediment in Crude Oil by Centrifuge
 - ASTM D5002 - 13: Density at 15 degree C.



Detailed Activities


Who	Step	Action		Check
1. Tank Preparation				
OP DCS	1.1	Verify the crude discharge plan for; <ul style="list-style-type: none">Crude tanker estimate time arrival (ETA)Nominated tank and lifting volumeCrude typeCargo surveyorTanker sample as per crude schedule requirementSpecial guide line for crude sampleSpecial guide line for chemical injection		<input type="checkbox"/>
DCS	1.2	Verify reconstituted crude must be switched out to next nominated crude tank at least 24 Hrs.		<input type="checkbox"/>
<div> WARNING</div> <p>Crude oil contain the high H₂S and Hg, inhalation may cause dizziness, headache and instantly fatal. PPE, organinc respirator, mercury vapor cartridge and H₂S monitor must require when working.</p>				
OP	1.3	Notify helper operator to de water nominated crude tank until no water present.		<input type="checkbox"/>
DCS	1.4	IF	THEN	<input type="checkbox"/>
		Nominated crude tank can not completely de water before crude unloading 30 minutes.	Notify shift supervisor to consult with crude scheduler for LT approval, do not proceed to the next step until LT approved.	
 NOTE		Crude tank mixers must stop before tank open gauge at least 2 hrs.		
	1.5	Notify to cargo surveyor witness for;		
OP	1.5.1	Verify nominated crude tank no water represent.		<input type="checkbox"/>
OP	1.5.2	Seal all valves as nominated crude tank in discharge plan.		<input type="checkbox"/>
OP	1.5.3	Collect crude oil sampling.		<input type="checkbox"/>
END OF TASK				



Who	Step	Action	Check												
2. Sample analysis															
<div>  CAUTION </div> <p>Crude oil contain the high H₂S and Hg, inhalation may cause dizziness, headache and instantly fatal. PPE, organic respirator, mercury vapor cartridge and H₂S monitor must require when working.</p>															
<p>Crude tank require to sample for mass balance as sampling point level available.</p> <table border="1"> <thead> <tr> <th>Sample point</th> <th>Level (mm)</th> <th>Amount (bottles)</th> </tr> </thead> <tbody> <tr> <td>Bottom</td> <td>1,500 - 6,000</td> <td>2</td> </tr> <tr> <td>Middle</td> <td>6,001 - 11,000</td> <td>2</td> </tr> <tr> <td>Top</td> <td>Above 11,000</td> <td>2</td> </tr> </tbody> </table>				Sample point	Level (mm)	Amount (bottles)	Bottom	1,500 - 6,000	2	Middle	6,001 - 11,000	2	Top	Above 11,000	2
Sample point	Level (mm)	Amount (bottles)													
Bottom	1,500 - 6,000	2													
Middle	6,001 - 11,000	2													
Top	Above 11,000	2													
OP	2.1	Collect nominated crude tank sample to lab for analysis.	<input type="checkbox"/>												
<div>  CAUTION </div> <p>Crude sample which contain H₂S greater than 600 ppm shall not be admitted into the SPRC laboratory.</p>															
SS	2.2	<table border="1"> <thead> <tr> <th>IF</th> <th>THEN</th> </tr> </thead> <tbody> <tr> <td>Crude sample get H₂S result greater than 600 ppm.</td> <td>Consult with PD shift supervisor to delivery crude sample to Nalco laboratory.</td> </tr> </tbody> </table>	IF	THEN	Crude sample get H ₂ S result greater than 600 ppm.	Consult with PD shift supervisor to delivery crude sample to Nalco laboratory.	<input type="checkbox"/>								
IF	THEN														
Crude sample get H ₂ S result greater than 600 ppm.	Consult with PD shift supervisor to delivery crude sample to Nalco laboratory.														
END OF TASK															


Who	Step	Action	Check																
3. Crude header preparation																			
3.1 SPRC/PTTGC line up																			
 <p>There is interlock defeat switch 01KSA013 to bypass the logic, normally it has to be in OFF position. The interlock defeat switch is only available for the site SPRC/PTTGC, which is currently holding the operation permission.</p> <p>CAUTION</p> <table border="1"> <thead> <tr> <th>open</th><th>MOV fault</th><th>Defeat switch (01KSA013)</th><th>keep close</th></tr> </thead> <tbody> <tr> <td>96HV001/002</td><td>96YA001/2 no</td><td>off</td><td>96HV001/002 96HV003/004</td></tr> <tr> <td>96HV003/004</td><td>96YA003/4 no</td><td>off</td><td>96HV001/002</td></tr> <tr> <td>66HV001/002</td><td>66YA001/2 no</td><td>off</td><td>96HV001/002</td></tr> </tbody> </table> <p>Incase 96HV001 and 96HV002 left open, the command to open 66HV001/66HV002 and 96HV003/96HV004 was not allowed.</p> <p>If 96YA001 and 96YA002 show faults, the interlock will keep the last action until 96YA001 and 96YA002 back to normal.</p> <p>Refer to HC-WI-TF-4525 Crude valve interlocking system</p>				open	MOV fault	Defeat switch (01KSA013)	keep close	96HV001/002	96YA001/2 no	off	96HV001/002 96HV003/004	96HV003/004	96YA003/4 no	off	96HV001/002	66HV001/002	66YA001/2 no	off	96HV001/002
open	MOV fault	Defeat switch (01KSA013)	keep close																
96HV001/002	96YA001/2 no	off	96HV001/002 96HV003/004																
96HV003/004	96YA003/4 no	off	96HV001/002																
66HV001/002	66YA001/2 no	off	96HV001/002																
DCS	3.1.1	Verify all valves in close position as following; <ul style="list-style-type: none"> 96HV003 96HV004 66HV001 66HV002 	<input type="checkbox"/>																
DCS	3.1.2	Verify DCS Marine open valves as following; <ul style="list-style-type: none"> 96HV001 96HV002 	<input type="checkbox"/>																


Who	Step	Action	Check
3.2 PD tank farm line up			
OP	3.2.1	Verify all valves in close position as following; <ul style="list-style-type: none"> 61BV003 61BV004 	<input type="checkbox"/>
OP	3.2.2	Verify all valves in open position as following; <ul style="list-style-type: none"> 61BV002 61HV060 	<input type="checkbox"/>
END OF TASK			


Who	Step	Action	Check
4. Crude tank line up and switching			
 NOTE Crude tank 60D103 - 60D107 allow to receive high pour point crude and demulsifier chemical injection.			
4.1 60D101 Line Up			
DCS	4.1.1	Close all valves as following; <ul style="list-style-type: none"> 60HV001 60HV050 	<input type="checkbox"/>
DCS	4.1.2	Print Saab level 60D101 for open gauge	<input type="checkbox"/>
 NOTE Next crude unloading valve must open more than 80%, then close the last unloading valve, to prevent back pressure in crude unloading line.			
DCS	4.1.3	Open valve 60HV002 for crude unloading.	<input type="checkbox"/>
DCS	4.1.4	Verify all crude unloading valves in close position as following; <ul style="list-style-type: none"> 60HV004 60HV017 60HV019 60HV033 60HV035 60HV880 	<input type="checkbox"/>



Who	Step	Action	Check
OP	4.1.5	Verify operator to place all valves in stop mode and seal valves by cargo surveyor as following; <ul style="list-style-type: none"> 60HV004 60HV017 60HV019 60HV033 60HV035 60HV880 60HV001 60HV050 	<input type="checkbox"/>
4.2 60D102 Line Up			
DCS	4.2.1	Close all valves as following; <ul style="list-style-type: none"> 60HV003 60HV053 	<input type="checkbox"/>
DCS	4.2.2	Print Saab level 60D102 for open gauge	<input type="checkbox"/>
 NOTE Next crude unloading valve must open more than 80%, then close the last unloading valve, to prevent back pressure in crude unloading line.			
DCS	4.2.3	Open valve 60HV004 for crude unloading	<input type="checkbox"/>
DCS	4.2.4	Verify all crude unloading valves in close position as following; <ul style="list-style-type: none"> 60HV002 60HV017 60HV019 60HV033 60HV035 60HV880 	<input type="checkbox"/>
OP	4.2.5	Verify operator to place all valves in stop mode and seal valves by cargo surveyor as following; <ul style="list-style-type: none"> 60HV002 60HV017 60HV019 60HV033 60HV035 60HV880 60HV003 60HV053 	<input type="checkbox"/>

Who	Step	Action	Check
4.3 60D103 Line Up			
DCS	4.3.1	Close all valves as following; <ul style="list-style-type: none"> 60HV016 60HV020 60HV058 	<input type="checkbox"/>
DCS	4.3.2	Print Saab level 60D103 for open gauge	<input type="checkbox"/>
 NOTE Next crude unloading valve must open more than 80%, then close the last unloading valve, to prevent back pressure in crude unloading line.			
DCS	4.3.3	Open valve 60HV017 for crude unloading	<input type="checkbox"/>
DCS	4.3.4	Verify all crude unloading valves in close position as following; <ul style="list-style-type: none"> 60HV002 60HV004 60HV019 60HV033 60HV035 60HV880 	<input type="checkbox"/>
OP	4.3.5	Verify operator to place all valves in stop mode and seal valves by cargo surveyor as following; <ul style="list-style-type: none"> 60HV002 60HV004 60HV019 60HV033 60HV035 60HV880 60HV016 60HV020 60HV058 	<input type="checkbox"/>
4.4 60D104 Line Up			
DCS	4.4.1	Close all valves as following; <ul style="list-style-type: none"> 60HV018 60HV021 60HV061 	<input type="checkbox"/>
DCS	4.4.2	Print Saab level 60D104 for open gauge	<input type="checkbox"/>
 NOTE Next crude unloading valve must open more than 80%, then close the last unloading valve, to prevent back pressure in crude unloading line.			


Who	Step	Action	Check
DCS	4.4.3	Open valve 60HV019 for crude unloading	<input type="checkbox"/>
DCS	4.4.4	Verify all crude unloading valves in close position as following; <ul style="list-style-type: none"> 60HV002 60HV004 60HV017 60HV033 60HV035 60HV880 	<input type="checkbox"/>
OP	4.4.5	Verify operator to place all valves in stop mode and seal valves by cargo surveyor as following; <ul style="list-style-type: none"> 60HV002 60HV004 60HV017 60HV033 60HV035 60HV880 60HV018 60HV021 60HV061 	<input type="checkbox"/>
4.5 60D105 Line Up			
DCS	4.5.1	Close all valves as following; <ul style="list-style-type: none"> 60HV036 60HV032 60HV066 	<input type="checkbox"/>
DCS	4.5.2	Print Saab level 60D105 for open gauge	<input type="checkbox"/>
 NOTE Next crude unloading valve must open more than 80%, then close the last unloading valve, to prevent back pressure in crude unloading line.			
DCS	4.5.3	Open valve 60HV033 for crude unloading	<input type="checkbox"/>
DCS	4.5.4	Verify all crude unloading valves in close position as following; <ul style="list-style-type: none"> 60HV002 60HV004 60HV017 60HV019 60HV035 60HV880 	<input type="checkbox"/>

Who	Step	Action	Check
OP	4.5.5	Verify operator to place all valves in stop mode and seal valves by cargo surveyor as following; <ul style="list-style-type: none"> 60HV002 60HV004 60HV017 60HV019 60HV035 60HV880 60HV036 60HV032 60HV066 	<input type="checkbox"/>
4.6 60D106 Line Up			
DCS	4.6.1	Close all valves as following; <ul style="list-style-type: none"> 60HV034 60HV037 60HV068 	<input type="checkbox"/>
DCS	4.6.2	Print Saab level 60D106 for open gauge	<input type="checkbox"/>
 NOTE Next crude unloading valve must open more than 80%, then close the last unloading valve, to prevent back pressure in crude unloading line.			
DCS	4.6.3	Open valve 60HV035 for crude unloading	<input type="checkbox"/>
DCS	4.6.4	Verify all crude unloading valves in close position as following; <ul style="list-style-type: none"> 60HV002 60HV004 60HV017 60HV019 60HV033 60HV880 	<input type="checkbox"/>
OP	4.6.5	Verify operator to place all valves in stop mode and seal valves by cargo surveyor as following; <ul style="list-style-type: none"> 60HV002 60HV004 60HV017 60HV019 60HV033 60HV880 60HV034 60HV037 60HV068 	<input type="checkbox"/>


Who	Step	Action	Check
4.7 60D107 Line Up			
DCS	4.7.1	Close all valves as following; <ul style="list-style-type: none"> 60HV860 60HV881 60HV883 	<input type="checkbox"/>
DCS	4.7.2	Print Saab level 60D107 for open gauge	<input type="checkbox"/>
 NOTE Next crude unloading valve must open more than 80%, then close the last unloading valve, to prevent back pressure in crude unloading line.			
DCS	4.7.3	Open valve 60HV880 for crude unloading	<input type="checkbox"/>
DCS	4.7.4	Verify all crude unloading valves in close position as following; <ul style="list-style-type: none"> 60HV002 60HV004 60HV017 60HV019 60HV033 60HV035 	<input type="checkbox"/>
OP	4.7.5	Verify operator to place all valves in stop mode and seal valves by cargo surveyor as following; <ul style="list-style-type: none"> 60HV002 60HV004 60HV017 60HV019 60HV033 60HV035 60HV860 60HV881 60HV883 	<input type="checkbox"/>
END OF TASK			

Who	Step	Action	Check
5. Receive SPM line flushing setting by program			
 NOTE Crude oil line content from SPM to storage tank is 23,130 m ³ .			
 NOTE Require reduce flow rate 4,000m ³ /hr if remain left 5,000 m ³ by base on 96HV001, 96HV002 and 96HV003 closing time 420second (7 mins) then will be set to stand by and stop to minimize short/over within 1,000 BBL.			

Who	Step	Action	Check
<p>The SPM flush line step program that have alarm blink and buzzer then to action;</p> <p>NOTE</p> <ol style="list-style-type: none"> 1. Call SPM to stand by 30 mins and reduce rate to 4,000 m³/hr then If remain left 2,250 m³ 2. Call SPM to stand by 15 mins If remain left 1,250 m³ 3. Call SPM to stand by 5 mins If remain left 600 m³ 4. Call SPM to stop discharge and close 96HV001, 96HV002, 96HV003 If remain left 200 m³ 			
DCS	5.1	Put the nominated crude tank number in "SPM FLUSH LINE " program step "1. Tank"	<input type="checkbox"/>
DCS	5.2	Select step "2. SPMFLUSH.SW" to "ON" mode.	<input type="checkbox"/>
DCS	5.3	Notify DCS Marine ready to SPM line flushing.	<input type="checkbox"/>
DCS	5.4	Go to step 9. Stop crude unloading setting by DCS.	<input type="checkbox"/>
END OF TASK			



Who	Step	Action		Check
6. Unloading activities				
DCS	6.1	Notify DCS Marine before crude discharge 1 hour		<input type="checkbox"/>
<div> NOTE</div> <p>Some high pour point crude type get difficultly to separate free water from normal crude drain off, demulsifier chemical uses to improve crude de watering. Crude tank 60D103 - 60D107 allow to receive high pour point crude and demulsifier chemical injection.</p>				
DCS	6.2	IF	THEN	<input type="checkbox"/>
		The nominated tank receive that require to inject the Demulsifier as referred DOG1 and DOG 2,	Notify DCS Marine to prepare Demulsifier injection is ratio10 ppm.	
DCS	6.3	Compare the loading outturn figure hourly during discharge with ship and the crude tank receiving to DCS Marine.		<input type="checkbox"/>
DCS	6.4	IF	THEN	<input type="checkbox"/>
		Any significant of discrepancies loading outturn figure have to investigate,	Stop unloading and report to shift supervisor,	


Who	Step	Action		Check
DCS	6.5	Notify DCS Marine and tank farm operator to commence discharge crude at initial flow rate 4,000 m ³ /hr for 30 minutes.		<input type="checkbox"/>
OP	6.6	Verify no leak and seeping from tank.		<input type="checkbox"/>
OP	6.7	Notify the conditions to DCS Tank Farm.		<input type="checkbox"/>
DCS	6.8	IF	THEN	<input type="checkbox"/>
		Demulsifier injecting,	Verify DCS Marine that Demulsifier injecting is ratio 10 ppm.	
DCS	6.9	Verify the crude correct in sequence order receiving tank.		<input type="checkbox"/>
DCS	6.10	Notify DCS Marine and tank farm operator to increase flow rate to 9,000 m ³ /hr		<input type="checkbox"/>
END OF TASK				



Who	Step	Action	Check
7. Crude Oil filling/mixing			
<p>The setting of auto stop mixer logic is designed to stop mixers when the level become low in the order to prevent build up of static electricity in tank.</p>			
<div> NOTE</div> <p>The interlock inhibit operator to restart the crude mixers while condition is still lower than setting limit level is at 3,473 mm.</p> <p><u>Refer to HC-WI-TE-4560 Auto stop mixer logic</u></p>			
DCS	7.1	IF	THEN
		The crude tank unloading level reach to 3,473 mm,	Start crude tank mixers.
<div><input type="checkbox"/></div>			
END OF TASK			

Who	Step	Action		Check
8. SPRC crude tank switching				
DCS	8.1	IF	THEN	<input type="checkbox"/>
		Crude unloading is the end of step discharge plan.	Go to 9. Stop crude unloading setting by DCS	

Who	Step	Action		Check
DCS	8.2	IF	THEN	<input type="checkbox"/>
		Crude unloading plan switch to the next tank.	Go to the next step 8.3.	
DCS	8.3	Notify DCS Marine to stand by crude tank switching 30 minutes.		<input type="checkbox"/>
DCS	8.4	Notify DCS Marine to stand by 15 minutes and reduce flow rate to 4,000 m³/hr.		<input type="checkbox"/>
DCS	8.5	Verify ship reduce flow rate to 4,000 m³/hr by monitor flow 96FI001.		<input type="checkbox"/>
DCS	8.6	WHEN	THEN	<input type="checkbox"/>
		Flow 96FI001 reading below 4,000 m³/hr	Switch crude unloading to others tank can be go to the step 7.7.	
DCS	8.7	Switch and Line Up through; Step 4.1 60D101 Line Up, or Step 4.2 60D102 Line Up, or Step 4.3 60D103 Line Up, or Step 4.4 60D104 Line Up, or Step 4.5 60D105 Line Up, or Step 4.6 60D106 Line Up, or Step 4.7 60D107 Line Up		<input type="checkbox"/>
DCS	8.8	WHEN	THEN	<input type="checkbox"/>
		Crude tank switching tank complete.	Go to Step 6.6.	
END OF TASK				

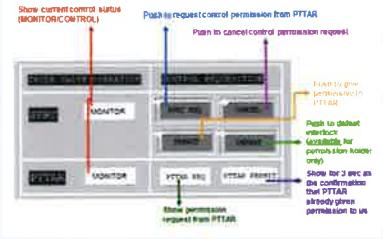
Who	Step	Action		Check
9. Stop crude unloading setting by DCS				
 NOTE		Crude oil line content from SPM to storage tank is 23,130 m ³ .		
 NOTE		DCS Tank Farm will notify to DCS Marine 30 minutes for decrease the crude unloading flow rate to minimum at 4,000 m ³ /hr before crude discharge completed.		
DCS	9.1	WHEN	THEN	<input type="checkbox"/>
		The crude remaining volume left to 2,250 m ³ .	Notify DCS Marine stand by 30 minutes and reduce flow rate to 4,000 m ³ /hr.	

Who	Step	Action		Check
DCS	9.2	IF	THEN	<input type="checkbox"/>
		Demulsifier injecting,	Notify DCS Marine to stop Demulsifier injection.	
DCS	9.3	WHEN	THEN	<input type="checkbox"/>
		The crude remaining volume left to 1,250 m ³ .	Notify DCS Marine stand by 15 minutes.	
DCS	9.4	WHEN	THEN	<input type="checkbox"/>
		The crude remaining volume left to 600 m ³ .	Notify DCS Marine stand by 5 minutes.	
DCS	9.5	WHEN	THEN	<input type="checkbox"/>
		The crude remaining volume left to 200 m ³ .	Notify DCS Marine stop crude unloading.	
DCS	9.6	Verify DCS Marine stop crude unloading and monitor; <ul style="list-style-type: none">• 96FI001 crude unloading flow rate reading below 0 m³/hr or• 96PI001 crude unloading pressure indicator reading below 0 kg/cm²		<input type="checkbox"/>
 CAUTION		The last crude import tank shall leave crude import MOVs valve opened position to prevent crude import lines the thermal expansion.		
DCS	9.7	IF	THEN	<input type="checkbox"/>
		The crude unloading plan switch to PTTGC.	Go to 11. Crude switch SPRC to PTTGC	
END OF TASK				

Who	Step	Action		Check
10. Tank close gauge				
 NOTE		To support mass balance figure for whole tank temperature average then crude tank mixers shall continues mixing after crude tank finished unloading.		
OP DCS	10.1	Continue mixing at least 6 hrs after finished crude unloading.		<input type="checkbox"/>
DCS	10.2	WHEN	THEN	<input type="checkbox"/>
		Crude tank mixers mixing at least 6 hrs,	Print Saab level the nominated crude tank close gauging.	
 CAUTION		Crude oil contain the high H ₂ S and Hg, inhalation may cause dizziness, headache and instantly fatal. PPE, organinc respirator, mercury vapor cartridge and H ₂ S monitor must require when working.		

Who	Step	Action	Check
OP	10.3	Notify helper operator to de water nominated crude tank.	<input type="checkbox"/>
OP	10.4	Verify nominated crude tank no water represent.	<input type="checkbox"/>
OP	10.5	Verify no leak and seeping from tank.	<input type="checkbox"/>
OP	10.6	Verify condition to DCS Tank Farm.	<input type="checkbox"/>
END OF TASK			

Who	Step	Action	Check
11. Crude switch SPRC to PTTGC			
DCS	11.1	Notify PTTGC when SPRC crude discharge completed	<input type="checkbox"/>
DCS	11.2	Verify DCS Marine stop crude unloading to SPRC.	<input type="checkbox"/>
DCS	11.3	Switch crude unloading from SPRC to PTTGC.	<input type="checkbox"/>

Who	Step	Action	Check																																
 <p>There is interlock defeat switch 01KSA013 to bypass the logic, normally it has to be in OFF position. The interlock defeat switch is only available for the site SPRC/PTTGC, which is currently holding the operation permission.</p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p>CAUTION</p> <table border="1"> <thead> <tr> <th colspan="4">NEW</th> </tr> <tr> <th>open</th> <th>MOV fault</th> <th>Defeat switch (01KSA013)</th> <th>keep close</th> </tr> </thead> <tbody> <tr> <td>96HV001/002</td> <td>96YA001/2</td> <td>off</td> <td>96HV001/002</td> </tr> <tr> <td></td> <td>no</td> <td></td> <td>96HV003/004</td> </tr> <tr> <td>96HV003/004</td> <td>96YA003/4</td> <td>off</td> <td>96HV001/002</td> </tr> <tr> <td></td> <td>no</td> <td></td> <td></td> </tr> <tr> <td>66HV001/002</td> <td>66YA001/2</td> <td>off</td> <td>96HV001/002</td> </tr> <tr> <td></td> <td>no</td> <td></td> <td></td> </tr> </tbody> </table> </div> <p>Incase 96HV003 and 96HV004 left open, the command to open 96HV003/96HV004 was not allowed. If 96YA003 and 96YA004 show faults, the interlock will keep the last action until 96YA003 and 96YA004 back to normal.</p> <p>Refer to HC-WI-TF-4525 Crude valve interlocking system</p>				NEW				open	MOV fault	Defeat switch (01KSA013)	keep close	96HV001/002	96YA001/2	off	96HV001/002		no		96HV003/004	96HV003/004	96YA003/4	off	96HV001/002		no			66HV001/002	66YA001/2	off	96HV001/002		no		
NEW																																			
open	MOV fault	Defeat switch (01KSA013)	keep close																																
96HV001/002	96YA001/2	off	96HV001/002																																
	no		96HV003/004																																
96HV003/004	96YA003/4	off	96HV001/002																																
	no																																		
66HV001/002	66YA001/2	off	96HV001/002																																
	no																																		
DCS	11.3.1	Verify all valves in close position as following; <ul style="list-style-type: none"> 96HV001 96HV002 	<input type="checkbox"/>																																
DCS	11.3.2	Verify DCS Marine open valve as following; <ul style="list-style-type: none"> 96HV003 96HV004 	<input type="checkbox"/>																																
END OF TASK																																			

Who	Step	Action	Check
12. Crude circulation heater			
<div>NOTE</div> <p>Effective demulsifier chemical reaction with free water in crude requires temperature 38 - 40 degree C, then crude heat up shall operate crude oil and circulate via heater until get the temperature 38 - 40 degree C.</p>			
OP	12.1	Refer to procedure HC-WI-PD-5397 Crude Oil circulation via heater 60E101.	<input type="checkbox"/>
END OF TASK			

Senior Operator

Initial

Time

Date

Shift Supervisor

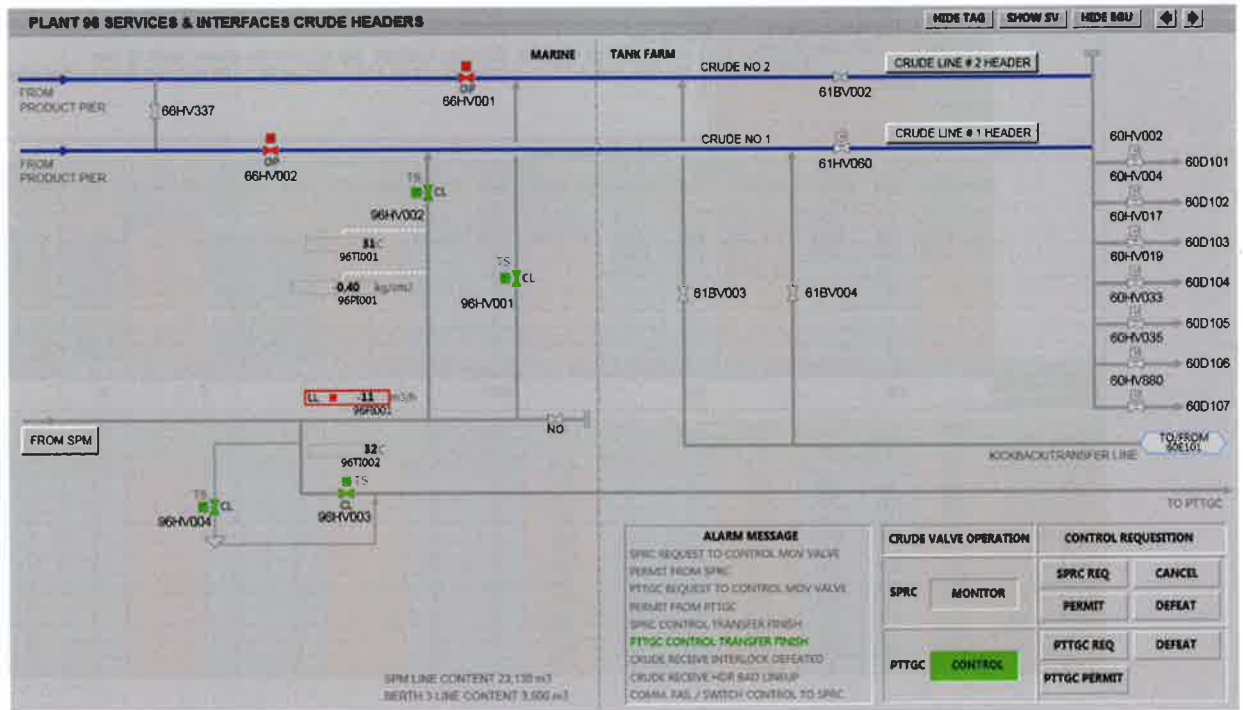
Initial

Time

Date

Appendix

Appendix A : GR0781 Service and Interface Crude HDR



Revision No.: 5.1

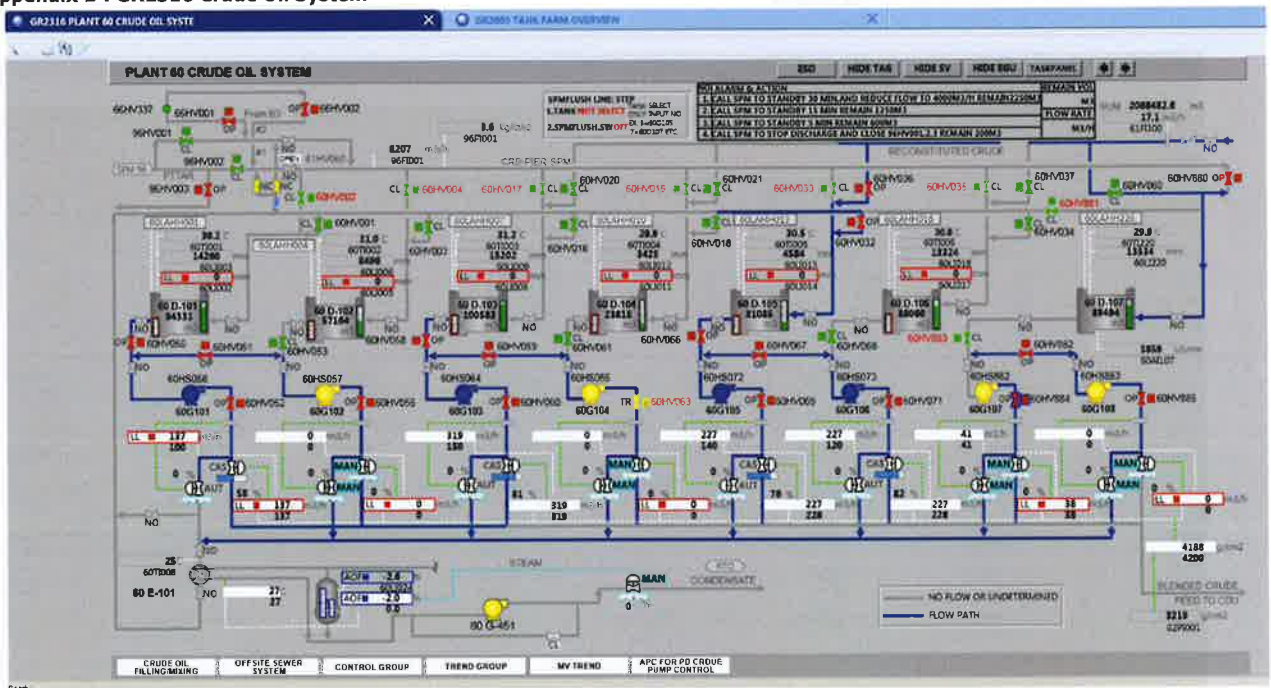
HC-WI-PD-5391

Date: 19 October 2021

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This is a controlled document and must be used within 7 days of printing 12 July, 2022

Appendix B : GR2316 Crude Oil System



Revision No.: 5.1

HC-WI-PD-5391

Date: 19 October 2021

Page 22 of 27

This is a controlled document and must be used within 7 days of printing 12 July, 2022

Definitions

N/A

References

- D-60-1225-101
- D-60-1225-102
- D-60-1225-103
- D-60-1225-104
- D-60-1225-105
- D-60-1225-106
- D-61-1225-106
- D-61-1225-107
- GR0781 Service and interfaces crude header
- GR2413 Crude oil filling and mixing
- GR2314 Crude oil system
- MOM "SPM Operating Workshop in November, 2018"
- HC-WI-TE-4525 Crude valve interlocking system
- HC-WI-PD-5397 Crude Oil circulation via heater 60E101

Amendment List

Below is a list of changes between the previous and the current revision of this document.

Step/Section

Reason for Change

(Changed) - Converted to SmartProcedure, changed document number from HC-WI-PD-1400 to HC-WI-PD-5391, reviewed all contents

(Changed) - - Change flowrate of tank switch and topping off from 4,000 - 5,000 m³/hr to be 4,000 m³/hr. - Change the maximum flow rate from 8,500 - 8,800 m³/hr to be 9,000 m³/hr. - Change SPM operating from PTTGC to be SPRC. (Refer to SPM Operation Interface Workshop in November 2018)

Information

(Changed) - Major change to add section 5. SPM line flush and change data in section 10. Tank close gauge, (Note, 10.1)

Caution

Step (Unnumbered) - 2.

(Added) - Minor change to change that add caution in section Precautions and section 9. Stop crude unloading setting by BCS

Distribution List

Copy No.	Controller/Holder	Location
00	Electronic Controller	SmartProcedures

ภาคผนวก ข.30

บันทึกการตรวจสอบอัตราการส่งน้ำมันดิบ และระดับน้ำมันในถังเก็บ

Movement/Dispatches



Plant 66 Ship and Shore Hourly Cargo Figures

Prepared by: Sawai Paena

Number: HC-FO-PD-6024

Approved by: Opas Waiyasatja

Revision: .1

Medium

High

1) D104 (6518) L = 6830 MM -

2) D106 (6521) L = 3120 MM -

Terminal Unloading Record

Vessel: Yang Mei Hu

Berth: 3

(ship)

Cargo: Murban

B/L QTY: 76440 M³ / 76738 m³ OLS

Receiving tank ullage available; Tank:

M3, Tank:

M3

Date Time	Ship ROB (M3)	Ship Disch rate (m3/hr)	Ship total disch (M3)	Shore received (M3)	Ship/ Shore Diff. (M3)	Manifold Press. (kg/cm2)		3120 (186) (6521) Remark M ³ /hr	(6518) D104
						L/A	Ship		
7/1/23 @ ↓ 10/1/23	2230	hr sta 1	Murban	discharge	to D104			-	6830
	2300	-	-	-	912			912	6940
	2400	69998	-	6896	5468	1428		4556	7669
	0100	66122	3876	10772	10304	468		4836	8411
	0200	61097	5025	15797	15069	728		4765	9142
	0300	56298	4799	20596	19807	789		4738	9869
	0400	51684	4614	25210	24520	690		4713	10592
	0500	47147	4637	29747	29194	553		4674	11309
	0600	42395	4752	34499	33887			4693	12029
	0700	37643	4752	39251	38567			4680	12747
	0800	32879	4764	44015	43325			4758	13477
	0900	28042	4837	48852	48187			4862	14223
	1000	23190	4852	53704	52997	707		4810	14961
	1100	18688	4502	58206	56550	926		3558	16506
	1200	13606	5082	63288	57280	844		238	3232
	1300	9155	4457	67739	62444	463		5164	4024
	1400	5719	3436	71175	67276	306		4832	4765
	1500	3920	1799	72974	70869	90		3593	5316
	1600	-	-	-	72884			2015	5625
	1700	-	-	-	74527			1643	5877
	1800	-	-	-	75433			906	6016
	1900	-	-	-	76738			1278	6212

Revision No.: .1

HC-FO-PD-6024

Date: 22 August 2018

Page 1 of 2

This is a controlled document and must be used within 7 days of printing 30 December, 2022

Movement/Dispatches



Plant 66 Ship and Shore Hourly Cargo Figures

Prepared by: Sawai Paena

Number: HC-FO-PD-6024

Approved by: Opas Waiyasatja

Revision: .1

Low

Medium

High

102 = 6520

101 = 8930

Terminal Unloading Record

Vessel: SOUTHERN LEADER

Berth: 3.

Cargo: MURBAN CRUDE

B/L QTY:

Receiving tank ullage available; Tank:

M3, Tank:

M3

Date Time	Ship ROB (M3)	Ship Disch rate (m3/hr)	Ship total disch (M3)	Shore received (M3)	Ship/ Shore Diff. (M3)	Manifold Press. (kg/cm2)		Remark
						L/A	Ship	
7-1-23								1900
1400	7464	4663	5298	5111			4.5	5730
1500	6964	5002	10318	10533			"	6511
1600	64516	5131	15449	15627			"	7277
1700	59554	4962	20411	20553			"	8048
1800	54634	4920	25331	25514			"	8809
1900	49209	4725	30256	30169				9623.
2000	44149	5560	35816	35606				10357
2100	38615	5324	41250	41050				11192
2200	33250	5335	46685	46415				12015
2300	28154	5126	51811	51552				12803
2400	23180	4974	56785	56520				13565
0100	18081	5099	61884	61351				14306
0200	13284	4797	66681	66345				15072
0300	8797	4547	71628	71450				15855
0400	4957	3980	75608	74814				16377
0500	2697	3266	77274	77408				8528
0600	-	-	78927	79253				8811.
0700	770	-	79195	-				
0800								
0900								

4655

5437

5442

5365

5137

4968

4831

4994

5105

3364

2594

1845

Revision No.: 1242 commence discharge to 1102.

HC-FO-PD-6024

Date: 22 August 2018 Switch, 102 to 101. (0400).

Page 1 of 2

This is a controlled document and must be used within 7 days of printing 05 January, 2023

Movement/Dispatches



Plant 66 Ship and Shore Hourly Cargo Figures

Prepared by: Sawai Paena

Number: HC-FO-PD-6024

Approved by: Opas Waiyasatja

Revision: .1

Low

Medium

High

Terminal Unloading Record

Vessel: URAGA PRINCESS

Berth: 3

Cargo: Murban

B/L QTY:

Receiving tank ullage available; Tank:

M3, Tank:

M3

Date Time 6-1-23	Ship ROB (M3)	Ship Disch rate (m3/hr)	Ship total disch (M3)	Shore received (M3)	Ship/ Shore Diff. (M3)	Manifold Press. (kg/cm2)		Remark
						L/A	Ship	
0800	-	-	-	2152			4.5	3065
0900	72967	5057	7976	2506			"	3241
1000	67956	5011	12987	12560			"	4216
1100	62965	4991	17978	17549			"	4991
1200	57981	4984	22962	22512			"	5756
1300	53084	4897	27859	27442			"	6577
1400	48205	4829	32738	32320			"	7273
1500	43336	4869	37607	37104			"	8021
1600	38498	4838	42445	42062			"	8770
1700	33703	4795	47240	46914			"	9515
1800	28940	4763	52003	51688			"	10259
1900	24235	4705	56708	56370				10991
2000	19820	4355	61063	60778				11709
2100	16192	3688	64751	64411				12385
2200	13475	3217	67468	67349				12892
2300	9788	4087	71555	71306				1302
2400	5910	4178	75733	75576				13409
0100	2255	2915	78648	78542				14064
0200	979	1916	79664	79582				4064
0300				80757				4970
0400								4919
								2966
								1440
								995

Revision No.: .1

Date: 22 August 2018

HC-FO-PD-6024

Page 1 of 2

This is a controlled document and must be used within 7 days of printing 05 January, 2023

0948 Stop for internal stripping
0410 Complete discharging

706 6.521
702 6.520

7/1/23

4682
9408
6
7957
4970
2966
1440
995

ภาคผนวก ข.31

ขั้นตอนการทำงานเกี่ยวกับการรับจ่ายน้ำมันที่ท่ากลางทะเล



SPM Terminal Operating Procedures

Suranun Silasuwanwit
SPM Superintendent

Winyou Chandorn
Marine Manager

Distribution List

Copy No.	Controller/Holder	Location
00	Electronic Controller	EDMS
01	SPM Maintenance Boat	Boat

Amendment List

[illegible]

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1. Introduction

1.1 Purpose

This procedure provides the necessary information about the SPM, location and steps required to moor tankers, connect hoses, discharge crude oil, disconnect hoses, and un-berth the tankers and SPM maintenance.

1.1 Notes, Cautions, and Warnings

This procedure uses the following symbols to draw the Operator's attention to the steps in the procedure that are particularly important or may lead to safety hazards if done incorrectly.



NOTE: General information useful to understand a particular step in the procedure.



CAUTION: A step that, if done incorrectly, could cause a safety hazard leading to personal injury, equipment or environmental damage, or a delay.



WARNING: A step that, if done incorrectly, could cause a serious safety hazard leading to death, serious personal injury, major equipment damage, fire or a large environmental release.

2. Description and Location of Terminal

2.1 Terminal Location

The MAP TA PHUT SPM TERMINAL consists of a single point mooring buoy located in position:

Latitude	12° 29.3' North
Longitude	101° 11.76' East

in approximately 25 Meters of water (LLT).

The Terminal is designed to handle vessels from 60,000 to 280,000 DWT with a maximum displacement of 350,000 tones and draft of 20.7 meters. Crude Oils for the Star Petroleum Refining Co., Ltd. are imported through the facility.

A 48 inch diameter submarine pipeline, approximately 19 kilometers in length connects the SPM with the shore terminal. This pipeline terminates at the SPM PLEM to which the sub-sea hoses are connected.

2.2 Principle Particulars

The buoy is a CALM type, secured by Six Anchors and Chains. The principle particulars of the buoy are :

Outer Shell Diameter	11.00	meters
Outer Skirt Diameter	15.17	meters
Height	4.80	meters
Draft	3.20	meters
Weight(Ballasted)	216.5	ton
Weight inc. susp. chains	260.0	ton

High Holding Power		
Marine Drag Anchors	15.5	ton
Anchor Chain lengths	315	meter
Anchor Chain diameter	4-1/4	inches
Min Breaking Load	8721	k N
Anchor Leg Spacing	60°	

2.3 Operating Conditions

The operational conditions up to which tankers can stay securely moored at the terminal correspond to a return period of 5 years as given below.

	Unit	Value
Significant Wave Height	m	3.3
Peak Wave Period	s	8
Wind Speed (1 minute mean)	knot	35
Current Speed (Surface)	knot	1.2

It is assumed that wind, waves and current are collinear.



NOTE: In case of operating wind limit is persisting that Mooring Master has considered for risky consequence. Mooring Master will make decision and take necessary action for all safety respect to the operation.

2.4 Survival Conditions

The survival conditions correspond to a period of 100 years and are given in the following table. There is no tanker moored during such conditions.

	Unit	Value
Significant Wave Height	m	3.4
Wave Period	s	8
Wind Speed (1 minute mean)	Knot	42
Current Speed (Surface)	Knot	1.4

2.5 Mooring Hawsers

Number of Hawsers	2
Type	Single - leg
Material	Nylon
Circumference	16 inch
Length	50 meters
Breaking Load NBDS	395 Ton
Maximum allowable mooring loads	220 Ton
Chafe Chain R 3	76 mm.

2.6 Sub-sea Hose Configuration

The Chinese Lantern sub-sea hose configuration consists of two hose strings, each of 3 hoses 24 inch in diameter.

2.7 Surface Hose Strings

The floating hose configuration consists of two hose strings. The main hoses being 24 inch and the tail hoses 16 inch diameter. The starboard string 955 feet and the port string 990 feet in length. The strings are marked by winker lights.

Double closure Gall Thomson breakaway couplings are fitted to both floating strings.

2.8 Navigation Aids

- 2.8.1 The SPM exhibits a white light flashing 6 times per 15 second Fl (6) 15 sec and visible at a range of 5 miles. In addition a fog horn will sound Morse Code "U" at 30 second intervals.

White winker lights are also fitted to the floating hose strings.

- 2.8.2 Buoy "A" Isolated Danger, Black with a broad red horizontal red band, top mark two black spheres one above the other, exhibiting a White light Fl (2) 12 sec 6M located in position:

Latitude 12° 29' 33.9" North

Longitude 101° 10' 18.4" East

This buoy marks a rock pinnacle which is considered dangerous to navigation.

- 2.8.3 Buoy "B" Special Mark, Yellow with single Yellow "X" top mark, exhibiting a Yellow light Fl (4) 20 sec 6M located in position:

Latitude 12° 29' 43.0" North

Longitude 101° 12' 24.7" East

A RACON transmitting Morse Code "B" (Bravo) is also fitted to this buoy.

- 2.8.4 Station Buoy, Orange in color and exhibiting a White light Fl 4 sec 5M located in position:

Latitude 12° 29' 54.0" North

Longitude 101° 12' 30.0" East

3 Berthing Procedures

3.1 Mooring and Assistant Mooring Masters



CAUTION: The Mooring Master (MM) will be responsible for the berthing, un-berthing and coordination of all operations undertaken by the vessel in the berth. He is to ensure all operations are carried out in a safe and seaman like manner, complying with International, National, Industry and Company Standards. Close coordination with the vessel's Master, Crew and the Marine Control Building must be maintained at all times.

While onboard the import tanker, the MM is the Company Representative and in such a capacity is responsible for ensuring that SPRC's interests are protected. The MM is responsible for issuing Letters of Protest for any shipboard equipment deficiencies or operational deficiencies that might be found or serious safety violations that may occur while he is on the vessel.

The MM should not hesitate to contact SPRC Management at any time he feels their assistance or advice is required.

The Assistant Mooring Master (AMM) will work under the directions and leadership of the MM.

3.2 Vessel acceptance



NOTE: Prior to berthing any vessel at the SPM Terminal the following checks must be made :

- 3.2.1 Vessel has been cleared by SPRC / PTTGC vetting system.
- 3.2.2 Appropriate Refinery (SPRC / PTTGC) ready to receive the vessel's cargo
- 3.2.3 Vessels Agent notified of berthing schedule
- 3.2.4 Independent Cargo Inspection Company been advised of berthing schedule.
- 3.2.5 SPM Pre-berthing Inspection has been completed by the Standby vessel's crew.
- 3.2.6 Load Monitor System has been set up.
- 3.2.7 Vessel acceptable on Displacement and Draft.
- 3.2.8 Cargo Tanks inerted as required by SOLAS
- 3.2.9 Vessel confirmed information on the Pre-berthing Check List.
- 3.2.10 Record of Inspection of Pipeline, Cargo Pump Stop and Cargo Pump Pressure relief tests to be inspected.

3.3 Vessel Pre - Berthing Check List

1. Name of Vessel
2. Name of Master
3. Summer Dead weight
4. Arrival Draft
5. Net Registered Tonnage
6. Last Port of Call
7. Owner's name and Address
8. Bill of Lading Figures
9. Nationality of Officers and Crew
10. Number and Size of Chain Stoppers for SPM Mooring
11. Can Vessel maintain 30 percent of Summer DWT while in Berth
12. IGS Operational and all cargo tanks conditions as required by SOLAS
13. Adequate Stability at all stages of Cargo / Ballast operations.
14. Number and size of Manifolds.
15. S.W.L. of Derrick or Crane.

This information may be obtained from the vessel's Master by VHF or E-Mail through his agent.

The vessel must comply fully with all equipment and safety requirements and not exceed the displacement or draft limitations for the SPM. If the vessel exceeds the SPM designed criteria or is deficient in equipment or safety requirements the vessel will not be berthed.

3.4 SPM Pre - Berthing Check List



NOTE: Prior to berthing a tanker, an inspection shall be made of the SPM and ancillary equipment by the stand-by vessel's crew on supervision of SPM Maintenance Supervisor.



CAUTION: In times of bad weather, consideration should be given as to whether conditions permit safe boarding of the buoy by personnel. While personal safety is paramount, the possibility of damage to the buoy by boats should be taken into consideration.

The final decision as to whether it is safe to board the buoy, is to be taken by the assigned Mooring Master in consultation with the Master of the Standby Vessel and SPM Maintenance Supervisor.

3.5 Drug and Alcohol Policy

- 3.5.1 STRICTLY FORBIDDEN to consume either alcohol or illegal drugs and any person may be requested to do drug/alcohol test.
- 3.5.2 Any Mooring Master, Assistant Mooring Master and Contractors thought to be under the influence of either alcohol or illegal drugs during working hours shall be requested to report for testing.
- 3.5.3 Refusal by a Mooring Master, Assistant Mooring Master and Contractors to submit to this drug/alcohol test shall result in them being requested to leave from operation.
- 3.5.4 Disciplinary action for refusing to submit to this drug/alcohol test shall be determined by management but may include:
- 3.5.5 Time off without pay for 1st occurrence.
- 3.5.6 Possible termination of employment for any additional occurrence.
- 3.5.7 If the Mooring Master and/or Contractor is tested and found to be under the influence of either alcohol or illegal drugs, they will be subjected to immediate disciplinary action which could include termination of their employment.
- 3.5.8 The use, possession, distribution or sale of either alcohol, illegal drugs and controlled substances by any person within SPRC premises or while engaged in performing services for SPRC is strictly and absolutely prohibited.

4 Mooring and Unmooring

4.1 Mooring Master Boarding

The Mooring Master his Assistant and SPM Maintenance Supervisor/ assigned rigger will board the vessel by boat.

- A safe means of access shall be provided in accordance with the requirements of SOLAS.
- The vessel must provide an adequate lee for boarding.
- During night operations the access shall be adequately illuminated to allow the safe approach and boarding of the Mooring Master, Government Officials Agent and Surveyors.
- The Conditions of Entry into and use of the Map Ta Phut SPM Terminal form and Pilotage Plan will be presented to the Master of the Tanker and shall be signed prior to the commencement of berthing operations.
- The Notice of Readiness will only be accepted / received provided the SPRC Mooring Master is satisfied that the vessel is in all respects ready to moor and discharge.

In no event shall the Notice of Readiness, whether previously accepted / received or not, be valid or binding on the Terminal unless the vessel, her tanks and equipment, are in fact, in every respect ready to discharge cargo.

The Mooring Master and Assistant will advise the Master on all maneuvers and operations relative to berthing, connecting/disconnecting of hoses and un-berthing. They will also provide all communications between vessel and shore during transfer operations and be the SPRC Representative with respect to cargo operations, documentation, safety observations and other requirements.

These Mooring Masters will remain on board the vessel while in the berth and suitable officer style accommodation is to be provided for them. Also accommodation to be provided for mooring crew(s)

4.1.1 Maximum Wind, Sea /Swell criteria for SPM mooring operation.

Significant Wave Height	2.0 - 2.5 m.
Wind Speed	20- 25 Knots.

Wind and wave are collinear.



Note: In case of operating wind limit is persisting that, Mooring Master

has considered for risky consequence. Mooring Master will make decision and take necessary action all safety respect to the operation.

4.1.2 Maximum Wind, Sea /Swell criteria for SPM discharging operation.

Suspend Discharge	Significant Wave Height = 2.5 meters.
Criteria	Stop cargo at : 30 Knots.
	Hose Disconnection at : 35 Knots.
	Un Berthed at : 35 Knots.



Note:

- In case of squall / heavy rain / thunder storm at SPM vicinity, the mooring and discharging operation will be suspended .
- In case of operating wind limit is persisting that, Mooring Master has considered for risky consequence. Mooring Master will make decision and take necessary action all safety respect to the operation

4.2 Under Pilotage and at Berth

The Mooring Master and Assistant will carry portable intrinsically safe multi-channel radios by means of which all communications regarding approach, mooring and cargo transfer will be made. They will also carry battery chargers for these radios during the vessel's stay at the SPM Terminal.

In addition, the vessel's VHF Radio should be available on the bridge and in the cargo control room for back up communications.

4.3 Preparation for Mooring



WARNING: During the approach, while mooring and secured in the SPM, the vessel's anchors **MUST** be secured by stoppers and secured to prevent accidental dropping with subsequent damage to the subsea pipeline and equipment.

The port Crane should be rigged ready to lift the mooring box from the boat and for connecting the cargo hoses. Crane shall have a minimum 15 tons SWL. However, vessels should have the recommended SWL capacity for their size as recommended in the Oil Companies International Marine Forum (OCIMF) publication **"Recommendations for Oil Tanker Manifolds and Associated Equipment" Fourth Edition 1991**

The vessel will provide 2 x 16 inch 150 lbs ASA flange connections on selected cargo manifolds made ready for hose connections, drip trays, sawdust or sand and fire fighting equipment in position at the manifold area.

The following vessel's equipment should be ready on the forecastle head:

- Two empty spool drums to heave onboard mooring pick up ropes. This will necessitate the removal of the mooring wire or rope from the spool drums.
- Two messenger lines 24 millimeter diameter, 150 meters in length.
- Two large crow bars.
- Sledge hammer
- Pail of grease
- Large flashlight for night berthing.

4.4 Mooring



CAUTION: Line handling during mooring and unmooring is performed by the vessel's crew, with an experienced officer, under instruction of the Mooring Master and Assistant Mooring Master.

Vessels must be fitted as recommended in the OCIMF publication **"Standards for Equipment Employed in Mooring of Ship's at Single Point Moorings"**.

ONLY VESSELS FITTED WITH APPROVED CHAIN STOPPERS AND 2 BOW FAIRLEADS WILL BE BERTHED AT THE SPM. THE USE OF SMIT BRACKETS OR ANY OTHER MEANS OF SECURING THE CHAFE CHAIN IS NOT PERMITTED.

Prior to the final approach of the tanker upon instruction from the Mooring Master, the starboard mooring hawser will be towed to the port side of the buoy to keep it clear from the port hawser. One boat after instruction from the Mooring Master will then tow the floating hose string away from the tanker's direction of approach in the form of a bight to ensure that the hose strings are kept clear of the vessel's propeller during berthing. Extreme caution shall be exercised to ensure that no excessive strain is placed on the floating hose strings by the boat while towing or holding the hoses clear.

When the vessel is within reasonable distance from the SPM, a ship's messenger line will be carried by the mooring launch and connected to the port mooring messenger

on the mooring hawser. This mooring messenger will be used to heave the 76 millimeter chafe chain on board.



WARNING: Care must be taken during this operation to ensure that no excessive weight comes on the mooring messenger.

Whenever possible, self spooling drums should be used to heave the messenger rope onboard.

The chafe chain will then be secured in the chain stopper in such a manner that the supporting buoy and nylon hawser remains outside and clear of the ship's fairlead. Allowing the chain to absorb any chafing in the mooring system.

The operation will then be repeated to secure the starboard mooring hawser.

Once the vessel is securely moored, a tug will bring (one-by-one) hose string end to make connection at the port manifold and then be secured on a towline astern.

4.5 Moored to Berth

A Mooring Hawser Load Monitoring Device is fitted to the SPM. It provides each hawser and the total load on the mooring system at the present time and displays on the display monitor carried to set up on each tanker. There are also visual and audible signal on the buoy to indicate to the Mooring Master that high mooring stresses are being experienced while the tanker is at the SPM.

At 155 tonnes strain, which is 70% of the preset threshold value of 220 tonnes, a red warning light flashes on the buoy. When this occurs the Mooring Master is to be informed by the Forecastle Watchman. The Mooring Master will request the tanker's engines be placed on Standby, cargo operations will be suspended and preparations made ready in case it is necessary to disconnect the hoses.

If the warning light goes out and stays out, it will be the Mooring Master decision whether to resume cargo operations.

In the event the red light remains flashing, indicating continuous load in excess of 155 tonnes the hoses are to be disconnected immediately and preparation made to leave the berth.

If the red flashing light remains on and the audible alarm sounds, indication that the threshold limit of 220 tonnes has been reached, the hose should be disconnected and the tanker un-berthed and taken to anchor.

However, if at any time, in the Mooring Master's judgment, weather conditions are such that he feels it is unsafe to continue cargo operations or remain at the SPM, such as when wind/swell conditions have reached the operating parameters of the SPM and the Load Monitoring Alarms have not yet activated, then his decision shall over ride all other factors.

When weather conditions improve the tanker can be re-berthed.

4.6 Unmooring

During discharging, Mooring Master will arrange with Ship's officer to pay out the mooring messengers from each spool drums, remove shackles connecting ship-shore messengers then each messenger will be rolled back to the spool drum neatly.

When the hoses have been disconnected and lowered to the water, the unmooring operation will commence which ship engine could be tested and the tug astern will be released either subsequently or after tanker unmoor and safely clear from SPM, as per Mooring Master decision.

The weight will then be allowed to come off the mooring hawsers, it may be necessary to use the ship's engines for this purpose. When the weight is off, the both mooring hawser will be released and lowered to the water.

At once both of the hawser messengers are cleared from the ship heaving drum, the vessel moved astern clear of the berth.



NOTE: Care must be taken to ensure that the hawsers do not become entangled in each other or are dropped onto, or across the hose strings.

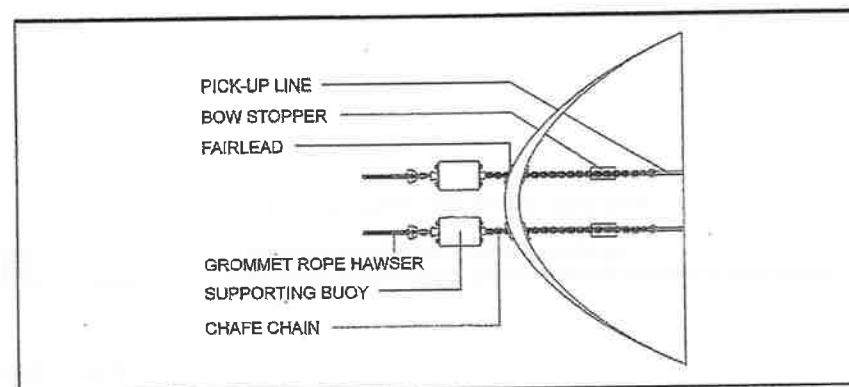
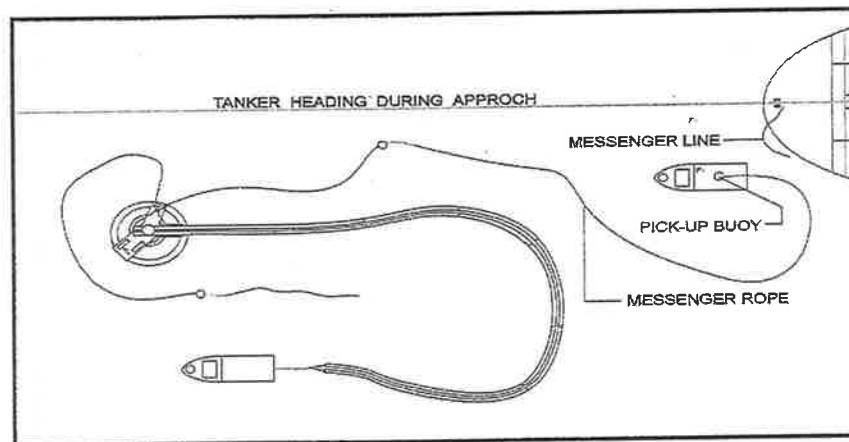
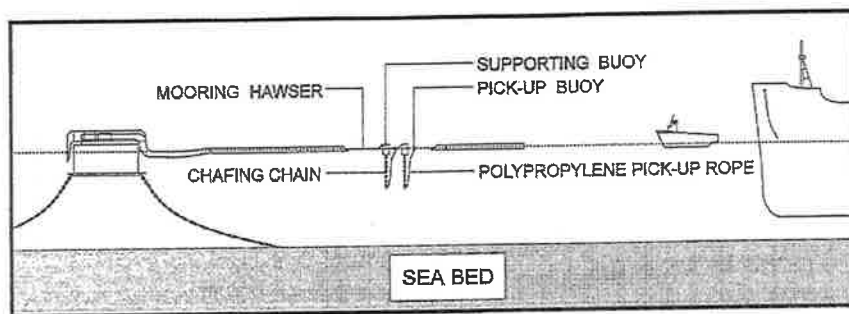


CAUTION: ANCHORS SHALL REMAIN SECURED UNTIL THE VESSEL IS WELL CLEAR FROM SPM AND SUBSEA PIPELINE.

4.7 SPM Equipment Defect List Report

- 4.7.1 During the tanker berthing discharging and un berthing , SPM Equipment Defect List Report shall be recorded to the following items .
- 4.7.2 SPM Navigation light, fog horn , Winker light .
- 4.7.3 Port and Starboard Mooring Hawser and messenger line .
- 4.7.4 Port & Starboard Hose strings .
- 4.7.5 Port & Starboard Tanker rail hose , accessories , and messenger.

4.8 Figure 1



5 Hose Connecting Procedures

5.1 Connecting Procedure

Tanker manifold arrangements must comply with the latest OCIMF publication "Recommendations for Oil Tanker Manifolds and Associated Equipment" fourth edition 1991.

- 5.1.1 After the vessel has been securely moored, the Maintenance boat will bring the SPM starboard floating cargo hose string alongside at port side tanker manifold area.
- 5.1.2 Lower derrick/crane hook to the maintenance boat, which will connect it to the SPM starboard hose's lifting wire.
- 5.1.3 Heave up the hose until the connection of lower part of snubbing chain is level with the hose rail's fairlead then secure the snubbing wire/chain with a supporting chain.
- 5.1.4 Lower the hose until the snubbing chain/wire connection are level at tanker rail's fair lead.
- 5.1.5 Unshackle hose snubbing chain/wire and secure snubbing wire with rope messenger.
- 5.1.6 Heaving up the hose until the suitable height. Pull in all length of snubbing wire / chain until slack tight.
- 5.1.7 Secure snubbing wire by turning to a bollard and secure the end using a tirlor.
- 5.1.8 Lower the hose to the safe access manifold area that for safely opening the blind flange. Open blind flange.
- 5.1.9 Lift the hose, alignment and connect to the manifold. Use a new gasket and fully bolt the flanges.
- 5.1.10 Open the hose end butterfly valve and secure.
- 5.1.11 Repeat the procedures for the after hose (SPM Port hose string).

After both hoses have been connected, they must be supported in way of the tanker rail by means of -webbing strop suspended from the crane



CAUTION:

No way Tanker rail hose will be sit on Ship's tanker rail for avoid hose deformed.

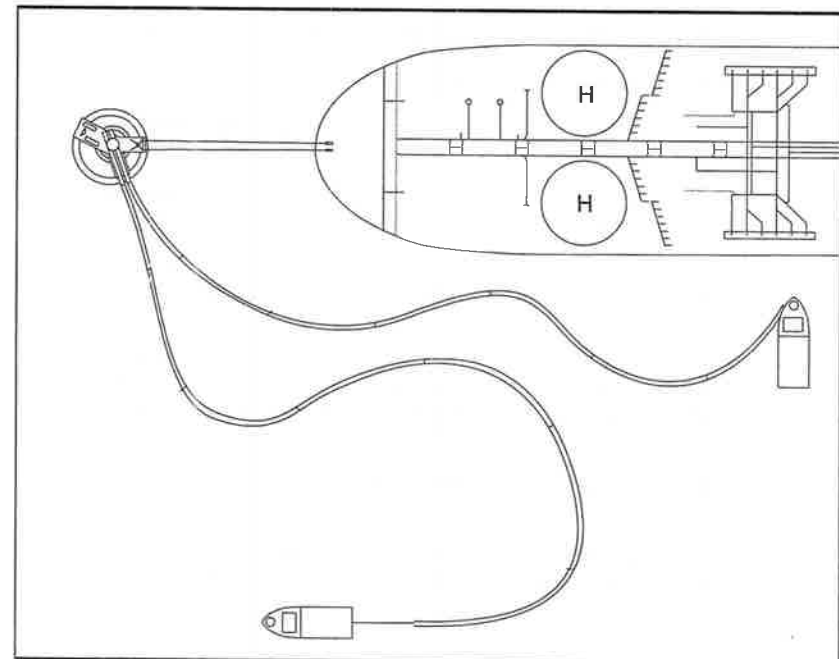
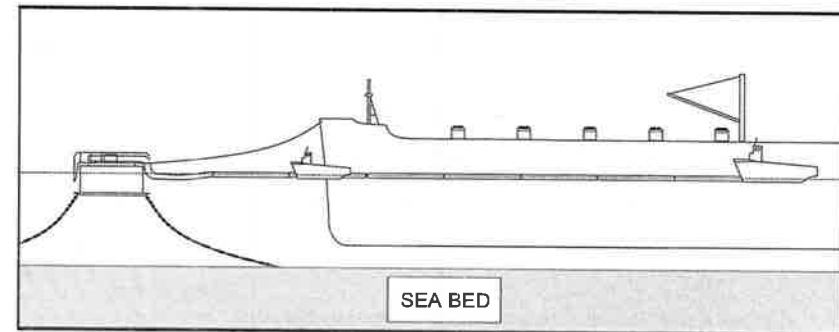
Before Hose connection operation commence, Mooring Master to ensure that no any part or equipment of tanker will harmful and might lead to damage to the hoses either on tanker manifold

area or tanker's side area / rail / tanker rail. Mooring Master will perform the operation only on safely condition.

**NOTE:**

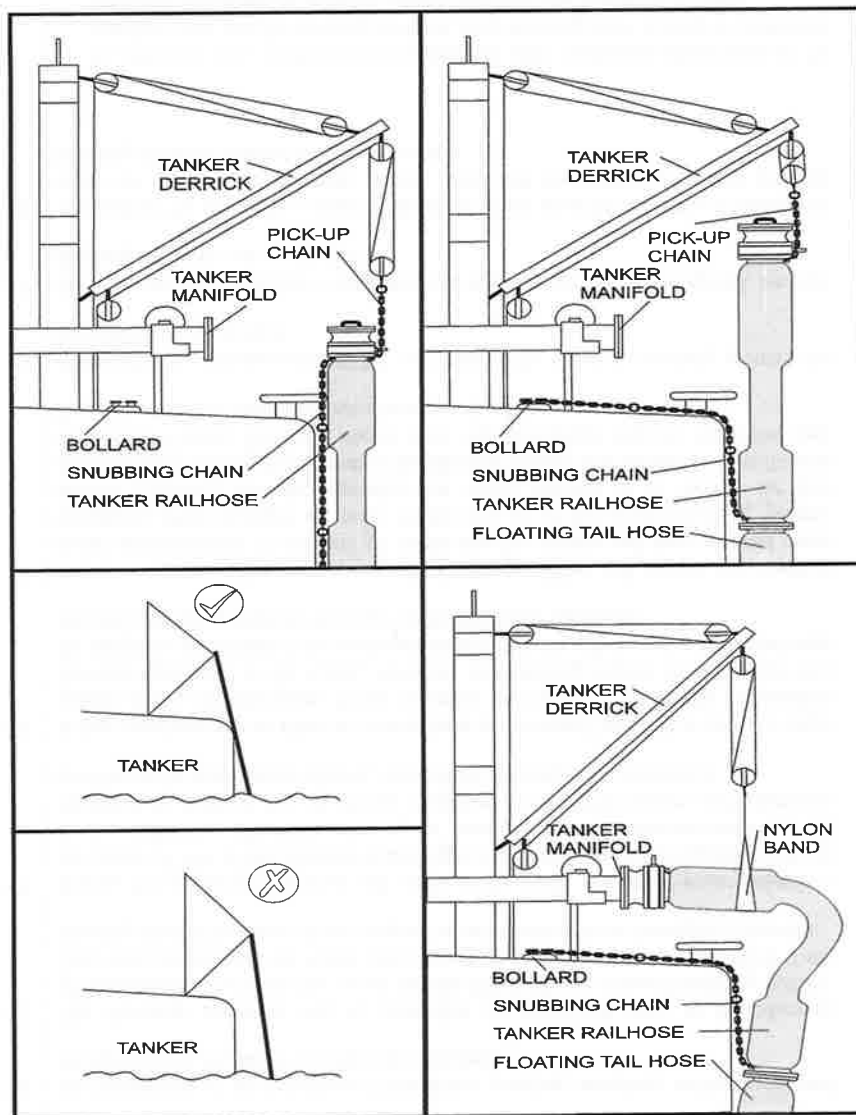
Care should be taken during the hose handling operation to avoid serious damage to the hoses and associated equipment.

Aware of oil spillage when open the blind flange.

5.2 Figure 2**HOSE CONNECTION**

5.3 Figure 3

HOSE CONNECTING SEQUENCE



6 Hose Disconnecting Procedure

6.1 Disconnecting Procedure

- 6.1.1 Shut vessel manifold valve and Shut & secure SPM hose end butterfly valve on completion of discharging and arrange for draining manifolds.
- 6.1.2 Remove nylon bands and position crane hook over after most hose
- 6.1.3 Attach lifting wire to the quick release which connected with crane hook, take the weight and disconnect the hose.
- 6.1.4 Replace the blank flange using a new gasket and fully bolt the flange.
- 6.1.5 Heave up the hose until the weight is off the snubbing chain/wire, release the snubbing chain/wire.
- 6.1.6 Lower the hose until the flange is level with the tanker rail, shackle snubbing chain/wire to flange lug and secure shackle with seizing wire.
- 6.1.7 Lower hose to the water as directed by the Mooring Master.
- 6.1.8 Repeat the procedure for the forward hose.



CAUTION:

Before Hose disconnection operation commence, Mooring Master to ensure that no any part or equipment of tanker will harmful and might lead to damage to the hoses either on tanker manifold area or tanker's side area / rail / tanker rail. Mooring Master will perform the operation only on safely condition.

SPM maintenance, particularly in bad weather, is extremely difficult and involves possible danger to personnel. For this reason, vessels are requested to give as much assistance as possible by taking seaman like care of the mooring and hose equipment and returning it to the water ready for the next tanker and in such a condition as they would like to find it.



NOTE:

Care must be taken when lowering the forward hose to prevent hose damaged due to scratch / sharp edge / entanglement of the hoses.

Hose/hawser maintenance is expensive and if SPRC judges that the vessel has misused any hose or hawser, the vessel will be liable for the expenditure incurred in making repairs.

7 Discharge Procedures

7.1 Cargo Discharge

- 7.1.1 On completion of all Government formalities, gauging, sampling, safety checks and documentation, discharge of cargo can commence.
- 7.1.2 The discharge operation will be controlled by VHF/UHF radio by the Mooring Master/Assistant between the vessel and the SPRC Marine Control Building (MCB). This does not absolve the vessel from communicating directly with the MCB if the Mooring Master/Assistant do not respond to radio calls or in an Emergency Situation.
- 7.1.3 During the discharge operation and while at the berth, the vessel must maintain a minimum of 30% of the Summer deadweight at all times. The SPM supplies crude oil to two refineries. Therefore, it may be necessary at the commencement of the discharge to displace the oil already contained in the SPM system and submarine pipeline to the appropriate refinery, before bulk discharge can commence.
- 7.1.4 In line samplers may be fitted at certain times to the vessel manifold to monitor cargo quality during the discharge. These samplers will be operated by the Independent Surveyor appointed to the vessel. However, the Mooring Master should ensure that the samplers are started at the commencement of the line flush and/or bulk discharge and that they are operational through out the discharge operation.
- 7.1.5 In the event that a line displacement is necessary, SPRC will require the vessel to pump approximately 23,130 m³ of crude into the system and then suspend cargo operations while changes are made to the line up of the crude receiving systems ashore. (Quantity will be dependent on which refinery is to receive the line displacement). During this operation the Mooring Master will coordinate directly with the Marine Control Building, who in turn will coordinate with the respective tank farm where the line displacement is being received.
- 7.1.6 During the line displacement, SPRC will require the vessel to carefully monitor the quantity being discharged.
- 7.1.7 Once the line displacement is completed and the quantity discharged agreed, the bulk discharge of cargo can commence.
- 7.1.8 Throughout the discharge, a responsible deck officer must be in charge of operations, either on deck, or in the cargo control room and in continuous contact with the Mooring Master/Assistant via portable radio.

An efficient deck watch must be maintained with continuous observation of the manifold area and the mooring hawsers. Ship mooring crew to keep a continuous forecandle watch and be in radio contact with Mooring Master at all times.

- 7.1.9 On commence discharging operation, once confirmation are ready for receive from terminal and ship's are ready to discharge. Ship will discharge with initial pressure 3.0 kg/cm² then to confirm for shore received cargo and every aspect are in good

order. To increase discharge rate as per terminal instruction.

Maximum discharge pressure at ship's manifold 10.5 kg/cm² or flow rate at shore not more than : SPRC tanks 9,000 m³/hr, PTTGC tanks 8,500 m³/hr which will control whichever come first.

- 7.1.10 At any time during discharge operations the terminal may request a reduction in rates, switch cargo grade / refinery, suspend discharge, etc. The Terminal will be give 30, 15, 5 minutes notice. At last 5 minutes, the discharge rate will be a minimum, approximately 3.0 Kg/cm². Whenever reach the target the terminal will instruct to suspend discharge then the tanker officer to stop discharge immediately and report time for suspend discharge to the Terminal.

During suspend discharging, both hose butterfly valve will be shut and secured.

- 7.1.11 To resume the discharging operation, the terminal will give 10 mins or as agree notice to SPM tanker. Whenever ready for received cargo, Terminal will instruct to SPM tanker for resume discharging.

Tanker manifold will be fully opened. Discharging operation be resumed with initial pressure 3.0 k/cm² and report discharging time to the terminal.

To increase discharge rate as per terminal instruction

- 7.1.12 At any time during discharge operations the terminal may request to reduction in rates for switch shore tank. The Terminal will be give 30, 15, 5 minutes notice. Approximately 5 minutes, the discharging flow rate will be 4,000 m³/hr. Whenever the shore tank have been switched to the other tank, as per discharging plan. Terminal will instruct to SPM tanker for switch shore tank time and requested discharging flow rate.
- 7.1.13 As an anti-pollution measure, the volume of oil discharged in m³ by the vessel must be relayed to the terminal on an hourly basis to allow for the comparison of figures (discharged against received). This is particularly important at night when it is difficult to detect oil pollution.
- 7.1.14 During the hours of darkness, it is required that all available approved floodlights are used to illuminate the vessel and surrounding waters to facilitate the detection of oil and generally assist in the transfer operation. Vessels are advised that failure to supply sufficient lighting could result in the transfer operation being suspended during the hours of darkness. Such delays would be for the vessel's account.
- 7.1.15 It is strictly against the law to pollute the waters of Thailand and the Master and Owners, may be subject to prosecution by the Thai Authorities.
- 7.1.16 Maximum trim at all stages are 5.5 meters.
- 7.1.17 Discharge operation will be suspended when significant wave height are more than 5.5 meters.



CAUTION: The maximum discharge pressure allowed at the Ship's Manifolds is 10.5 kg/cm² or 10.3 bar (150 psi)

- 7.1.18 On completion of discharge operation the rail tail hoses and ship's manifolds will be drained to prevent spillage of oil when disconnecting hoses.

7.2 Crude Oil Washing

Mooring Master will provide instruction for terminal Crude Oil Washing (COW) requirement which be **required or not required** up to each crude specification. However, **MINIMUM COW OPERATIONS , AS REQUIRED BY MARPOL REGULATION 1973 – 1978** permission will only be granted provided all safety and operational requirements recommended in the **"International Safety Guide for Oil Tankers and Terminals"** (ISGOTT) have been met in full. (Ref. to Item 4.4 of the Terminal Safety Regulations).

- 7.2.1 The surveyor will be sealed at COW line 's master valve of all cargo discharging tank . To break seal of nominate COW tanks by the surveyor as per tanker officer 's request

7.3 Ballasting Operations



WARNING: Extreme caution must be taken when ballasting operations are undertaken, to ensure no oil escapes through the vessel's sea valves.

7.4 Cargo Outturn

On the completion of the cargo discharge and prior to the tank inspection, all cargo valves, with the exception of the manifold valves should be opened to ensure all cargo lines and pumps have been properly drained during the discharge.

A comparison of Bill of Lading and Total Cargo Ship Discharge figures must be undertaken. If the quantity Ship Discharge is found to be 0.5% or more below the Bill of Lading figure / and or the Observed Quantity received ashore compare with Observed Quantity which Ship Discharge found the different is 0.5% or more, the vessel's tanks must be checked again in conjunction with the Independent Surveyor for any quantity remaining.

If the discrepancy still exists after the check, a Letter of Protest for the Shortage in Cargo Out Turn must be issued to the vessel's Master for his signature.

8 Terminal Services Contract

8.1 Contractor

Uniwise Towage Limited is the Contractor responsible for providing marine support craft and manpower for the SPM Maintenance and day to day Operations, 24 hours a day, 365 days of the year.

The Contractor will work under the directions of and report to the SPRC SPM Superintendent.

8.2 Contractor Vessel

The SPM maintenance boat is the Multi-purpose Maintenance Vessel .

The SPM maintenance boat is used primarily for mooring, hose handling, maintenance and diver support but is capable of performing all SPM support duties.



CAUTION: The SPM maintenance boat will remain on station at the SPM location for security purposes. This is to prevent pilferage from the SPM or associated equipment and to ensure vessels navigating in the area give the SPM a wide berth.

Emergency Support Tug boat

Support tug boat equipped with Oil Spill Response Equipment and team to standby during SPM discharging Operation and if need at SPM area . The list of Oil Spill Equipment as follow :

- | | | |
|----------------------|---|--------|
| • Ro-Boom | 2 | sets. |
| • Power Pack | 1 | set. |
| • Dispersant Sprayer | 1 | set . |
| • Oil Dispersant | 8 | drums. |

8.3 Maintenance Support Personnel

Maintenance support personnel for SPM and associated equipment. Minimum of three dedicated personnel, consist of 1 Diving Supervisor (AODC Certified) and 2 Maintenance and Emergency divers (fluent in English and have previous experience of SPM maintenance). In addition crew from the SPM maintenance boat to be available to assist in maintenance operations as and when required.

8.4 Supervision

The role of the Mooring Master during maintenance periods, is to oversee the work performed by the Contractors personnel. He is responsible for seeing that the work undertaken is done safely, following the procedures laid down in the HC-WI-PD-4003 SPM Terminal Operating Procedure, HC-WI-PD-4006 SPM Inspection and Maintenance, The SBM "Calm Buoy Operating and Maintenance Manual" and the OCIMF publication "Single Point Mooring Maintenance and Operations Guide".

If at any time the Mooring Master is not satisfied with the way the maintenance is being carried out, either through unsafe working practices or incorrect procedures, he is to suspend the operation immediately. The Contractor's supervisor at the location is to be notified and remedial action taken.

If the situation cannot be resolved on site, the Mooring Master is to notify the SPM Superintendent immediately.



NOTE: THERE CAN BE NO COMPROMISE ON SAFETY OR INCORRECT MAINTENANCE PROCEDURES.

9 Diving Services Agreement.

9.1 Contractor

Diving Contractor shall provide all personnel, material, supervision and expertise to undertake the following services as directed by SPRC.

Diving Contractor shall provide the following requirement for any SPM / SPM related 's diving job scope :

- One (1) Supervisor hold the formal International Marine Contractor Association (IMCA) training certificate.
- Diving Operation Team shall hold minimum requirement of diving certificate and to be conducted training by full IMCA member.

Inspection of the SPM subsea installation.

Diver assistance with surface hose change out.

Removal of marine growth on SPM, hoses and PLEM by high pressure water jet.

Cathodic protection readings of SPM and PLEM as directed by SPRC.

Subsea hose change as directed by SPRC.

Emergency call out, diver to be on site within 3 hours



WARNING: Diving operations to be conducted in accordance with Internationally recognized standards.

10 Pollution

10.1 Prevention



WARNING: All International, National and Company rules, regulations and guidelines covering oil pollution must be strictly complied with at all times.

The discharge of oil to the sea is strictly forbidden.

10.2 Reporting

All pollutions observed offshore originating from the SPM, pipeline, hoses, vessel or from any other source are to be reported immediately to the Shift Supervisor, via the Marine Control Building Marine Coordinator. Action should be taken to reduce or stop the pollution if it safe to do so without endangering human life.

10.3 Response

On receiving a pollution report, SPRC Management will investigate, and if necessary, activate the SPRC "Oil Spill Response Contingency Plan".

The plan outlines the required procedures to be followed in the event of a Marine Pollution. All personnel involved in the SPM operations must familiarize themselves with the contents of this document.

The relevant sections covering the SPM area will be attached as an Appendix to this document.

11. Attachments

11.1 Appendix 1 : Mooring Master Check list

CONDITIONS OF ENTRY INTO AND USE OF

MAP TA PHUT SPM TERMINAL, THAILAND.

1. All services, facilities and assistance provided by or on behalf of PTT Global Chemical Public Company Limited ("The Company") in or in connection with the Port, whether or not any charge is made by The Company there for, are provided subject to all applicable Laws, Bye-Laws and Harbor Regulations, Safety Regulations, and Towage Conditions for the time being in force and to the following further conditions:

- a) The services of the Mooring Master(s) are provided on the express understanding and condition that when any Mooring Master furnished by The Company goes on board a vessel for the purpose of assisting such vessel, he becomes for such purposes the servant of the Owner or Charterer of the vessel; and The Company, including its joint venture co-owner, parent companies, subsidiaries, and affiliates, shall in no way be liable for any damage or personal injury, including death, of any nature whatsoever, incurred by any person whomsoever, in any way connected with, contributed by, or resulting from the advice or assistance given or for any action taken by such Mooring Master, whether negligent or otherwise, while on board or in the vicinity of such assisted vessel.
 - b) Similarly, the services of mooring launches and mooring personnel, if any, and the furnishing of mooring lines and hosing-up gear are under the supervision and control of the Mooring Master, and The Company, including its joint venture co-owner, parent companies, subsidiaries, and affiliates, shall in no way be liable for any damage or personal injury, including death, of any nature whatsoever, incurred by any person whomsoever, in any way connected with, contributed to by, or resulting from the performance of these additional services, or furnishing of equipment, whether or not any of such are utilized by any vessel.
2. In addition, neither The Company, its joint venture co-owner, parent companies, subsidiaries, or affiliates, nor its or their servants, agents or contractors (in whatever capacity they may be acting), shall be in any way whatsoever responsible for (or liable for any contribution with respect to) any loss, personal injury, including death, damage or delay, from whatsoever cause, including the negligence of The Company or its servants, agents, or contractors, arising whether directly or indirectly in consequence of any assistance, advice or instructions whatsoever given or tendered in respect of any vessel, whether by way of tugs, pilotage or berthing services, the provision of navigation facilities, including buoys or other channel markings, or otherwise howsoever. In all circumstances the Master of any vessel shall remain solely responsible on behalf of his Owners for safety and proper navigation of his vessel.
3. While The Company exercises due care to ensure that the berths, premises, facilities, property, gear, craft and equipment provided by The Company are safe and suitable for vessels permitted or invited to use them, no guarantee, express or implied, of such safety and suitability is given by The Company that such berths, premises, facilities, property, gear, craft, and equipment are devoid of defects or fit for the service or use to which it is put, and every vessel shall be and remain at the sole risk of the Owners and Master thereof; and The Company, including its joint venture co-owner, parent companies, subsidiaries, and affiliates, shall not be responsible (or liable for any contribution) with respect to any loss, personal injury including death, damage, or delays whatsoever, that may be sustained whether directly or indirectly by, or occur to, any vessel or to her Owners or her crew or cargo or for any part thereof (whether such cargo is on board or in the course of discharging) by whomsoever and by whatsoever cause such as loss, injury, damage, or delay is occasioned, and whether or not it is caused, occasioned, or contributed to, in whole or in part, to any act, neglect, omission or default on the part of The Company, or any servant, agent or contractor of The Company, or by fault or defect in any berth, premises, facilities, property, gear, craft, or equipment of any sort of The Company or its servants, agents or contractors.

4. The Company will not be responsible for any loss, damage or delay directly or indirectly caused or contributed to by or arising from, strikes, lock-outs, or labor disputes or disturbances whether The Company or its servants, agents or contractors are parties thereto or not.
5. If in connection with or by reason of the use by any vessel of any berth, or of part of The Companies premises, or of any gear or equipment provided by or on behalf of The Company, or of any craft, or of any other facilities or property, of any sort whatsoever, belonging to or provided by on behalf of The Company, any damage or injury is caused to such berth, premises, gear or equipment, craft, or other facility or property, or any third party, or any vessel (its Owners' crew), from whatsoever cause such damage may arise, and irrespective of whether or not such damage has been caused, occasioned or contributed to, in whole or in part, by the negligence of The Company or its servants, agents or contractors, and irrespective of whether there has been any neglect or default on the part of the vessel or the Owners, in any such event the vessel and the Owners shall hold The Company, its parent companies, subsidiaries and affiliates, harmless from and indemnified without limitation against all such damage and injury and against loss sustained by The Company, its parent companies, subsidiaries or affiliates, consequent thereon.
- 6 The vessel and her Owners shall hold The Company, its joint venture co-owner, parent companies, subsidiaries, and affiliates, and its and their servants, agents and contractors, harmless from and indemnified without limitation against the following whether or not caused, contributed to, or due, in whole or in part, to any act, neglect, omission or default on the part of The Company, its servants, agents or contractors:
- All and any action, liabilities, claims, damages, cost, awards and expenses arising whether directly or indirectly out of any loss, damage, personnel injury, including death, or delay, of whatsoever nature, occasioned to any third party or any vessel (her Owner and crew), including your vessel and Owners and crew, including but not limited to, that caused or contributed, whether directly or indirectly, by the vessel or any part thereof or by any substance or material leaking or escaping therefrom or by the Master or crew or by any other servant or agent of the Owners.
 - All or any damage, personal injury, including death, delay or loss, of whatsoever nature, occasioned to The Company, its joint venture co-owner, parent companies, subsidiaries and affiliates, or its or their servants, agents, and contractors, arising out of any cause whatsoever including but not limited to, that caused or contributed to, whether directly or indirectly, by the vessel or any part thereof or by any substance or material leaking or escaping therefrom or by her Master or crew or by any other servant or agent of the Owners.
7. The Laws of Thailand shall apply to the actual entry to and use of the SPM terminal though these conditions shall be construed according to the Laws of New York. The vessel and Owners shall submit any dispute hereunder which cannot be amicably agreed between the parties within 120 days, to final and binding arbitration to be conducted in the English language before three arbitrators (one each selected by the parties and the third by the two arbitrators thus selected [in default of which the third arbitrator shall be selected by the President for the time being of the American Chamber of Commerce in Geneva]), in Geneva, Switzerland, applying the UNCITRAL Rules of Arbitration.

RECEIPT AND ACCEPTANCE

I hereby acknowledge receipt of the foregoing Conditions of Entry into and Use of the Map Ta Phut SPM Terminal, Thailand and accept and agree to be bound by, on behalf of myself, my vessel and Owners, the terms and conditions set forth therein.

M.T. _____

Signature _____ (Time and Date) _____

HIRING OF TUGS

TO : **Star Petroleum Refining Public Company Limited**
No. 1, I-8 Road
Map Ta Phut Industrial Estate,
Map Ta Phut, Rayong 21150,
Thailand.

I hereby authorize you to supply to and on behalf of the

M.T. _____

such tugs and line boats as you consider necessary for the moving of my vessel while entering or within or leaving the harbor or the approaches thereto, such hiring to be at currently established rates and the terms of the :

UNITED KINGDOM STANDARD FOR TOWAGE AND OTHER SERVICE
(Revised 1986) as per copy attached.

Date: _____

Time: _____

Sign _____

Master _____

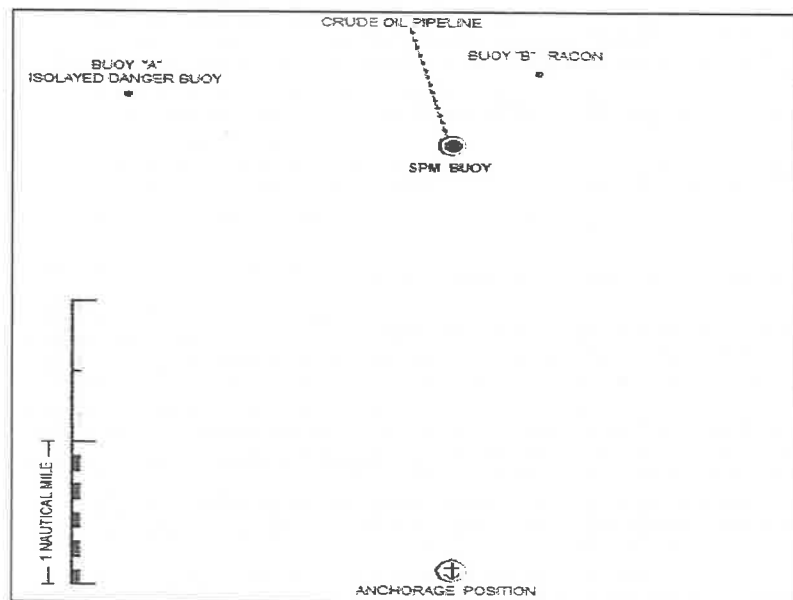
Ship's stamp

SCHEDULE 3U.K. STANDARD CONDITIONS FOR TOWAGE AND OTHER SERVICES
(Revised 1986)

1. (a) The agreement between the Tugowner and the Hirer is and shall at all times be subject to and include each and all of the conditions herein-after set out.
- (b) for the purposes of these conditions.
 - (i) "towing" is any operation in connection with the holding, pushing, pulling, moving, escorting or guiding of or standing by the Hirer's vessel, and the expressions "to tow", "being towed" and "towage" shall be defined likewise.
 - (ii) "vessel" shall include any vessel, craft or object of whatsoever nature (whether or not coming within the usual meaning of the word "vessel") which the Tugowner agrees to tow or to which the Tugowner agrees at the request, express or implied, of the Hirer, to render any service of whatsoever nature other than towing.
 - (iii) "tender" shall include any vessel, craft or object of whatsoever nature which is not a tug but which is provided by the Tugowner for the performance of any towage or other service.
 - (iv) The expression "whilst towing" shall cover the period commencing when the tug or tender is in a position to receive orders direct from the Hirer's vessel to commence holding, pushing, pulling, moving, escorting, guiding or standing by the vessel or to pick up ropes, wires or lines, or when the towing line has been passed to or by the tug or tender, whichever is the sooner, and ending when the final orders from the Hirer's vessel to cease holding, pushing, pulling, moving, escorting, guiding or standing by the vessel or to cast off ropes, wires or lines has been carried out, or the towing line has been finally slipped, whichever is the later, and the tug or tender is safely clear of the vessel.
 - (v) Any service of whatsoever nature to be performed by the Tugowner other than towing shall be deemed to cover the period commencing when the tug or tender is placed physically at the disposal of the Hirer at the place designated by the Hirer, or, if such be at a vessel, when the tug or tender is in a position to receive and forthwith carry out orders to come alongside and shall continue until the employment for which the tug or tender has been engaged is ended. If the service is to be ended at or off a vessel the period of service shall end when the tug or tender is safely clear of the vessel or, if it is ended elsewhere, then when any persons or property of whatsoever description have been landed or discharged from the tug or tender and/or the service for which the tug or tender has been required is ended.
 - (vi) The word "tug" shall include "tugs", the word "tender" shall include "tenders", the word "vessel" shall include "vessels", the word "Tugowner" shall include "Tugowners", and the word "Hirer" shall include "Hirers".
 - (vii) The expression "tugowner" shall include any person or body (other than the Hirer or the owner if the vessel on whose behalf the Hirer contracts as provided in Clause 2 hereof) who is a party to this agreement whether or not he in fact owns any tug or tender, and the expression "other Tugowner" contained in Clause 5 hereof shall be construed likewise.
2. If at the time of making this agreement or of performing the towage or of rendering any service other than towing at the request, express or implied, of the Hirer, the Hirer is not the Owner of the vessel referred to herein as "the Hirer's vessel", the Hirer expressly represents that he is authorised to make and does make this agreement for and on behalf of the owner of the said vessel subject to each and all of these conditions and agrees that both the Hirer and the Owner are bound jointly and severally by these conditions.
3. Whilst towing or whilst at the request, express or implied, of the Hirer, rendering any service other than towing, the master and crew of the tug or tender shall be deemed to be the servants of the Hirer and under the control of the Hirer and/or his servants and/or his agents, and anyone on board the Hirer's vessel who may be employed and/or paid by the Tugowner shall likewise be deemed to be the servant of the Hirer and the Hirer shall accordingly be vicariously liable for any act or omission by any such person so deemed to be the servant of the Hirer.
4. Whilst towing, or whilst at the request, either expressed or implied, of the Hirer rendering any service of whatsoever nature other than towing:-
 - (a) The Tugowner shall not (except as provided in Clauses 4 (c) and (e) hereof) be responsible for or be liable for
 - (i) damage of any description done by or to the tug or tender, or done by or to the Hirer's vessel or done by or to any cargo or other thing on board or being loaded on board or intended to be loaded on board the Hirer's vessel or the tug or tender or to or by any other object or property;
 - or
 - (ii) loss of the tug or tender or the Hirer's vessel or of any cargo or other thing on board or being loaded on board or intended to be loaded on board the Hirer's vessel or the tug or tender or any other object or property; or
 - (iii) any claim by a person not a party to this agreement for loss or damage of any description whatsoever, arising from any cause whatsoever, including (without prejudice to the generality of the foregoing) negligence at any time of the Tugowner his servants or agents, unseaworthiness, unfitness or breakdown of the tug or tender, its machinery, boilers, towing gear, equipment, lines, ropes or wires, lack of fuel, stores, speed or otherwise and
 - (b) The Hirer shall (except as provided in Clauses 4(c) and (e)) be responsible for, pay for and indemnify the Tugowner against and in respect of any loss or damage and any claims of whatsoever nature or howsoever arising or caused, whether covered by the provisions of Clause 4(a) hereof or not, suffered by or made against the Tugowner and which shall include, without prejudice to

the generality of the foregoing, any loss of or damage to the tug or tender or any property of the Tugowner even if the same arises from or is caused by the negligence of the Tugowner his servants or agents.

- (c) The provisions of Clauses 4(a) and 4(b) hereof shall not be applicable in respect of any claims which arise in any of the following circumstances:-
 - (i) All claims which the Hirer shall prove to have resulted directly and solely from the personal failure of the Tugowner to exercise reasonable care to make the tug or tender seaworthy for navigation at the commencement of the towing or other service. For the purpose of this Clause the Tugowner's personal responsibility for exercising reasonable care shall be construed as relating only to the person or persons having the ultimate control and chief management of the Tugowner's business and to any servant (excluding the officers and crew of any tug or tender) to whom the Tugowner has specifically delegated the particular duty of exercising reasonable care and shall not include any other servant of the Tugowner or any agent or independent contractor employed by the Tugowner.
 - (ii) All claims which arise when the tug or tender, although towing or rendering some service other than towing, is not in a position of proximity or risk to or from the Hirer's vessel or any other craft attending the Hirer's vessel and is detached from and safely clear of any ropes, lines, wire cables or moorings associated with the Hirer's vessel. Provided always that, notwithstanding the foregoing, the provisions of Clauses 4(a) and 4(b) shall be fully applicable in respect of all claims which arise at any time when the tug or tender is at the request, whether expressed or implied, of the Hirer, his servants or his agents, carrying persons or property of whatsoever description (in addition to the Officers and crew and usual equipment of the tug or tender) and which are wholly or partly caused by, or arise out of the presence on board of such persons or property or which arise at anytime when the tug or tender is proceeding to or from the Hirer's vessel in hazardous conditions or circumstances.
 - (d) Notwithstanding anything hereinbefore contained, the Tugowner shall under no circumstances whatsoever be responsible for or be liable for any loss or damage caused by or contributed to or arising out of any delay or detention of the Hirer's vessel or of the cargo on board or being loaded on board or intended to be loaded on board the Hirer's vessel or of any other object or property or of any person, or any consequence thereof, whether or not the same shall be caused or arise whilst towing or whilst at the request, either express or implied, of the Hirer rendering any service of whatsoever nature other than towing or at any other time whether before during or after the making of this agreement.
 - (e) Notwithstanding anything contained in Clauses 4(a) and (b) hereof the liability of the Tugowner or death or personal injury resulting from negligence is not excluded or restricted thereby.
5. The Tugowner shall at any time be entitled to substitute one or more tugs or tenders for any other tug or tender or tugs or tenders. The Tugowner shall at any time (whether before or after the making of this agreement between him and the Hirer) be entitled to contract with any other Tugowner (hereinafter referred to as "the other Tugowner") to hire the other Tugowner's tug or tender and in any such event it is hereby agreed that the Tugowner is acting (or is deemed to have acted) as the agent for the Hirer, notwithstanding that the Tugowner may in addition, if authorised whether expressly or impliedly by or on behalf of the other Tugowner, act as agent for the other Tugowner at any time and for any purpose including the making of any agreement with the Hirer. In any event should the Tugowner as agent for the Hirer contract with the other Tugowner for any purpose as aforesaid it is hereby agreed that such contract is and shall at all times be subject to the provisions of these conditions so that the other Tugowner is bound by the same and may as a principal sue the Hirer thereon and shall have the full benefit of these conditions in every respect expressed or implied herein.
 6. Nothing contained in these conditions shall limit, prejudice or preclude in any way any legal rights which the Tugowner may have against the Hirer including, but not limited to, any rights which the Tug owner or his servants or agents may have to claim salvage remuneration or special compensation for any extraordinary services rendered to vessels or anything aboard vessels by any tug or tender. Furthermore, nothing contained in these conditions shall limit, prejudice, or preclude in any way any right which the Tugowner may have to limit his liability.
 7. The Tugowner will not in any event be responsible or liable for the consequences of war, riots, civil commotions, acts of terrorism or sabotage, strikes, lockouts, disputes, stoppages or labour disturbances (whether he be a party thereto or not) or anything done in contemplation or furtherance thereof or delays of any description, howsoever caused or arising, including by the negligence of the Tug owner or his servants or agents.
 8. The Hirer of the tug or tender engaged subject to these conditions undertakes not to take or cause to be taken any proceedings against any servant or agent of the Tug owner or other Tug owner, whether or not the tug or tender substituted or hired or the contract or any part thereof has been sublet to the owner of the tug or tender, in respect of any negligence or breach of duty or other wrongful act on the part of such servant or agent which, but for this present provision, it would be competent for the Hirer so to do and the owners of such tug or tender shall hold this undertaking for the benefit of their servants and agents.
 9. (a) The agreement between the Tug owner and the Hirer is and shall be governed by English Law and the Tugowner and the Hirer hereby accept, subject to the proviso contained in sub-clause (b) hereof, the exclusive jurisdiction of the English Courts (save where the registered office of the Tug owner is situated in Scotland when the agreement is and shall be governed by Scottish Law and the Tug owner and the Hirer hereby shall accept the exclusive jurisdiction of the Scottish Courts).
 - (b) No suit shall be brought in any jurisdiction other than that provided in sub-clause (a) hereof save that either the Tugowner or the Hirer shall have the option to bring proceedings in rem to obtain the arrest of or other similar remedy against any vessel or property owned by the other party hereto in any jurisdiction where such vessel or property may be found.

MAP TA PHUT SPM Pilotage Plan**SPM Buoy (Single Point Mooring)**

Orange Buoy, White Light Fl.(6) 15 sec. 5 M., Fog Horn Morse Code "U" 30 sec intervals.
 Location :- Lat 12° 29.3' N., Long 101° 11.76' E.
 Winker Lights on floating hose strings.
 Attached by 6 mooring chains leading 1,000 ft. in horizontal direction.

Buoy "A" Isolated Danger Buoy

Black Buoy with Red Band, White Light Fl.(2) 12 sec. 6 M.
 Location :- Lat 12° 29' 33.9"N., Long 101° 10' 18.4"E.
 From SPM : Bearing 276° Distance 1.68 M. (10,080 ft.)

Buoy "B" RACON

Yellow Buoy, Yellow Light Fl.(4) 20 sec. 6 M.
 Location :- Lat 12° 29' 43.0"N., Long 101° 12' 24.7"E.
 From SPM : Bearing 042° Distance 0.68 M. (4,080 ft.)

Anchorage Position

Location :- Lat 12° 26' 12.6"N., Long 101° 11' 57.6"E.
 From SPM : Bearing 180° Distance 3 M.

Crude Oil Pipeline

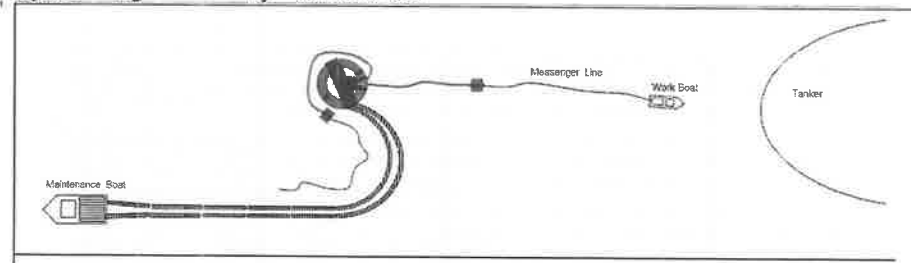
Diameter 48" Length to the shore 19.5 Km.
 Direction from SPM 346°

MAP TA PHUT SPM Berthing Contingency Plan

- If case of emergency, contact SPRC Marine Control Building (MCB) on Radio VHF channel 67 or 16.
- Any situation that affects the vessels maneuvering ability (Engine or Rudder failure) will result in the berthing being aborted and the SPM support vessels will take following actions:
 Maintenance tug boat will pass a towline to the vessel and provide towage assistance.
 or push on the bow to swing the vessel away from the SPM approach course as request.
- Vessel anchors are not to be used, except under direction of Mooring Master.
- Echo Sounder to be running during operation.
- **During berthing operation:**

When the vessel is within reasonable distance from the SPM, one tug boat will made fast at the stern of the tanker and standby until complete berthing.

Maintenance tug boat to towing the hoses clear away during tanker approach SPM, work boat will pass up shore mooring messenger to tanker, after completed mooring. Maintenance boat bring hoses to manifold for connection. after completed hose connection, Maintenance tug boat will replace the tug which stand by at stern of tanker.

**Maintenance tug boat (M.V. Uniwise Rayong)**

5,500 BHP.
 55 Tons Bollard Pull
 Twin Screw
 Fendered for pushing
 ** Towing wire ready for emergency use during berthing operation **
 Fire fighting capability
 Fi Fi 1 for water
 Fi Fi 3 for foam
 Equipped for oil recovery and dispersant application
 Standby radio VHF channel 67 and 16

If extra tugs is required in an emergency, contact S.C. Management who operate harbour tugs up to 3,600 HP. in the Port of Map Ta Phut. : Radio VHF channel 13 (operate 24 Hours)

Tel. (038) - 684556 - 9

Fax. (038) - 684560

Signature _____
 Master

Signature _____
 Map Ta Phut SPM Mooring Master

M.T. _____

Time / Date _____

**STAR PETROLEUM REFINING PUBLIC COMPANY LIMITED
MAP TA PHUT SPM TERMINAL**

VESSEL / PILOT INFORMATION

Vessel _____ Date _____

Summer Deadweight _____ Arrival Draft Fwd _____ Aft _____

Arrival Displacement _____

At What Draft is the Propeller Submerged? _____

Type of Vessel : Double Hull.

Propulsion : Motor (Minimum Start Air Pressure _____)

Bridge Control Yes / No Propeller : Fixed / Variable

Max Rudder Angle _____ Gyro Error _____

SHP _____ Maximum Astern time _____ Mins.

Maneuvering Speed :	Ahead RPM	Speed	Astern RPM
D Slow	_____	_____	_____
Slow	_____	_____	_____
Half	_____	_____	_____
Full	_____	_____	_____

The Pilot / Mooring Master will discuss with the vessel's Master his intended plan of navigation and approach to the berth, advising of tidal conditions and mooring plan.

Take your time and **SLOW DOWN** if necessary to ensure all parties agree to the proposed actions.

Vessel's Master

Pilot / Mooring Master

Remarks : _____

**STAR PETROLEUM REFINING PUBLIC COMPANY LIMITED
MAP TA PHUT SPM TERMINAL**

**SMOKING NOTICE
WHILE VESSEL IS MOORED TO SPM.**

Smoking is strictly prohibited on board the Vessel except in the following spaces specifically designated by the Master and agreed by the Mooring Master as **SMOKING AREAS**.

1. _____

2. _____

Failure to comply with this regulation will involve cessation of cargo and ballast operations until investigations have been completed and a written assurance has been received from the Master that effective controls have been established.

The Mooring Master reserves the right in usual circumstances to withdraw the above concession and to prohibit smoking in any area whatsoever.

M.T. _____

Signed _____
Master.

Signed _____
Mooring Master.

STAR PETROLEUM REFINING PUBLIC COMPANY LIMITED
MAP TA PHUT SPM TERMINALMooring Master Capt. _____

Cabin _____ Tel. _____

Mooring Master Capt. _____

Cabin _____ Tel. _____

Mooring Master Capt. _____

Cabin _____ Tel. _____

COMMUNICATIION

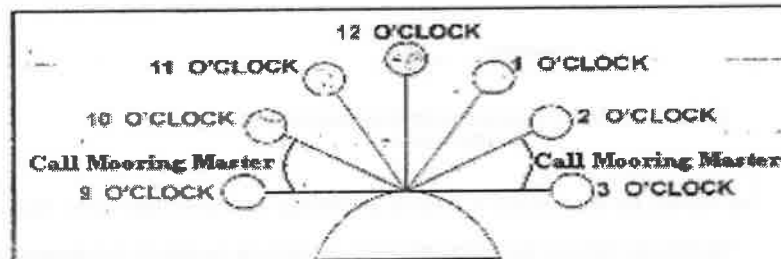
Radio VHF Channel 67

Callsign Tanker : **S P M** (Single Point Mooring)Shore : **MCB** (Marine Control Building)OFFSHORE BOATS

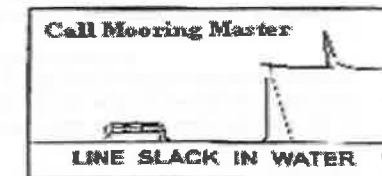
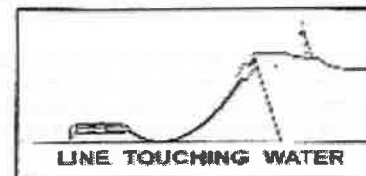
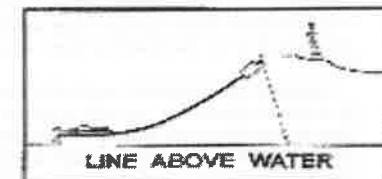
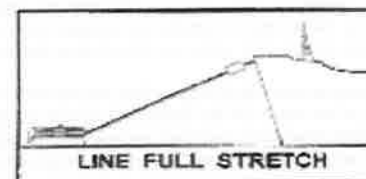
Stern Tug : Uniwise Rayong

M.T. _____

Signature _____ (Time and Date) _____

HOW TO REPORTCALL MOORING MASTER FROM FORECASTLEEXAMPLE SPM 11 O'CLOCK, LINE ABOVE WATER, DISTANCE 50 METERReport Mooring Master suddenly when:

1. Red light come up on the SPM
2. SPM position coming to 10-9 o'clock or 2-3 o'clock
3. Mooring hawsers slack in the water


M.T. _____
Date _____ Time _____
Signature _____

OPERATION OF SEA VALVES

The Master

M.T. _____
Date _____

During your vessel's stay at Map Ta Phut SPM all sea valves will remain closed and sealed. If for any reason the sea valves are to be opened, the Mooring Master on duty must be informed before any action is taken.

The cargo surveyors on board your vessel are to witness all sea valve operations which includes the breaking of seals. After ballasting operations have been completed the surveyors are to witness the closing and re-sealing the sea valves.

	<u>Date</u>	<u>Time</u>	<u>Seal Number</u>	<u>Signature</u>
<u>Port sea valve</u>				
Checked before cargo discharge :-	_____	_____	_____	_____
Opened	_____	_____	_____	_____
Ballasting :-				
Closed	_____	_____	_____	_____
<u>Starboard sea valve</u>				
Checked before cargo discharge :-	_____	_____	_____	_____
Opened	_____	_____	_____	_____
Ballasting :-				
Closed	_____	_____	_____	_____
<u>Overboard sea valve</u>				
Checked before cargo discharge :-	_____	_____	_____	_____
Opened	_____	_____	_____	_____
Ballasting :-				
Closed	_____	_____	_____	_____

Master/Chief Officer
Master

Cargo Surveyor

Mooring Master/Assist. Mooring

Name _____	Name _____	Name _____
Date / time _____	Date / time _____	Date / time _____
MT _____	Company _____	

STAR PETROLEUM REFINING PUBLIC COMPANY LIMITED
MAP TA PHUT SPM TERMINAL

The Master

M.T. _____ Date _____

SAFETY REQUIREMENTS

Responsibility for the safe conduct of operations on board your ship while at our Terminal rests with you as Master. Nevertheless, since personnel, property and other shipping may also suffer serious damage in the event of an accident aboard your ship, we wish, before operations start, to seek your cooperation and understanding on the safety requirements set out in the Map Ta Phut SPM Terminal Safety Check List.

These safety requirements are based on practices widely accepted by the oil and tanker industries. We therefore expect you and all under your command to adhere strictly to them throughout your stay in this port. We, for our part, have instructed our personnel to do likewise and cooperate fully with you in the mutual interest of a safe and efficient operation. In order to assure ourselves of your compliance with these safety requirements, we shall, before the start of operations and thereafter from time to time, instruct a member of our staff to inspect your ship. After reporting to you or your deputy, he will invite one of your officers to join him in a routine inspection of your ship to ensure that the Map Ta Phut SPM Terminal Safety Check List can be completed in the affirmative.

If we observe any infringement on board your ship of any of these safety requirements, we shall bring this immediately to the attention of yourself or your deputy for corrective action. If such action is not taken in a reasonable time, we shall adopt measures which we consider to be the most appropriate to deal with the situation and we shall notify you accordingly. If you observe any infringement of these regulations by SPRC staff onboard your ship, please bring this immediately to the attention of the SPRC Mooring Master who is nominated as your contact during your stay in port. Should you feel that any immediate threat to the safety of your ship arises from any action on our part, or from the equipment under our control, you are fully entitled to demand an immediate cessation of operations.

IN THE EVENT OF CONTINUED OR FLAGRANT DISREGARD OF THESE SAFETY REGULATIONS BY ANY SHIP, WE RESERVE THE RIGHT TO STOP ALL OPERATIONS AND TO ORDER THAT SHIP OFF THE BERTH FOR APPROPRIATE ACTION TO BE TAKEN BY THE CHARTERER AND OWNERS CONCERNED.

Please acknowledge receipt, understanding and acceptance of this letter by countersigning and returning the attached copy.

For and on behalf of
STAR PETROLEUM REFINING PUBLIC COMPANY LIMITED

(Signature)

M.T. _____

RECEIPT AND ACCEPTANCE OF THIS LETTER
IS HEREBY ACKNOWLEDGED:

Signed: _____ Master

Date: _____ Time: _____ Hours.



STAR PETROLEUM REFINING PUBLIC COMPANY LIMITED
MAP TA PHUT SPM TERMINAL
SHIP/ShORE SAFETY CHECK LIST

MT. _____

Date of Arrival _____

Time of Arrival _____

INSTRUCTIONS FOR COMPLETION

The safety of operations requires that all questions be answered affirmatively with a tick i.e. ✓. If an answer is not possible, the reason should be given and agreement reached upon appropriate precautions between the ship and the terminal. Where any question is not considered to be applicable a note to that effect should be inserted in the remarks column.

☐ -the presence of this symbol in the columns "Ship" and STAR PETROLEUM REFINING PUBLIC COMPANY LIMITED ("SPRC") indicates that the check shall be carried out by the party concerned.

The presence of the letters A, P and R in the column "Code" indicates the following:

A ('Agreement'). This indicates an agreement or procedure that should be identified in the 'Remarks' column of the Check-List or communicated in some other mutually acceptable form.

P ('Permission'). In the case of a negative answer to the statements coded 'P', operation should not be conducted without the written permission from the appropriate authority.

R ('Recheck'). This indicates items to be re-checked at appropriate intervals, as agreed between both parties, at period stated in the declaration.

Bulk liquid – General - Physical Checks	Ship	SPRC	Code	Remarks
1. There is safe access between the ship and shore	<input type="checkbox"/>	<input type="checkbox"/>	R	
2. The ship is securely moored	<input type="checkbox"/>	<input type="checkbox"/>	R	
3. The agreed ship/shore communication system is operative	<input type="checkbox"/>	<input type="checkbox"/>	A R	System: Backup system:
4. Emergency towing-off pennants are correctly rigged and positioned.	<input type="checkbox"/>	<input type="checkbox"/>	R	
5. The ship's fire hoses and fire-fighting equipment are positioned and ready for immediate use.	<input type="checkbox"/>	<input type="checkbox"/>	R	
6. The terminal's fire-fighting equipment are positioned and ready for immediate use.	<input type="checkbox"/>	<input type="checkbox"/>	R	
7. The ship's cargo and bunker hoses, pipelines and manifolds are in good condition, properly rigged and appropriate for the service intended.	<input type="checkbox"/>	<input type="checkbox"/>		
8. The terminal's cargo and bunker hoses or arms are in good condition properly rigged and appropriate for the service intended.	<input type="checkbox"/>	<input type="checkbox"/>		
9. The cargo transfer system is sufficiently isolated and drained to allow the safe removal of blank flanges prior to connection.	<input type="checkbox"/>	<input type="checkbox"/>		
10. Scuppers and save-alls on board are effectively plugged and drip trays are in position and empty.	<input type="checkbox"/>	<input type="checkbox"/>	R	
11. Temporarily removed scupper plugs will be constantly monitored.	<input type="checkbox"/>	<input type="checkbox"/>	R	
12. Shore spill containment and sumps are correctly managed.	<input type="checkbox"/>	<input type="checkbox"/>	R	
13. The ship's unused cargo and bunker connections are properly secured with blank flanges fully bolted.	<input type="checkbox"/>	<input type="checkbox"/>		
14. The terminal's unused cargo and bunker connections are properly secured with blank flanges fully bolted.	<input type="checkbox"/>	<input type="checkbox"/>		
15. All cargo, ballast and bunker tank lids are closed.	<input type="checkbox"/>	<input type="checkbox"/>		
16. Sea and overboard discharge valves, when not in use, are closed and visibly secured	<input type="checkbox"/>	<input type="checkbox"/>		
17. All external doors, ports and windows in the accommodation, stores and machinery spaces are closed. Engine vents may be open	<input type="checkbox"/>	<input type="checkbox"/>	R	
18. The ship's emergency fire control plans are located externally.	<input type="checkbox"/>	<input type="checkbox"/>		Location:
19. Fixed IGS pressure and oxygen content recorder are working.	<input type="checkbox"/>	<input type="checkbox"/>	R	
20. All cargo tank atmospheres are at positive pressure with oxygen content of 8% or less by volume.	<input type="checkbox"/>	<input type="checkbox"/>	P R	



	Ship	SPRC	Code	Remarks
Bulk Liquid General-Verbal Verification				
21. The ship is ready to move under its own power.	<input type="checkbox"/>	<input type="checkbox"/>	P R	
22. There is an effective deck watch in attendance on board and adequate supervision of operations on the ship and in the terminal.	<input type="checkbox"/>	<input type="checkbox"/>	R	
23. There are sufficient personnel on board and ashore to deal with an emergency	<input type="checkbox"/>	<input type="checkbox"/>	R	
24. The procedures for cargo, bunker and ballast handling have been agreed.	<input type="checkbox"/>	<input type="checkbox"/>	A R	
25. The emergency signal and shutdown procedure to be used by the ship and shore have been explained and understood.	<input type="checkbox"/>	<input type="checkbox"/>	A	
26. Material Safety Data Sheets (MSDS) for the cargo transfer have been exchanged where requested.	<input type="checkbox"/>	<input type="checkbox"/>	P R	
27. The hazards associated with toxic substances in the cargo being handled have been identified and understood.	<input type="checkbox"/>	<input type="checkbox"/>		H2S Content: Benzene Content:
28. An internal Shore Fire Connection has been provided.	<input type="checkbox"/>	<input type="checkbox"/>		
29. The agreed tank venting system will be used.	<input type="checkbox"/>	<input type="checkbox"/>	A R	Method:
30. The requirements for closed operations have been agreed	<input type="checkbox"/>	<input type="checkbox"/>	R	
31. The operation of the P/V system has been verified.	<input type="checkbox"/>	<input type="checkbox"/>		
32. Where a vapour return line is connected, operating parameters have been agreed.	<input type="checkbox"/>	<input type="checkbox"/>	A R	
33. Independent high level alarms, if fitted, are operational and have been tested.	<input type="checkbox"/>	<input type="checkbox"/>	A R	
34. Adequate electrical insulating means are in place in the ship/shore connection.	<input type="checkbox"/>	<input type="checkbox"/>	A R	
35. Shore lines are fitted with a non-return valve, or procedure to avoid back filling have been discussed.	<input type="checkbox"/>	<input type="checkbox"/>	P R	
36. Smoke rooms have been identified and smoking requirements are being observed.	<input type="checkbox"/>	<input type="checkbox"/>	A R	Nominated smoking rooms
37. Naked light regulations are being observed.	<input type="checkbox"/>	<input type="checkbox"/>	A R	
38. Ship/shore telephones, mobile phones and pager requirements are being observed.	<input type="checkbox"/>	<input type="checkbox"/>	A R	
39. Hand torches (flashlights) are of an approved type.	<input type="checkbox"/>	<input type="checkbox"/>		
40. Fixed VHF/UHF transceivers and AIS equipment are on the correct power mode or switched off.	<input type="checkbox"/>	<input type="checkbox"/>		
41. Portable VHF/UHF transceivers are of an approved type.	<input type="checkbox"/>	<input type="checkbox"/>		
42. The ship's main radio transmitter aerials are earthed and radars are switched off.	<input type="checkbox"/>	<input type="checkbox"/>		
43. Electric cables to portable electrical equipment within the hazardous area are disconnected from power.	<input type="checkbox"/>	<input type="checkbox"/>		
44. Windows type air conditioning units are disconnected.	<input type="checkbox"/>	<input type="checkbox"/>		
45. Positive pressure is being maintained inside the accommodation, and air conditioning intakes, which may permit the entry of cargo vapours, are closed.	<input type="checkbox"/>	<input type="checkbox"/>		
46. Measures have been taken to ensure sufficient mechanical ventilation in the pump room.	<input type="checkbox"/>	<input type="checkbox"/>	R	
47. There is provision for an emergency escape.	<input type="checkbox"/>	<input type="checkbox"/>		
48. The maximum wind and swell criteria for operations have been agreed.	<input type="checkbox"/>	<input type="checkbox"/>	A	Stop cargo at: Disconnect at: Un-berth at:
49. Security protocols have been agreed between the Ship Security Officer and the Port Facility Security Officer, if appropriated.	<input type="checkbox"/>	<input type="checkbox"/>	A	
50. Where appropriate, procedures have been agreed for receiving nitrogen supplied from shore, either for inerting or purging ship's tanks or for line clearing into the ship.	<input type="checkbox"/>	<input type="checkbox"/>	A P	



Inert Gas System-Verbal Verification	Ship	SPRC	Code	Remarks
51. The IGS is fully operational and in good working order.	<input type="checkbox"/>		P	
52. Deck seals, or equivalent, are in good working order.	<input type="checkbox"/>		R	
53. Liquid levels in pressure/vacuum breakers are correct.	<input type="checkbox"/>		R	
54. The fixed and portable oxygen analysers have been calibrated and are working properly.	<input type="checkbox"/>		R	
55. All the individual tank IG valves (if fitted) are correctly set and locked.	<input type="checkbox"/>		R	
56. All personnel in charge of cargo operations are aware that, in the case of failure of the inert gas plant, discharge operations should cease and the terminal be advised.	<input type="checkbox"/>			
Crude Oil Washing-Verbal Verification	Ship	SPRC	Code	Remarks
57. The Pre-Arrival COW check-list, as contained in the approved COW manual, has been satisfactorily completed.	<input type="checkbox"/>			
58. The COW check-lists for use before, during and after COW, as contained in the approved COW manual, are available and being used.	<input type="checkbox"/>		R	

Declaration

We, the undersigned, have checked the above items, in accordance with the instructions, and have satisfied ourselves that the entries we have made are correct to the best of our knowledge, and arrangements have been made to carry out repetitive checks as necessary and agreed that those items with code 'R' in the Check-List should be re-checked at intervals not exceeding _____ hours.

If to our knowledge the status of any item changes, we will immediately inform the other party.

For Ship	For SPRC
Name	Name
Rank	Position or Title
Signature	Signature
Date / time	Date / time

Record of repetitive checks:

Date:							
Time:							
Initials for Ship:							
Initials for Shore:							



CRUDE OIL WASHING

THE MASTER

DATE:

M.T.

NO.

CARGO

STAR PETROLEUM REFINING PUBLIC COMPANY LIMITED as receiver of all or part of the cargo loaded onboard your vessel wishes to draw your attention to the fact that COW is only permitted in accordance to MARPOL 73/78 and as detailed in the IMO publication "Crude Oil Washing Systems"

In addition to the tanks designated, with due regard to the ship's trading pattern, to carry clean or dirty ballast approximately one quarter of all remaining tanks shall be crude oil washed for sludge control purposes on a rotational basis. However, tanks need not be crude oil washed more than once in every four months.

As a consequence you are kindly requested to verify your C O W needs as follows:

TANKS DESIGNATED FOR DIRTY BALLAST:

TANKS DESIGNATED FOR CLEAN BALLAST:

25 % OF THE REMAINING TANKS:

ADDITIONAL COW AS INSTRUCTED BY SPRC

Master / Chief Officer

Mooring Master

PRE-CRUDE OIL WASHING OPERATIONS CHECK LIST

No.	ITEM	CHECK	REMARKS
1	Have the: Pre-arrival cargo port; I.S.G.O.T.T. Pre-arrival at discharge port; Pre-discharging; and During discharging; check lists been completed and are all conditions satisfactory?	Yes / No	
2	Are the communications links between: Deck and control room; cargo control room and engine room; cargo control room and ashore; established and working satisfactory?	Yes / No	
3	Have the crude oil washing abort conditions and procedures been discussed and agreed by both ship and shore staff?	Yes / No	
4	Are the fixed and portable oxygen analyzers working properly?	Yes / No	
5	Is the inert gas system working properly and is the oxygen content of the delivered gas below 5% by volume?	Yes / No	
6	Has the oxygen content of the tank(s) to be washed been checked and is it below 8% by volume?	Yes / No	
7	Do all cargo tanks have a positive inert gas pressure?	Yes / No	
8	Are responsible personnel assigned to check all deck lines for leakage when crude oil washing commences?	Yes / No	
9	Are the fixed tank washing machines set for the required washing stages?	Yes / No	
10	Have the valves and lines in the pump room and on deck been checked and are they correctly set?	Yes / No	
11	Has the bottom 1 meter of the cargo tank(s) to be used to supply the washing fluid been discharged to remove any accumulated water? Yes / No		
12	Have the re-circulate crude tanks been discharged and replenished with dry crude?	Yes / No	

Checking Officer _____

Date: _____ Time _____

DURING CRUDE OIL WASHING CHECK LIST

No.	ITEM	CHECK	REMARKS
1	Is the quantity of delivered inert gas frequently checked by portable instrument and recorded and is the oxygen content below 8% by volume?	Yes / No	
2	Are all the deck and pump room lines and tank washing machines frequently checked for leakage?	Yes / No	
3	Is the crude oil washing in progress in the designated cargo tank(s) only.	Yes / No	
4	Is the pressure in the tank washing ring main 10 bar or above?	Yes / No	
5	Are the cycle times of the tank washing machines as specified in the COW Manual?	Yes / No	
6	Are the tank washing machines in operation frequently checked and are they working properly?	Yes / No	
7	Is a responsible person stationed continuously on deck?	Yes / No	
8	Have float type gauges been raised and housed in the tank being crude oil washed?	Yes / No	
9	Is the stern trim at least 3 meters when bottom washing is in progress?	Yes / No	
10	Is the tank draining method specified in the COW Manual being followed?	Yes / No	
11	Are the levels in the recirculatory crude oil tanks frequently checked to prevent overflow?	Yes / No	

Checking Officer _____

Date _____ Time _____

10.4 Appendix 2: Discharging Information

SPRC Star Petroleum Refining Public Company Limited		Discharging Information Map Ta Phut SPM	
Tanker Name: _____		Date: _____	
1. <u>Crude to be discharged</u>			
First grade _____		TOV (M ³) _____	
Second grade _____		TOV (M ³) _____	
Third grade _____		TOV (M ³) _____	
Fourth grade _____		TOV (M ³) _____	
2. <u>Mooring Master / MM/Shore Foreman staying onboard:</u>			
Capt. (Pilot) _____	Cabin _____	Tel. _____	Watch Time _____
Capt. (MM) _____	Cabin _____	Tel. _____	Watch Time _____
Capt. (MM) _____	Cabin _____	Tel. _____	Watch Time _____
Shore Foreman _____		Cabin _____	Tel. _____
3. <u>Surveyor / Agent Checker staying onboard</u>			
Surveyor (No.1) _____		Cabin _____	Tel. _____
Surveyor (No.2) _____		Cabin _____	Tel. _____
Agent Checker _____		Cabin _____	Tel. _____
4. <u>Communication:</u>			
4.1 With Shore Control Station			
- Shore CALL SIGN.... "MCB " and Ship CALL SIGN "SPM"			
- Means VHF CH.67 (Primary) UHF CH . 7 (Back up)			
4.2 With Mooring Master			
- Pilot/Mooring Master will keep watching during discharging.			
- Means VHF CH.67, CALL SIGN.... " Mooring Master "			
5. <u>Requirement:</u>			
5.1 Ship's crew watch keeping at FORE CASTLE and at MANIFOLD all time			
5.2 Initial discharge pressure 3 kg/cm ² . Maximum discharging pressure at manifold to 10.5 Kg/cm ² .			
or flow rate at shore not more than : PTTGC tank 8,500 M3/hr. , SPRC tank 9,000 M3/hr.			
5.3 During discharging , terminal will give a notice (30 , 15 , 5 , ... mins) for any reduction due to stoppage , change tank , etc. SPM Tanker will give 10 mins notice to MCB for cargo grade completion.			
5.4 To switch shore tank , MCB request to reduce flow rate to 4,000 m ³ / hr.			
5.5 Ship's officer in charge CCR to call ... " MCB " and exchange crude(s) volume (cubic meter) every hour :			
- Total cubic meter remaining onboard (TOV)			
- Discharge rate / quantity discharge last hour			
- Total cubic meter been discharged			
- Then ... " MCB " will return total cubic meter shore has received			
- Comparison between Ship/ shore figure : Always monitor and if more than 500 m ³ , the volume will be carefully rechecked and clarify with both tanker / shore side.			
5.4 Ship to maintain stability at least 30% of summer dead weight.			
5.5 Maximum trim at all stages are 5.5 meters.			
5.6 Discharge operation will be suspended when significant wave height more than 2.5 meters.			
Acknowledge Receipt , _____		Truly Yours , _____	
Ship's Officer _____		Mooring Master _____	

APPENDIX 3 : SPM PREBERTH INSPECTION

SPRC Star Petroleum Refining Public Company Limited		SPM Pre-berth Inspection Report	
Tanker Name: _____		Date: _____	
Prior the tanker berthing operation, the following actions to be carried out :			
Subjects	Yes / No	Remarks	
Check SPM ,environment , no damaged / no spillage / no leakage			
Check correction of SPM freeboard and trim			
Inspect hawsers /mooring arrangement / pick up ropes not damaged not fouling / not entangle and connections tight:			
- Boarding SPM to inspect hawsers and relating connection			
- Workboat pull pick up rope and self-observe the mooring assembly and entire mooring hawsers			
- Eye inspection from the workboat or Uniwise Rayong			
Trial Load Monitoring system to working properly			
Check hose and MBC connection no damaged/leakage/fouling :			
- Surface swimming perform (if require) or checking from the boat			
- Check lifting gear at hose end laying properly			
- Check hose strings steaming correctly.			
Check Turntable rotating freely :			
- Boarding SPM and Check or observing from the boat			
Check navigation aids position / lighting correctly			
Check SPM pipework,swivel,expansion joint : no damaged/no leakage			
Check SPM fitting . Valve operable/correct position. Pressure gauge reading			
Check SPM security hatched / vent / drain v/v / sounding cap			
Hose Connection / Disconnection Operation :			
- To verify and confirm that no any ship's part/equipment at manifolds / rail /tanker rail area will harmful or lead to damage to the hoses during . operation			
Above subjects have accomplished and confirm SPM READY / NOT READY for berthing.			
Additional Remarks			

Check by (name) _____ Date / Time _____

Acknowledge by _____ Date / Time _____
Mooring Master



APPENDIX 4 : SPM DEFECT LIST



Tanker Name: _____ Date: _____

During the tanker berthing / discharging / un-berthing, the following items observed:

Subjects	Remarks
SPM Light / Fog horn and Winker lights	
Port Mooring Hawser	
Stbd. Mooring Hawser	
Port Mooring Messenger	
Stbd. Mooring Messenger	
Port 24" Hose String	
Stbd. 24" Hose String	
Port 16" Tail Hoses	
Stbd. 16" Tail Hoses	
Port 16" Tanker rail hose & - Butterfly valve - Snubbing wire / chain - Lifting gear - Messenger	
Stbd. 16" Tanker rail hose & - Butterfly valve - Snubbing wire / chain - Lifting gear - Messenger	

Check by (name) _____ Date / Time _____

Responsibility (signature) _____ Date / Time _____