

---

## **PETRONAS TECHNICAL STANDARDS**

---

### **Oil Spill Contingency Planning**

---

**PTS 18.41.01**

**March 2016**

---

 <b>PETRONAS</b>	<b>OIL SPILL CONTINGENCY PLANNING</b>	PTS 18.41.01
		March 2016
		Page 2 of 44

## PTS Circular

This new / revision of PTS – **PTS 18.41.01 Oil Spill Contingency Planning (March 2016)** has been transformed in the new format and numbering and content has been reviewed accordingly.

The previous version of this **PTS Oil Spill Contingency Planning 60.3004 (June 2010)** will be removed from PTS Filing Room / PTS Site from herein onwards.

The custodian of this PTS is:

Name: Kairul Zaman M Noh

Tel. No: 03-23314145

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

## Document Authorization

	Name	Designation	Date	Signature
Prepared by	Fazil Baharuddin	Head - Fire, HAZMAT & Oil Spill Management, GHSE	24/03/2016	
Reviewed by Department Head	Kairul Zaman M Noh	Head of Crisis Management, GHSE	29/03/2016	
Approved for Release	Dr. Bea Ponnudurai	Head of Group HSE	30/3/16	

## Revision History

Date	Version	Description of Updates	Author
March 2016	2	Enhancement to align with latest internal and external requirements	GHSE
June 2010	1	Enhancement to include latest regulatory requirements, best practices, onshore oil spills and international operations	GHSED
June 2006	Original	Offshore Oil Spill Contingency Planning	GHSED

	<b>OIL SPILL CONTINGENCY PLANNING</b>	PTS 18.41.01
		March 2016
		Page 3 of 43

## FOREWORD

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

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

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

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

PETRONAS is the sole copyright holder of PTS. No part of this document may be reproduced, stored in a retrieval system or transmitted in any form or by any means (electronic, mechanical, recording or otherwise) or be disclosed by users to any company or person whomsoever, without the prior written consent of PETRONAS.

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

 <b>PETRONAS</b>	<b>OIL SPILL CONTINGENCY PLANNING</b>	PTS 18.41.01
		March 2016
		Page 4 of 43

## ANNOUNCEMENT

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

## Table of Contents

<b>1.0</b>	<b>INTRODUCTION .....</b>	<b>7</b>
1.1	SCOPE .....	7
1.2	GLOSSARY OF TERM .....	7
1.3	SUMMARY OF CHANGES .....	11
<b>2.0</b>	<b>OSCP FRAMEWORK .....</b>	<b>12</b>
2.1	OIL SPILL ASSESSMENT .....	12
2.2	OIL SPILL EMERGENCY PREPAREDNESS & RESPONSE MANDATORY REQUIREMENTS .....	12
2.3	PETRONAS OIL SPILL TIERED RESPONSE PROTOCOL & ACTIVATION .....	12
2.4	LINKAGE AND INTEGRATION WITH HOST GOVERNMENT .....	13
<b>3.0</b>	<b>PETRONAS OSRP .....</b>	<b>15</b>
3.1	OIL SPILL RESPONSE PLAN (OSRP) .....	15
3.2	INCIDENT ACTION PLAN (IAP) .....	15
3.3	RESOURCE MATRIX .....	15
<b>4.0</b>	<b>ORGANIZATION, ROLES AND RESPONSIBILITIES .....</b>	<b>16</b>
4.1	OIL SPILL RESPONSE TEAM .....	16
<b>5.0</b>	<b>EMERGENCY AND INCIDENT NOTIFICATION .....</b>	<b>18</b>
5.1	EMERGENCY NOTIFICATION .....	18
5.2	POST EMERGENCY PROCEDURES .....	18
<b>6.0</b>	<b>TRAINING, DRILLS AND EXERCISES .....</b>	<b>20</b>
6.1	TRAINING PROGRAMME FOR OSRT .....	20
6.2	DRILL AND EXERCISE REQUIREMENT .....	20
6.3	DRILL AND EXERCISE EVALUATION .....	20
<b>7.0</b>	<b>EMERGENCY FACILITIES .....</b>	<b>21</b>
7.1	INCIDENT COMMAND POST .....	21
7.2	STAGING AREA .....	21
7.3	EMERGENCY CONTROL CENTRE (ECC) .....	21
<b>8.0</b>	<b>COMPLIANCE ASSESSMENT .....</b>	<b>22</b>
<b>9.0</b>	<b>BIBLIOGRAPHY .....</b>	<b>23</b>
	<b>APPENDIX A: QUANTITATIVE OIL SPILL RISK ASSESSMENT .....</b>	<b>24</b>
	<b>APPENDIX B: OIL SPILL RESPONSE CAPABILITY ASSESSMENT CHECKLIST .....</b>	<b>25</b>
	<b>APPENDIX C: ACTIVATION OF OSR SERVICE PROVIDERS .....</b>	<b>28</b>
	<b>APPENDIX D: MALAYSIAN NATIONAL OIL SPILL THREE-TIER EMERGENCY MANAGEMENT .....</b>	<b>29</b>

	OIL SPILL CONTINGENCY PLANNING	PTS 18.41.01
		March 2016
		Page 6 of 43

<b>APPENDIX E: PROPOSED OIL SPILL RESPONSE PLAN CONTENT.....</b>	<b>30</b>
<b>APPENDIX F: OIL SPILL RESPONSE STRATEGIES .....</b>	<b>34</b>
<b>APPENDIX G: SAMPLE OF OIL SPILL IAP.....</b>	<b>38</b>
<b>APPENDIX H: PROPOSED OIL SPILL RESOURCE MATRIX .....</b>	<b>41</b>
<b>APPENDIX I: ROLES OF OSRT.....</b>	<b>42</b>
<b>APPENDIX J: IMO RECOMMENDATION FOR OSR TRAINING .....</b>	<b>43</b>

## 1.0 INTRODUCTION

PETRONAS Group of Companies is constantly exposed to potential of oil spill emergencies / crises due to the nature of its business. Unpreparedness and lack of foresight in oil spill response can be costly and detrimental to the organization. PETRONAS shall always be prepared to manage oil spill emergencies / crises in order to minimize impact to people, environment, asset and reputation.

## 1.1 SCOPE

This PTS specifies PETRONAS minimum requirements for oil spill emergencies / crises management that includes the development and implementation of plans, teams and facilities.

## 1.2 GLOSSARY OF TERM

### 1.2.1 Specific Definition of Terms

No	Term	Definition
1	Business	PETRONAS businesses i.e. Upstream and Downstream
2	Credible Scenarios	Probable emergency event which is derived from major risk or top 10 hazards identified through Hazard and Effect Management Process (HEMP)
3	Crisis	Significant business disruption which affects the organization's normal operations, impacting people, environment, assets and reputation
4	Crisis Management	Comprehensive set of processes that aims to build capability of an organization to respond and manage risk areas to protect and save people, environment, asset and reputation
5	Drill	Limited in scope and intended to test a limited aspect of response capability
6	Emergency	An adverse situation that has an impact on people, environment, asset and reputation and requires the activation of emergency teams
7	Emergency Control Centre (ECC)	An emergency facility at which the emergency / crisis management team gather to coordinate information and manage resources to support emergency response and management activities

No	Term	Definition
8	Emergency / Crisis Plans	An emergency plan specifies procedures to facilitate and organize actions during an emergency e.g ERP, OSRP, CCP, BCP, BUCMP, BCMP, SRMCP and PCMP
9	Emergency teams	Emergency teams is a general term referring to response team e.g ERT, OSRT, EMT, BCT, CCT, BUCMT, BCMT and PCMT
10	Exercise	A process to assess, train, practice and improve performance of emergency / crisis management
11	Incident	An abnormal or unplanned event that affects people, environment, asset and reputation, requires attention and has the potential to precipitate an emergency / crisis
12	Incident Command Post	The location at which OSC coordinates emergency response team operation at site
13	Major Risk	A risk that has the potential to result in a Major Accident with severe or catastrophic consequences to people, environment, assets and reputation as defined in PETRONAS HSE Mandatory Control Framework (MCF)
14	Mutual Aid	An agreement among members of industries to share resources in responding to an emergency / crisis
15	Resource Matrix	A list of identified resources that includes detailed information of the equipment, contact details of SMEs and emergency response service providers and contractors
16	Staging Area	Location established where emergency resources can be placed while awaiting a tactical assignment

Table 1: Specific Definition of Terms

#### 1.2.2 Specific Abbreviations

No	Abbreviation	Description
1	APMM	Agensi Penguatkuasaan Maritim Malaysia (Malaysian Maritime Enforcement Agency)
2	BCMT	Business Crisis Management Team



No	Abbreviation	Description
3	CCT	Country Contingency Team
4	COMCEN	Communication and Control Centre
5	CPO	Capital Project Owner
6	ECC	Emergency Control Centre
7	EMT	Emergency Management Team
8	ESI	Environmental Sensitivity Index
9	EVP	Executive Vice President
10	GHSE	Group Health, Safety and Environment
11	HER	Hazard and Effect Register
12	HSE	Health, Safety and Environment
13	HSE MS	PETRONAS Health, Safety and Environment Management System
14	IAP	Incident Action Plan
15	IC	Incident Commander
16	ICP	Incident Command Post
17	IMO	International Maritime Organization
18	IPIECA	International Petroleum Industry Environmental Conservation Association
19	JAS	Jabatan Alam Sekitar (Department of Environment)
20	JV	Joint Venture
21	MCF	HSE Mandatory Control Framework
22	MKN	Majlis Keselamatan Negara (National Security Council)
23	NOCC	National Oil Spill Control Committee
24	NOSCP	National Oil Spill Contingency Plan

No	Abbreviation	Description
25	OPRC Convention	International Convention on Oil Spill Preparedness, Response and Cooperation 1990
26	OPU	Operating Unit
27	OSC	On-Scene Commander
28	OSCP	Oil Spill Contingency Planning
29	OSR	Oil Spill Response
30	OSRL	Oil Spill Response Limited
31	OSRP	Oil Spill Response Plan
32	OSRT	Oil Spill Response Team
33	PCMT	PETRONAS Crisis Management Team
34	PCPS	PETRONAS Contingency Planning Standard
35	PETRONAS	Petroleum Nasional Berhad
36	PIMMAG	Petroleum Industry of Malaysia Mutual Aid Group
37	PPE	Personal Protective Equipment
38	PTPP	Pelan Tindakan Pembersihan Pantai
39	PTS	PETRONAS Technical Standard
40	SCAT	Shoreline Clean-Up Assessment Technique
41	SME	Subject Matter Expert
42	SOCC	State Oil Spill Control Committee
43	SOP	Standard Operating Procedure
44	UC	Unified Command
45	VP	Vice President
46	VHF	Very High Frequency

Table 2: Specific Abbreviations

 <b>PETRONAS</b>	<b>OIL SPILL CONTINGENCY PLANNING</b>	PTS 18.41.01
		March 2016
		Page 11 of 43

### 1.3 SUMMARY OF CHANGES

This PTS 18.41.01 Oil Spill Contingency Planning replaces PTS 60.3004 Oil Spill Contingency Planning (June, 2010).

Date	Revision	Description of Updates	Author
June 2010	1	Enhancement to include latest regulatory requirements, best practices, onshore oil spills and international operations	GHSED
June 2006	Original	Offshore Oil Spill Contingency Planning	GHSED

	<b>OIL SPILL CONTINGENCY PLANNING</b>	PTS 18.41.01
		March 2016
		Page 12 of 43

## **2.0 OSCP FRAMEWORK**

### **2.1 OIL SPILL ASSESSMENT**

OPU / JV / CPO / Business with oil spill exposure should undertake quantitative oil spill risk assessment to estimate quantitatively the worst case of oil spill that may occur as a result of their operations. Outcome of the assessment should be used as a basis in developing oil spill response capability. Appendix A provides detail on quantitative oil spill risk assessment while Appendix B is checklist for Oil Spill Response Capability Assessment.

### **2.2 OIL SPILL EMERGENCY PREPAREDNESS & RESPONSE MANDATORY REQUIREMENTS**

All PETRONAS facilities / operations that may expose to spill of oil shall develop and maintain plans and teams conforming to regulatory requirements in managing physical response to an emergency and the associated external issues.

- i. OPU / JV / CPO / Business shall develop and maintain OSRP and IAP
- ii. OPU / JV / CPO / Business at international operations shall develop OSRP that is integrated with host country's oil spill response system
- iii. OPU / JV / CPO / Business shall establish OSRT
- iv. OSRT shall attend related training and participate in oil spill scenario drills and exercises
- v. OPU / JV / CPO / Business shall establish and maintain an internal and external emergency / crisis notification protocols
- vi. OPU / JV / CPO / Business shall establish and maintain Tier 1 oil spill response equipment based on Quantitative Oil Spill risk assessment
- vii. OPU / JV / CPO / Business shall establish emergency resource / mutual aid agreements / programmes to cater for resource support and requirement

### **2.3 PETRONAS OIL SPILL TIERED RESPONSE PROTOCOL & ACTIVATION**

PETRONAS three-tiered response protocol provides clear demarcation of response control and the required capability of the emergency / crisis response teams. Response priorities during oil spill emergency / crisis are to protect and save people, environment, assets and reputation.

The three-tiered response definitions are as follows:

i. Tier 1

A situation where the emergency response is within the control and capability of the OPU / JV / CPO OSRT and occur within port limit, oil terminal or offshore platforms.

ii. Tier 2

A situation where the emergency response is beyond the control and capability of the OPU / JV / CPO OSRT or occur beyond port limit, oil terminal or offshore platforms. At this stage, OPU / JV / CPO EMT is activated with involvement from service providers (e.g. PIMMAG, OSRL, etc.) and authorities.

iii. Tier 3

A situation where the emergency response is beyond the control and capability of the OPU / JV / CPO EMT and requires mobilisation of authorities' oil spill response capabilities.

Appendix C provides details on activation of oil spill response service providers.

## 2.4 LINKAGE AND INTEGRATION WITH HOST GOVERNMENT

Depending on the severity, the authorities will take control of response operations either for reasons of public safety, national interest or if it determines PETRONAS is unable to manage the situation. This is achieved by invoking government emergency protocols where UC shall be established and a handing over certificate shall be prepared and duly signed by the IC and authorities.

### 2.4.1 Linkage and Integration with Malaysian Authorities

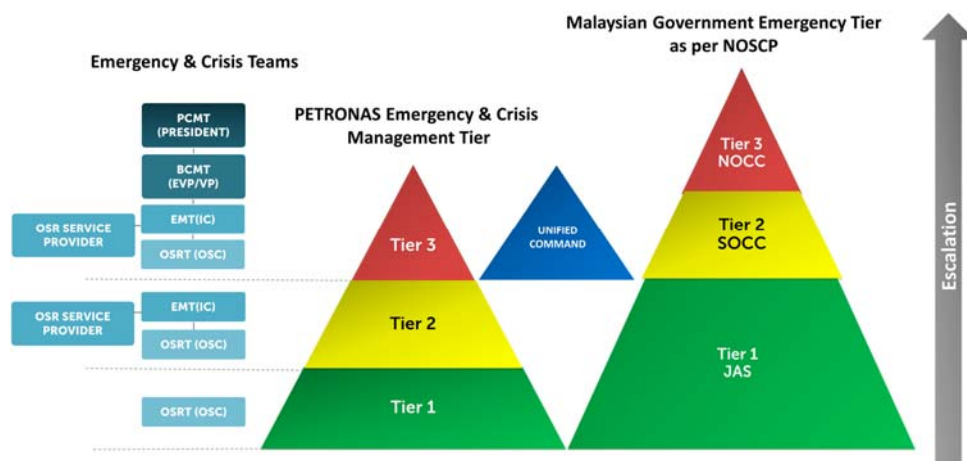


Figure 1: PETRONAS three-tiered oil spill response system and linkage to Malaysian Authorities

Note: The national oil spill three-tiered emergency management system as specified in NOSCP is attached in Appendix D

#### 2.4.2 Linkage and Integration for International Operations

All PETRONAS international operations shall comply with the respective National / States legislations and regulations with respect to the following – oil pollution and management, oil spill prevention and response as specified in its respective National / States regulations or wherever made available in a National Oil Spill Contingency Plan. In addition to the National / State customs and immigration regulations of which are made relevant to the mobilization of oil spill control equipment and personnel from external service providers may also be applicable.

The figure below illustrates PETRONAS linkage to host government oil spill response system for international operations.

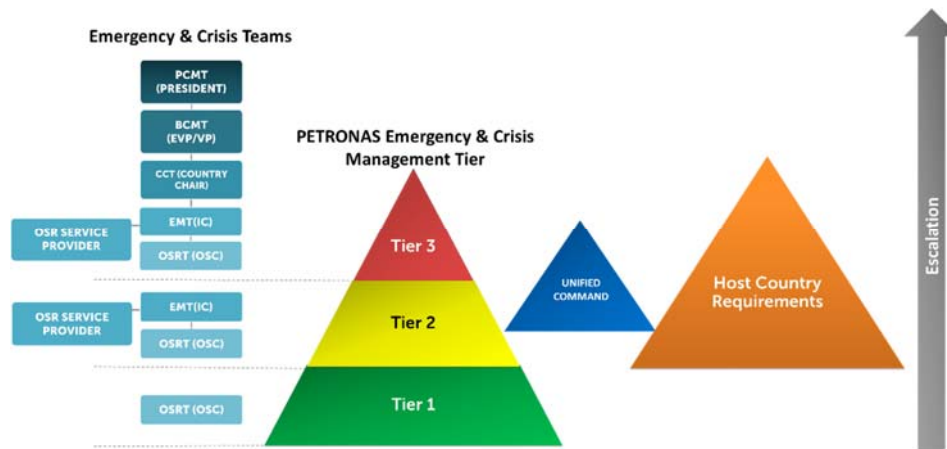


Figure 2: PETRONAS three-tiered oil spill response system and linkage for International Operations

Note: International operations shall comply to host government response regulations

	<b>OIL SPILL CONTINGENCY PLANNING</b>	PTS 18.41.01
		March 2016
		Page 15 of 43

### 3.0 PETRONAS OSRP

#### 3.1 OIL SPILL RESPONSE PLAN (OSRP)

OPU / JV / CPO / Business shall develop and maintain an OSRP to respond and manage oil spill emergency. The OSRP shall be reviewed once in 3 years or as and when necessary. The plan shall describe:

- i. Activities, risk assessment / potential oil spill scenario that may impact the facility and community
- ii. Response strategies
- iii. Scope of the plan as well as geographical coverage
- iv. Oil spill response organization (i.e. tiered response approach)
- v. Roles and responsibilities of key personnel
- vi. Notification procedures (i.e. internal & external)
- vii. Clear linkages with mutual aid plans and other emergency related plans
- viii. Unified Command with authorities to manage oil spill cleanup operations
- ix. All PETRONAS oil spill response resources including third parties (e.g. specialists, service providers, etc)
- x. Oil spill response IAP

Note:

- i. Proposed OSRP content is as per Appendix E
- ii. Description of Oil Spill Response Strategies are as per Appendix F

#### 3.2 INCIDENT ACTION PLAN (IAP)

IAP is a document prepared in advance to respond to oil spill emergency scenario. It is developed based on identified oil spill credible scenarios as per HER and included in OSRP. An IAP contains detailed information to guide the OSRT in responding to emergency / crisis. It shall also be used during oil spill training, exercise and assessment.

Note: Sample of IAP is as per Appendix G

#### 3.3 RESOURCE MATRIX

OPU / JV / CPO / Business shall identify necessary oil spill response resources to be included in the OSRP that may be required and deployed during an oil spill emergency / crisis. The resources identified shall include detailed information of available oil spill response equipment, emergency contact, oil spill response service providers.

Note: Proposed resource matrix details is as per Appendix H

 <b>PETRONAS</b>	<b>OIL SPILL CONTINGENCY PLANNING</b>	PTS 18.41.01
		March 2016
		Page 16 of 43

#### **4.0 ORGANIZATION, ROLES AND RESPONSIBILITIES**

OSRT shall be established with clear roles and responsibilities to respond to credible oil spill scenarios. An official appointment from the management of OPU / JV / CPO / Business is required for any personnel appointed as OSRT members.

#### **4.1 OIL SPILL RESPONSE TEAM**

OSRT is the tactical response team to carry out assessment, containment, recovery and clean-up tasks under the direction of On-Scene Commander (OSC). OSC is responsible to ensure that oil spill operation is carried out in a safe and efficient manner with the assistance of OSRT leader to lead the OSR operation. The OSRT should be trained in oil spill response and fit to conduct response operations.

The OSRT leader criteria shall be:

- i. Preferably an executive staff
- ii. Person-in-charge of facilities and installation
- iii. Trained and competent in oil spill emergency response

The primary roles of the OSRT shall be:

- i. Assess oil spill situation or sighting of oil spill (size-up)
- ii. Ensure response operations are carried out in a safe, well-organise and effective manner
- iii. Strategize and implement site control and safety, source control, protect and save people, environment and asset
- iv. Interacting with EMT, government agencies, contractors and other parties
- v. Declaration of Tier 2 by OSC based on severity of oil spill situation
- vi. Stand down declaration for emergency at Tier 1 after thorough risk assessment



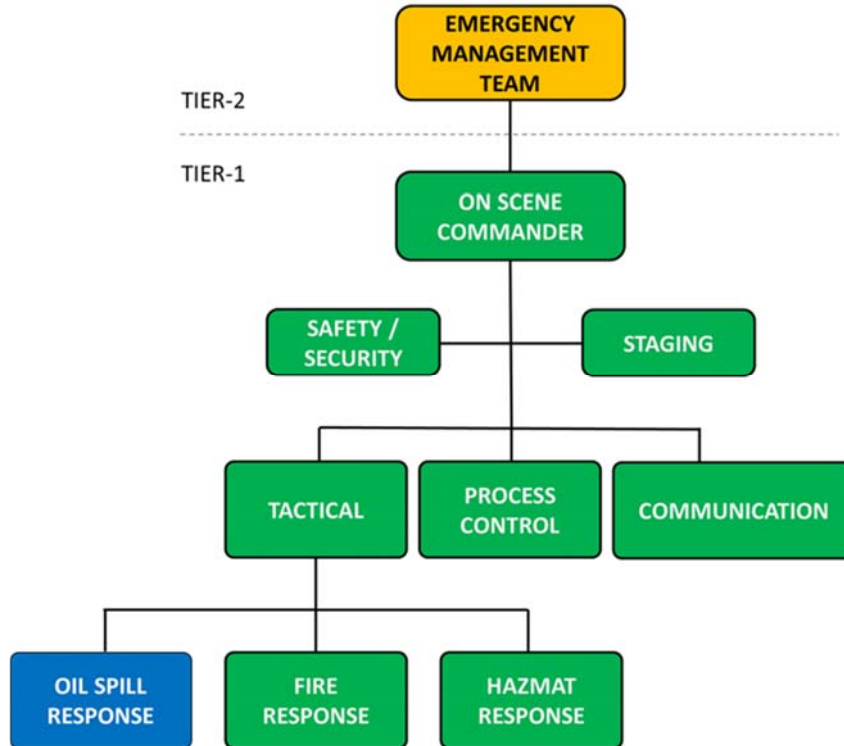


Figure 3: OSRT linkage to EMT

Note: Based on business requirement and not limited to the above example

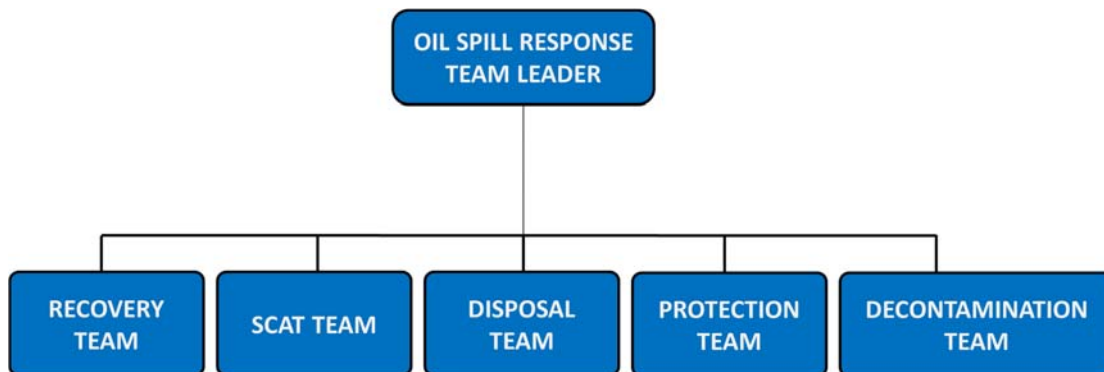


Figure 4: OSRT Organization Structure

Note:

- i. Based on business requirement and not limited to the above example
- ii. Roles of OSRT are specified in Appendix I
- iii. Shoreline Clean-up Assessment Technique (SCAT)

	<b>OIL SPILL CONTINGENCY PLANNING</b>	PTS 18.41.01
		March 2016
		Page 18 of 43

## 5.0 EMERGENCY AND INCIDENT NOTIFICATION

All OPU / JV / CPO / Business shall establish and maintain an oil spill emergency notification processes to ensure immediate notification is disseminated to higher management and authorities (e.g. JAS, Jabatan Laut, APMM etc.) based on notification list.

### 5.1 EMERGENCY NOTIFICATION

- i. Initial oil spill emergency notification within respective OPU / Business management shall be made by the OPU concerned immediately. Communication to COMCEN shall be made within 1 hour of the incident by fax, email, phone or SMS. Subsequent updates shall be made by fax or email every 3 hours or when there is significant change in the situation using the Notification Form.
- ii. COMCEN shall be responsible to notify all concerned as indicated in the Notification Form. It will still be the responsibility of the OPU / JV / CPO / Business concerned to notify their top management.
- iii. The OPU / Business is responsible to notify relevant national / competent authorities of the oil spill incident / emergency, in accordance with the statutory / non-statutory requirements of the host government
- iv. Notification to public through relevant government agencies on potential and actual impacts of oil spill emergency shall be made as soon as possible. This will increase public awareness of the hazards by providing information on appropriate actions to be taken before, during and after emergencies.

### 5.2 POST EMERGENCY PROCEDURES

#### 5.2.1 Ending the Emergency (Stand Down)

It is essential to ensure all potential hazards must be identified and that the emergency is under control before a decision is made to terminate the oil spill response operation. The stand down declaration is made:

- i. By OSC and IC at Tier 1 and Tier 2 emergencies respectively
- ii. In consultation with authorities / IC / BCMT beyond Tier 3 oil spill emergencies
- iii. By IC / CCT Leader for international operations
- iv. To COMCEN as per Notification Form.

 <b>PETRONAS</b>	<b>OIL SPILL CONTINGENCY PLANNING</b>	PTS 18.41.01
		March 2016
		Page 19 of 43

#### 5.2.2 Post Mortem

After the stand down of oil spill emergency, OSRT shall conduct a post mortem session with responding authorities and contractors to identify gaps, area of improvement and good practices that were demonstrated during the response. All post mortem report shall be submitted to Business HSE and GHSE using standard form. Business HSE shall track and ensure closure of Tier 2 and above action items in the post mortem report. All key improvements shall be highlighted in the Management Review and incorporated in the existing emergency / crisis plans.

#### 5.2.3 Management of Evidence

The affected area should be secured and evidence preserved for further examination and investigation by PETRONAS / authorities. Investigation by PETRONAS shall be in accordance with PTS 18.06.01 Incident Notification, Investigation and Reporting.

PPE and safety equipment shall be made available for re-entry, if required. Permission for site clearance, damage assessment, recovery or reconstruction must be obtained from competent authorities to ensure safety of personnel entering the area.

	<b>OIL SPILL CONTINGENCY PLANNING</b>	PTS 18.41.01
		March 2016
		Page 20 of 43

## **6.0 TRAINING, DRILLS AND EXERCISES**

OPU / JV / CPO / Business shall establish, develop and conduct oil spill trainings, drills and exercises programmes as follows.

### **6.1 TRAINING PROGRAMME FOR OSRT**

OPU / JV / CPO / Business shall ensure trainings are provided to establish and maintain the competency of OSRT members and OSC. The minimum training programme for OSRT members is a once off Oil Spill Response Training Level 1 (where applicable) and OSRT Refresher every two years. The minimum training programme for OSC is a once off Oil Spill Response Training Level 2 (where applicable) and OSC Refresher every two years. The training shall be coordinated by PIMMAG or other recognised training providers. Training content is based on IMO recommendation as per Appendix J.

### **6.2 DRILL AND EXERCISE REQUIREMENT**

OPU / JV / CPO / Business shall conduct oil spill response drill and exercise to allow OSRT to be familiar with the procedures, facilities and systems during an actual emergency. The interactions within multiple and external response teams allow the OSRT to enhance decision-making capabilities and demonstrate individual and group skill abilities to response operations. The drill / exercise scenario will involve participation or mobilisation of OSRT based on IAP and it will be held once in two months for each shifts.

### **6.3 DRILL AND EXERCISE EVALUATION**

OPU / JV / CPO / Business shall evaluate drills and exercises conducted to identify areas for improvement. Evaluation for Tier 2 drills or exercises, shall consist of a member from Business HSE while for Tier 3 exercise and above, a member from GHSE shall be included.

Drills / Exercises post mortem report shall be developed and maintained by the OPU / JV / CPO / Business for continual improvement and assurance purposes. Business shall ensure gaps identified in the drills and exercises are closed accordingly. Copy of exercise report shall be submitted to GHSE as per PTG 18.40.03 PETRONAS Emergency Drill and Exercise Guideline (PEDEG).

	OIL SPILL CONTINGENCY PLANNING	PTS 18.41.01
		March 2016
		Page 21 of 43

## **7.0 EMERGENCY FACILITIES**

### **7.1 INCIDENT COMMAND POST**

ICP is a location at which OSC coordinates OSRT operation at site. ICP is to be located outside the area of present and potential hazards.

### **7.2 STAGING AREA**

Staging area is the location where oil spill response resources are placed while awaiting tactical assignment. Staging area is managed by the Staging Area Manager under the OSC at Tier 1 and under the Operation Section Chief at Tier 2. OPU / JV / CPO / Business shall identify the location of staging area as well as the alternate location should the primary staging area becomes inaccessible or unsafe.

### **7.3 EMERGENCY CONTROL CENTRE (ECC)**

OPU / JV / CPO / Business shall establish, equip and maintain facilities in ECC. The proposed ECC facilities are as follows:

- i. Telephones, Walkie-Talkies - VHF Channel 16 for offshore operations
- ii. Facsimile (in and out) and copier
- iii. Digital clocks
- iv. Personal Computer (e-mail access) and printer
- v. Display / status board
- vi. Filing trays and stationery
- vii. Updated charts, maps, diagrams, photographs
- viii. Updated emergency contact numbers e.g authorities, internal communication
- ix. Relevant forms

	<b>OIL SPILL CONTINGENCY PLANNING</b>	PTS 18.41.01
		March 2016
		Page 22 of 43

## 8.0 COMPLIANCE ASSESSMENT

The compliance assessment of oil spill response preparedness programme in OPU / JV / CPO / Business shall be conducted periodically based on the tier 2 and 3 HSEMS assurance requirements. The objective of this assessment is to identify gaps and incorporate feedbacks for continuous improvement. It shall be led by respective Business HSE with members / SMEs from other Business Units. A copy of the assessment report shall be submitted to GHSE. The compliance assessment shall be based on:

- i. Examination of availability, validity and completeness of plan and procedures. Documents to be examined during the assessment:
  - i. HER
  - ii. OSRP
  - iii. Mutual aid plan
  - iv. Oil Spill Drill and Exercise close-out reports and gap closure tracking mechanism
  - v. Investigation report of previous oil spill incidents and emergencies
  - vi. HSEMS Tier 2 / Tier 3 assurance findings
  - vii. Other documents as required by government regulations
- ii. Evaluation of oil spill manpower availability and capability. Documents to be examined during the assessment:
  - i. OSRT organization chart
  - ii. Oil Spill emergency contact list, both internal and external
  - iii. Oil Spill Drill and Exercise attendance record
  - iv. Oil Spill Training matrix and records
- iii. Verification of oil spill response equipment and facilities. Documents to be examined during the assessment:
  - i. IAP
  - ii. Resource Matrix
  - iii. Oil spill response equipment and facilities inspection, testing and maintenance procedures and records

All oil spill response and management documentation must be readily available at all times.

	OIL SPILL CONTINGENCY PLANNING	PTS 18.41.01
		March 2016
		Page 23 of 43

## 9.0 BIBLIOGRAPHY

In this PTS, reference is made to the following Standards/Publications. Unless specifically designated by date, the latest edition of each publication shall be used, together with any supplements/revisions thereto:

### PETRONAS TECHNICAL STANDARDS

PETRONAS Contingency Planning Standard	PTS 18.40.01
HSE Management System	PTS 18.00.01

### OTHER DOCUMENTS

IPIECA Report Series – Oil Spill Preparedness and Response (1990-2008)  
 IMO Manual on Oil Pollution – Contingency Planning (2011)  
 International Convention on Oil Spill Preparedness, Response and Cooperation, 1990 (OPRC Convention)  
 American National Response Team Integrated Contingency Plan (ICP)  
 BSEE Regional Oil Spill Response Plan NTL 2012-N06

### MALAYSIAN GOVERNMENT EMERGENCY REGULATIONS, PROCEDURES

*Rancangan Kontingensi Kebangsaan Kawalan Tumpahan Minyak, Edisi 2014* (National Oil Spill Contingency Plan, 2014 Edition)  
*MKN Arahan No.20: Dasar dan Mekanisme Pengurusan Bantuan Bencana, Mac 2012* (NSC Directive No.20: The Policy and Mechanism on National Disaster and Relief Management, March 2012)  
*Peraturan Tetap Operasi Bagi Bencana Minyak, Gas dan Petrokimia, September 2004* (Standard Operating Procedure for Oil, Gas and Petrochemical Disasters, September 2004)

 <b>PETRONAS</b>	<b>OIL SPILL CONTINGENCY PLANNING</b>	PTS 18.41.01
		March 2016
		Page 24 of 43

## **APPENDIX A: QUANTITATIVE OIL SPILL RISK ASSESSMENT**

Quantitative oil spill risk assessment is conducted to estimate quantitatively the worst case scenario of an oil spill that may occur as a result of OPU / JV / CPO / Business operations. Outcome of the assessment should be used as a basis in developing oil spill response capability in addition to the minimum requirement set by JAS and best industrial practices.

The assessment should consider meteorological factors affecting the spill including rate of evaporation and tendency of dispersion. Rate of dispersion will generally provide responders with information of the duration that oil will turn into tar balls and outlines the time limit of the use of dispersant as response strategy. The meteorological information is also useful to assist OPU / JV / CPO / Business in strategizing the type and size of equipment to be purchased for their operations, e.g. for open waters (high wave and swell) – offshore type of boom, for tropical areas (high rate of evaporation) – skimmers with screw pump.

The assessment should be carried out by competent personnel / consultant approved by GHSE.



**APPENDIX B: OIL SPILL RESPONSE CAPABILITY ASSESSMENT CHECKLIST**

Oil Spill Response Plan / Procedure					
No	Requirements	Compliance			Remarks / Findings / Evidence
		Y	N	N/A	
1.	Oil spill risk assessment carried out has taken into consideration credible scenario.				
2.	Potential high risk areas within the facilities have been identified.				
3.	Environmental sensitive areas within the vicinity of the facilities have been identified.				
4.	Integrated with Environmental Management System (ISO14001).				
5.	Oil Spill Response Plan (OSRP) is available as per PTS 18.41.01 Oil Spill Contingency Planning Guideline requirement.				
6.	OSRP custodian identified and distribution list available.				
7.	OSRP reviewed once in every 3 years or as and when necessary.				
8.	Three-tiered response protocol are identified with clear demarcation of response control.				
9.	Linkage and integration with local authorities / host government on OSR are clearly defined.				
10.	Incident Action Plan (IAP) for every credible scenarios are developed and updated.				

Oil Spill Response Plan / Procedure					
No	Requirements	Compliance			Remarks / Findings / Evidence
		Y	N	N/A	
11.	OSRP is integrated with the Emergency Response Plan (ERP) and vice versa.				
12.	Oil spill response activation flowchart / procedure is available.				
13.	OSRT structure has been established.				
14.	Roles and responsibilities of OSRT are clearly defined.				
15.	Initial emergency notification to management and relevant authorities has been established and maintained.				
16.	Oil spill surveillance and site assessment has been established.				
17.	Procedure on approval from authority for the usage of dispersant available.				
18.	Dispersant approval letter and SDS available.				
19.	Post emergency procedures (e.g. notification of stand down to relevant authorities, temporary storage, disposal and post spill cleanup) are established.				
20.	OSRT training matrix has been established and maintained.				

Oil Spill Response Plan / Procedure					
No	Requirements	Compliance			Remarks / Findings / Evidence
		Y	N	N/A	
21.	OSR training has been provided to OSC and OSRT.				
22.	OSRT conducts OSR drill as per IAP once in every 2 months.				
23.	Emergency Control Center (ECC) is equipped with relevant oil spill scenario information (ESI, marine chart, trajectory modelling, etc.)				
24.	Oil spill response capability assessment (equipment) has been conducted (date).				
25.	List of OSR equipment (inventory list) is available.				
26.	List and contact numbers of OSR contractors / special services (e.g – PIMMAG, OSRL) are developed and maintained.				
27.	List and contact numbers of mutual aid / relevant authorities (e.g – JAS, Jabatan Laut) are developed and maintained.				

## APPENDIX C: ACTIVATION OF OSR SERVICE PROVIDERS

### Activation of PIMMAG:

Petroleum Industry of Malaysia Mutual Aid Group (PIMMAG) assistance may be required for Tier 2 Oil Spill Emergencies (Domestic Operations):

**Step 1 :** Contact PIMMAG through these emergency telephone numbers:

Activation Hotline : **019-313 1631** or **019 - 350 0197**

**Step 2 :** Complete the following forms for formal communication:

- Alert PIMMAG for OSR resources to be ready (Form A)
- Request for PIMMAG OSR equipment to be mobilised (Form B)
- Other forms as required:
- Notification to PIMMAG on stand-down of manpower & equipment (Form C)
- Notification to PIMMAG on transfer of OSR call-out responsibility (Form D)

Refer website: **www.pimmag.com.my** for more info.

### Activation of OSRL:

Oil Spill Response Limited (OSRL) assistance may be required for Tier 2 Oil Spill Emergencies (Domestic / International Operations):

**Step 1 :** Contact OSRL through these emergency telephone numbers:

<b>EUROPE, MIDDLE EAST, AFRICA:</b> <b>+44 (0)23 8033 1551</b>
<b>ASIA PACIFIC: +65 6266 1566</b>
<b>AMERICAS: +1 954 983 9880</b>

**Step 2 :** Complete the following forms for formal communication:

- Notification Form (Initial Incident Information)
- Mobilisation of Oil Spill Response Limited Form
- Oil Spill Model Request Form (if required)

Refer website: **www.oilspillresponse.com** for more info.

 <b>PETRONAS</b>	<b>OIL SPILL CONTINGENCY PLANNING</b>	PTS 18.41.01
		March 2016
		Page 29 of 43

#### APPENDIX D: MALAYSIAN NATIONAL OIL SPILL THREE-TIER EMERGENCY MANAGEMENT

OPU / JV / CPO / Business / HCU OSR plans shall be integrated with the Malaysian Government tiered response system as defined in its National Oil Spill Contingency Plan (NOSCP):

- i. **Tier 1 – Local Response:** Small spill within port limit and clean-up action will be undertaken by the operator of the ports, terminals, platforms offshore structures or depots where the spill originates. Oil spill response measures taken shall utilise the existing local resources.
- ii. **Tier 2 – State Response:** Tier 2 oil spill response will be activated by the Chairman of SOCC when resources of Local Response are exhausted and external assistance is deemed necessary. The same applies to an oil spill that has spread beyond the coverage of state boundary local plan. Assistance will be coordinated by the respective SOCC based on a respective State's plan.
- iii. **Tier 3 – National Response:** Tier 3 response is for major oil spill incident where resources in the country can no longer cope and / for any oil spill that affects common / trans-boundary. Coordination at international level will be undertaken by NOCC lead by the Director General of Jabatan Alam Sekitar (JAS), Malaysia.

## APPENDIX E: PROPOSED OIL SPILL RESPONSE PLAN CONTENT

Review Procedures Record of Amendments Plan Distribution Electronic Plan Access Policy on HSE & Crisis Management Table of Contents	
<b>SECTION 1.0</b>	<b>RESPONSIBILITY AND PLANNING SYSTEMS</b>
	1.1 Purpose and Objectives <ul style="list-style-type: none"> <li>1.1.1 Statement of Primary Purpose</li> <li>1.1.2 Onshore Spill Response Support</li> <li>1.1.3 Multi-Tiered Oil Spill Response Philosophy</li> <li>1.1.4 Response Management System</li> </ul> 1.2 Scope/Area of Responsibility <ul style="list-style-type: none"> <li>1.2.1 Applicability and Exclusions</li> <li>1.2.2 Geographic Response Area</li> </ul> 1.3 Certification of Responsibility and Resources <ul style="list-style-type: none"> <li>1.3.1 Financial Responsibility</li> <li>1.3.2 Contracted or Available Response Resources</li> </ul> 1.4 Relationship to Other Plans <ul style="list-style-type: none"> <li>1.4.1 National Response Framework <ul style="list-style-type: none"> <li>1.4.1.1 National Contingency Plan (e.g. NOSCP)</li> <li>1.4.1.2 National Security Council (NSC) – (e.g. MKN 20)</li> </ul> </li> <li>1.4.2 State Government Plans (e.g. PTPP)</li> <li>1.4.3 Company Emergency Response Plans (ERP)</li> </ul> 1.5 Regulatory Cross-Reference Table
<b>SECTION 2.0</b>	<b>RESPONSE ORGANIZATION</b>
	2.1 Incident Commanders/Qualified Individuals 2.2 Spill Management Team Tier Structures <ul style="list-style-type: none"> <li>2.2.1 Tier 1 Spill Management Team</li> <li>2.2.2 Tier 2 Spill Management Team</li> <li>2.2.3 Tier 3 Spill Management Team</li> <li>2.2.4 Source Control Organization</li> </ul> 2.3 Roles and Responsibilities 2.4 Unified Command 2.5 Incident/Crisis Management Team
<b>SECTION 3.0</b>	<b>OIL SPILL RESPONSE ACTIONS</b>
	3.1 Initial Response Actions <ul style="list-style-type: none"> <li>3.1.1 Action Sequence and Strategy</li> <li>3.1.2 Qualified Individual Initial Actions</li> </ul> 3.2 Health and Safety Assessment

	OIL SPILL CONTINGENCY PLANNING	PTS 18.41.01
		March 2016
		Page 31 of 43

	3.3 General Response Actions, Priorities and Objectives 3.4 Source Control 3.4.1 Production Facility Source Control 3.4.2 Pipeline / Flow line Source Control 3.4.3 Well Source Control 3.5 Spill Assessment 3.5.1 Initial Assessment Activities 3.5.2 Spill Trajectories/Modelling 3.5.3 Limited Visibility Spill Location/Tracking 3.5.4 Aerial Surveillance 3.5.5 Oceanographic and Meteorological Information 3.6 Response Facilities 3.6.1 Pre-Designated Incident Response Facilities 3.7 Response Information Management 3.7.1 Common Operating Picture 3.7.2 Simultaneous Operations
SECTION 4.0	NOTIFICATION AND CONTACT INFORMATION
	4.1 General Notification Information 4.2 Government Reporting Requirements 4.3 Internal Reporting Requirements 4.4 Supplemental Notifications 4.5 Spill Management Team Alert Procedures 4.6 Notification Forms
SECTION 5.0	RESPONSE RESOURCES
	5.1 Resource Contact Information 5.2 Resource Inventories and Mobilization Times 5.3 Source Control Resources 5.3.1 General Source Control Resources 5.3.2 Sub-Sea Well Containment or Capping 5.4 Escalating Resources 5.4.1 Tier 1 5.4.2 Tier 2 5.4.3 Tier 3 5.5 Equipment Maintenance and Readiness 5.6 Vessels of Opportunity (VOO) 5.7 Support Resources 5.8 Volunteers 5.9 Specialized Expertise

 <b>PETRONAS</b>	<b>OIL SPILL CONTINGENCY PLANNING</b>	PTS 18.41.01
		March 2016
		Page 32 of 43

<b>SECTION 6.0</b>	<b>SPECIFIC RESPONSE STRATEGIES</b>
	<ul style="list-style-type: none"> <li>6.1 On-Water Response <ul style="list-style-type: none"> <li>6.1.1 Offshore Sensitive Areas</li> <li>6.1.2 Mechanical Containment and Recovery Guidelines <ul style="list-style-type: none"> <li>6.1.2.1 Mechanical Containment and Recovery Strategies</li> </ul> </li> <li>6.1.3 Dispersants <ul style="list-style-type: none"> <li>6.1.3.1 Dispersant Strategies</li> </ul> </li> <li>6.1.4 In-Situ Burning <ul style="list-style-type: none"> <li>6.1.4.1 In-Situ Burning Strategies</li> </ul> </li> <li>6.1.5 On-Water Alternative Technologies</li> </ul> </li> <li>6.2 Shoreline Response <ul style="list-style-type: none"> <li>6.2.1 Shoreline/Sensitive Area Protection <ul style="list-style-type: none"> <li>6.2.1.1 Sensitive Area Identification</li> <li>6.2.1.2 Protection Prioritization</li> <li>6.2.1.3 Protection Techniques</li> <li>6.2.1.4 Tactical/Geographical Response Plans</li> </ul> </li> <li>6.2.2 Shoreline Clean Up <ul style="list-style-type: none"> <li>6.2.2.1 Shoreline Clean Up Assessment Team</li> <li>6.2.2.2 Techniques and Implementation</li> </ul> </li> <li>6.2.3 Shoreline Alternative Technologies</li> </ul> </li> <li>6.3 Wildlife Protection and Rehabilitation <ul style="list-style-type: none"> <li>6.3.1 Wildlife Protection</li> <li>6.3.2 Surveys</li> <li>6.3.3 Rescue and Rehabilitation</li> </ul> </li> </ul>
<b>SECTION 7.0</b>	<b>DECONTAMINATION, WASTE MANAGEMENT AND DISPOSAL</b>
	<ul style="list-style-type: none"> <li>7.1 Decontamination</li> <li>7.2 Waste Management <ul style="list-style-type: none"> <li>7.2.1 Regulatory Requirements/Characterization</li> <li>7.2.2 Waste Management Plan</li> <li>7.2.3 Interim Storage and Segregation</li> <li>7.2.4 Recovered Oil Accounting/Tracking</li> <li>7.2.5 Decanting</li> <li>7.2.6 Treatment</li> </ul> </li> <li>7.3 Disposal</li> </ul>
<b>SECTION 8.0</b>	<b>DEMOBILIZATION</b>
	<ul style="list-style-type: none"> <li>8.1 Demobilization <ul style="list-style-type: none"> <li>8.1.1 Check-Out Procedures</li> </ul> </li> <li>8.2 Response Debrief/Critique</li> </ul>



SECTION 9.0	REFERENCES
	<p>Appendix:</p> <ul style="list-style-type: none"> <li>A -Health and Safety Guidelines</li> <li>B -Facility Descriptions</li> <li>C -Communications</li> <li>D -Documentation</li> <li>E -Public Information and External Relations</li> <li>F -Risk Assessment and Scenario Planning</li> <li>G -Training, Drills and Exercises</li> <li>H -Prevention and Detection</li> <li>I -Definitions and Acronyms</li> </ul>

	OIL SPILL CONTINGENCY PLANNING	PTS 18.41.01
		March 2016
		Page 34 of 43

## APPENDIX F: OIL SPILL RESPONSE STRATEGIES

### Philosophy

The goal of oil spill response is to minimize the overall impacts on natural and economic resources, some resources will be of greater concern than others; and response options offering different degrees of resource protection will be selected accordingly. Decisions regarding clean-up method(s) must balance two factors:

- i. Potential environmental impacts with the no-action alternative; and
- ii. Potential environmental impacts associated with a response method or group of methods.

Potential impacts can be determined before considering the need for, or type of, response strategies. For example, evaluating a gasoline spill in an exposed seawall environment might lead to the conclusion that, due to evaporation and low habitat use, minimal environmental effects will occur and further evaluation is unwarranted. On the other hand, assessing a spill of a middle-weight crude oil in a soft inter-tidal area would likely indicate a high potential for environmental effects; therefore, response methods would need to be evaluated.

The decisions to select response methods should consider the potential of each possible method for reducing the environmental consequences of the spill and the response (including a natural recovery alternative). The method, or combination of methods, that most reduces consequences effectively, should be the preferred response strategy. A method that increases impacts in the short term can be the preferred alternative if it speeds up recovery. (Recovery cannot be defined as pre-spill conditions since natural changes in biological communities will introduce variability to organisms affected by the spill).

The environmental consequences of a spill and the response will depend on the specific spill conditions, such as the type and amount of oil, weather conditions, habitat where the spill occurred and effectiveness of the response methods. It is imperative that planners and responders discuss and develop resource protection priorities during contingency planning so that valuable time is not lost during an actual response.

For further reading on oil spill response strategies, please refer to IPIECA Report Series at [www.ipieca.org](http://www.ipieca.org)

### Decision Making Tools

#### **Environmental Sensitivity Index (ESI) Maps**

ESI maps provide a concise summary of coastal resources that are at risk if an oil spill occurs nearby. Examples of at risk resources include biological resources (such as birds and shellfish beds), sensitive shorelines (such as marshes and tidal flats), and human-use resources (such as public beaches and parks). When an oil spill occurs, ESI maps can help responders meet one of the main response objectives; reducing the environmental consequences of the spill and the clean-up efforts.

	<b>OIL SPILL CONTINGENCY PLANNING</b>	PTS 18.41.01
		March 2016
		Page 35 of 43

Additionally, ESI maps can be used by planners before a spill happens to identify vulnerable locations, establish protection priorities and identify clean-up strategies.

Key features of ESI maps and data:

- i. Uses Global Information System (GIS) techniques to integrate maps of a region with geographically-referenced biological resources, human-use resources, and ESI-classified shorelines that are ranked based on their sensitivity to oiling.
- ii. Contains a summary view of ESI data on the back of the paper map, and GIS versions of the ESI data that can be used for more complex queries.
- iii. Serves as a quick reference for oil spill responders and coastal zone managers.
- iv. Available as a single map, or a regional collection of maps called an ESI atlas.
- v. Available in print and electronic formats.

#### **Shoreline Clean-up Assessment Technique (SCAT)**

As part of oil spill response, Shoreline Clean-up Assessment Technique (SCAT) systematically surveys the affected area by the spill to provide rapid accurate geo referenced documentation of shoreline oiling conditions. SCAT will be undertaken by an appointed team trained for the job.

This information is used to develop real-time decisions and to expedite shoreline treatment planning and response operations. A SCAT program includes field assessment surveys, data management, and data application components as part of the spill management organization. The field survey teams use specific and standard terminology to describe and define shoreline oiling conditions. The SCAT process itself, however, is flexible, and the assessment activities are designed to match the unique spill conditions.

The systematic approach provides for consistent data collection. This allows a comparison of data and observations between different sites, between different observers, and between the same sites over time. These data also provide the basis for cleanup evaluation. In most surveys, the SCAT teams complete forms and sketches for each segment in the affected area. A SCAT proforma is used for documentation.

SCAT surveys provide a geographic or spatial description and documentation of the shoreline or oiling conditions. Frequently, SCAT teams are asked to provide recommendations regarding appropriate clean-up methods and to define constraints or limitations on the application of clean-up techniques, so that the treatment operations do not result in additional damage to the shoreline.

#### **Oil Spill Trajectory Model**

During an oil spill response, trajectory models are used to predict the future movement and fate of spillage (forecast mode). This information is used for planning purposes to position equipment and response personnel in order to optimize a spill response. Oil spill trajectory models can be used in a statistical manner (stochastic mode) to identify the areas that may be impacted by oil spills.

	<b>OIL SPILL CONTINGENCY PLANNING</b>	PTS 18.41.01
		March 2016
		Page 36 of 43

In those cases where the degree of risk at various locations from an unknown source is needed, trajectory models can be used in an inverse mode to identify possible sources of the pollution (receptor mode). Oil spill trajectory models are used in the development of scenarios for training and exercises. The use of models allows the scenario designer to develop incidents and situations in a realistic manner.

### **Net Environmental Benefit Analysis (NEBA)**

Net environmental benefits are the gains in environmental services or other ecological properties attained by actions, minus the environmental injuries caused by those actions. A Net Environmental Benefit Analysis (NEBA) is a methodology for comparing and ranking the net environmental benefit associated with multiple management alternatives. NEBAs can be conducted for a variety of stressors and management options, including chemical contaminant mitigation, hydropower mitigation, global climate change mitigation (e.g., carbon sequestration), etc.

NEBA for contaminated sites typically involves the comparison of the following management alternatives:

- i. Leaving contamination in place;
- ii. Physically, chemically, or biologically remediating the site through traditional means;
- iii. Improving ecological value through onsite and offsite restoration alternatives that do not directly focus on removal of chemical contamination; or
- iv. A combination of those alternatives.

NEBA involves goals that are common to both Natural Resource Damage Assessment (NRDA) and remedial alternatives analysis and related legislative requirements, e.g., valuing ecological entities, assessing adverse impacts, and evaluating restoration options. Primary information gaps related to NEBA include: non-monetary valuation methods, exposure-response models for all stressors, the temporal dynamics of ecological recovery, and optimal strategies for ecological restoration.

### Alternate Strategy

#### **Use of Dispersant**

Dispersants are used in response to oil spills to prevent oil from reaching the shorelines and environmentally sensitive areas. With proper execution of Oil Spill Contingency Plans, prevailing waves and mixing energy aids in the break-up and dispersion of oil into finer droplet in the sea water column where dissolution takes place by sea current and eventually undergoes bio-degradation and dissolution.

Ideally, removal of oil from marine environment via mechanical recovery is the most preferred environmental option, however constraints and limitations such as adverse weather conditions, equipment availability and prompt deployment of containment and recovery systems offshore make the use of dispersants an important option for dealing with oil spills upfront.

	<b>OIL SPILL CONTINGENCY PLANNING</b>	PTS 18.41.01
		March 2016
		Page 37 of 43

Although the use of dispersants can be considered at the earliest stage of an oil spill response operations, the decision to apply it shall be made only after NEBA has been carried out. In addition consideration should also be given to the properties of oil spilled, degree of weathering, prevailing wind condition and location of spill. Prior advice should be sought from third party service providers, such as PIMMAG and OSRL on the optimum clean-up operation. For more in depth information Refer PTG 18.74.02 Use of Oil Spill Dispersants.

### **HNS Spill**

PETRONAS handles Hazardous and Noxious Substances (HNS) as part of its daily operation at facilities and transportation vessels. OPU / JV / CPO / Business shall respond to spills / leaks involving HNS as defined in the OPRC-HNS 2000 protocol.

The actions and tasks by HNS spill / leak responders shall be jointly coordinated to assure the health and safety of the public, facilities operators, vessel crews & emergency responders and mitigate the effects of spill / leak to the environment by performing appropriate response. The responders may consist of several teams such as:

- i. Oil spill response team
- ii. Emergency response service providers
- iii. Local HNS / HAZMAT Team
- iv. Port authorities
- v. Local authorities

#### APPENDIX G: SAMPLE OF OIL SPILL IAP

INCIDENT ACTION PLAN		OIL SPILL AT JETTY
<b>RESPONSE STRATEGY:</b> Stop or contain the leakage if possible - Inform OSC immediately - Inform loading operation - Activate mutual aid if necessary - Inform neighbouring vessel(s) to stop operation - Ensure all valves at jetty and shore tanks are closed - All personnel assemble at assembly area - Isolate all electrical supply to affected area - Standby Fire fighting equipment - Oil containment - Oil collection and skimming pumps		
IMMEDIATE RESPONSE	ACTIONS	RESOURCES REQUIRED
<ul style="list-style-type: none"> <li>First Observer</li> <li>Communication / Security</li> <li>OSC</li> <li>OSRT members</li> <li>Traffic Control</li> </ul>	<ul style="list-style-type: none"> <li>Stop or contain the leakage i.e close the valve if it does not pose any danger. Inform OSC. Inform vessel crew to stop product loading. Close all valves at jetty</li> <li>Notify JAS and other relevant parties (upon instruction from OSC)</li> <li>Inform neighbouring vessel(s) to stop operation. Inform Port Authority to activate mutual aid if necessary. Assemble the OSRT</li> <li>Quickly assemble at assembly point for further instruction from OSC</li> <li>Ensure drivers / operators to switch off engines and stop loading. Evacuation control upon instruction OSC (personnel and vehicle). Conduct head count. Traffic control. Prevent unauthorized personnel from entering the terminal. Log all incident events</li> </ul>	<ul style="list-style-type: none"> <li>Nearest Emergency Shutdown Valve (ESV), Walkie – Talkie</li> <li>Telephone, Computerized Fire Alarm Monitoring System (CMS).</li> <li>Walkie-Talkie, Emergency Contact Number, Alarm System</li> <li>None</li> <li>Head Count board, Safety Cone, Walkie Talkie, Hailer, Terminal Name List, Punch Card, Incident event log book.</li> </ul>

 <b>PETRONAS</b>	<b>OIL SPILL CONTINGENCY PLANNING</b>	PTS 18.41.01
		March 2016
		Page 39 of 43

1ST RESPONSE	ACTIONS	RESOURCES REQUIRED
<ul style="list-style-type: none"> <li>• OSC</li> <li>• OSRT members</li> <li>• Security / Staging Area Team</li> <li>• OSC</li> </ul>	<ul style="list-style-type: none"> <li>• Assess information/situation base on 360° wind direction and tidal condition. Decide on the action to be taken. Determine the hazardous zone</li> <li>• Close all valves at storage tanks. Standby Fire fighting equipment. Mobilize OSR equipment. Oil containment. Oil skimming and collection. Oil dispersant application. Mobilize portable fire fighting equipment (if necessary)</li> <li>• Set up staging area. Provide initial briefing of the incident to responding agencies. Direct and provide safe access of emergency vehicles to site. Record all resources available</li> <li>• Inform Line Managers, Managers in charge, Business Head, Senior Manager HSE, MD/CEO. Inform COMCEN. Inform PIMMAG for assistant and advice if local OSR equipment is insufficient to contain the oil spill Brief JAS, PIMMAG and other relevant authority on all relevant terminal information</li> </ul>	<ul style="list-style-type: none"> <li>• Gas Detector, P &amp; ID, Layout Plan, Emergency contact list, Wind sock, Foam calculation Table, Manning, Resource matrix document, CCTV, Walkie Talkie, Loud Hailer, Marine Chart (Tidal Condition)</li> <li>• Solid Foam Boom, Floating oil storage tank, Dispersant sprayer (c/w gun, Air Blower and hoses), Skimmer system (c/w diesel driven power pack, transfer pump, hydraulic hoses and suction hose), Oil storage tank, Boat (pilot and tug boat) Walkie Talkie</li> <li>• Status board, Loud Hailer, Canopy/umbrella, White board marker</li> <li>• Incident notification form, emergency Contact list, telephone, resource matrix document</li> </ul>

	OIL SPILL CONTINGENCY PLANNING	PTS 18.41.01
		March 2016
		Page 40 of 43

2ND RESPONSE	ACTIONS	RESOURCES REQUIRED
<ul style="list-style-type: none"> <li>• IC</li> </ul>	<ul style="list-style-type: none"> <li>• Activate Tier 2 Emergency upon advise by Operations Chief. Establish Regional EMT command centre. Assess additional resource requirements. Manage all enquiries and welfare of all personnel. Activate Business Continuity Plan (BCP)</li> </ul>	<ul style="list-style-type: none"> <li>• Emergency Response Plan, Emergency Control Centre, Resource Matrix, BCP Document</li> </ul>
<p><b>OTHER ACTIONS / CONCERNS:</b></p> <p>Only explosion proof and pneumatic pumps should be used during oil spill.</p> <p>If there is BOMBA fire engine for standby, the fire engine must be parked at least 50 meter away from spillage location.</p> <p>Vehicles, pumps or compressors used during oil spill recovery shall be equipped with 'spark arrestor'.</p> <p>If foam application needed, the application shall only begin once sufficient quantity of foam available at site. Foam shall be applied until sufficient and stable foam layer has been produced. Insufficient foam quantity and instable foam layer will reduce the foam layer's vapor suppression capability. This will lead to burn back and earlier foam application will be wasted. Foam application need to be applied as smooth as possible to avoid any disruption to foam layer. Foam application shall be carried out in optimum manner to minimize negative impact to the environment.</p>		
<p><b>ONGOING POTENTIAL HAZARDS:</b></p> <p>Oil Spill Response Team (OSRT) shall be at all-time on alert for any possibility of fire breakout.</p> <p>OSRT will experience fatigue during long hour of oil spill response. This may lead to ineffective oil spill recovery. Prudent manpower management to be expedited to manage this potential hazard. Sufficient food and drinks supplied to OSRT shall be in place. OSRT shall work on rotation basis to avoid severe fatigue.</p>		



	OIL SPILL CONTINGENCY PLANNING	PTS 18.41.01
		March 2016
		Page 41 of 43

## APPENDIX H: PROPOSED OIL SPILL RESOURCE MATRIX

### People resources

- i. Emergency focal person contact list
- ii. SME contact numbers
- iii. Authorities contact numbers, e.g. Police, BOMBA, JAS, APMM etc.
- iv. Advisor e.g. PIMMAG & OSRL
- v. Stakeholder

### Equipment resources

- i. Oil Spill containment and retrieval equipment
- ii. Service provider, e.g. PIMMAG & OSRL

### Others

- i. Laboratory for oil spill sample test

#### APPENDIX I: ROLES OF OSRT

	ROLES
<b>OSRT Leader</b>	<ul style="list-style-type: none"> <li>• Act as directed by OSC</li> <li>• Oversee all oil spill response activities</li> <li>• Ensure activities are done safely and efficiently as indicated in IAP</li> </ul>
<b>Recovery</b>	<ul style="list-style-type: none"> <li>• Act as directed by OSRT Leader</li> <li>• Mobilize and deploy oil spill response equipment</li> <li>• Contain and recover oil</li> <li>• Apply appropriate safety measure during recovery operation</li> </ul>
<b>SCAT</b>	<ul style="list-style-type: none"> <li>• Act as directed by OSRT Leader</li> <li>• Conduct SCAT if necessary</li> <li>• Conduct shoreline cleaning operation if necessary</li> <li>• Work together with authorities or Non-Governmental Organization (NGO) to conduct operation</li> </ul>
<b>Disposal</b>	<ul style="list-style-type: none"> <li>• Act as directed by OSRT Leader</li> <li>• Collect spilled product by using suitable equipment and personal protective equipment (PPE)</li> <li>• Store the spilled product as required by authority</li> <li>• Dispose the spilled product by appointing authorized contractor</li> <li>• Dispose the used PPE and response equipment (disposable type)</li> </ul>
<b>Decontamination</b>	<ul style="list-style-type: none"> <li>• Act as directed by OSRT Leader</li> <li>• Rescue contaminated animals</li> <li>• Provide temporary shelter for animals before decontamination process</li> <li>• Identify plans for decontamination</li> <li>• Conduct decontamination process by using suitable equipment and chemical</li> </ul>
<b>Protection</b>	<ul style="list-style-type: none"> <li>• Act as directed by OSRT Leader</li> <li>• Control spilled oil from entering public area and sensitive area</li> <li>• Monitor predicted movement of spillage</li> <li>• Apply only approved dispersant if necessary to disperse oil</li> </ul>

#### APPENDIX J: IMO RECOMMENDATION FOR OSR TRAINING

PERSONNEL	TRAINING PROGRAMMES	CONTENT
Oil Spill Response Team (OSRT)	Level 1 – Oil Spill Response Training and Field Responders	<ul style="list-style-type: none"> <li>• Overview of Oil Spill Response</li> <li>• Oil Spill Properties, Behaviour and Fate</li> <li>• Health, Safety and Environment Impact of Oil Spill</li> <li>• Response Organization and Control Strategies</li> <li>• Oil Boom, Failures of Boom, Boom Selection, Deployment, Recovery and Configurations of Booms</li> <li>• Recovery Devices and Sorbents</li> <li>• Deployment and Operation of Various Skimmer Types</li> <li>• Storage, Transportation and Disposal of Recovered Oil</li> <li>• Use of Chemical</li> <li>• Storage, Maintenance and Cleaning of Equipment</li> <li>• National Oil Spill Contingency Plan</li> </ul>
Emergency Management Team (EMT)	Level 2 – Oil Spill Response Training for Supervisors and Incident Commanders	<ul style="list-style-type: none"> <li>• Overview of Oil Spill</li> <li>• Oil Spill Properties, Behaviour and Fate</li> <li>• Spill Assessment</li> <li>• Containment and Protection Booming</li> <li>• Recovery of Oil Spill</li> <li>• Chemical Dispersion</li> <li>• Shoreline Clean-up</li> <li>• Waste Management</li> <li>• Contingency Planning</li> <li>• National Oil Spill Contingency Plan</li> <li>• Managing Health and Safety</li> <li>• Liability and Compensation</li> <li>• Communications</li> <li>• Response Deactivation and Post Incident Debrief</li> <li>• Oil Spill Case Study</li> </ul>