Sakhalin Energy Investment Company, Ltd.

OIL SPILL PREVENTION AND RESPONSE PLAN FOR PRIGORODNOYE ASSET ONSHORE OPERATIONS

2013
«Approved / УТВЕРЖДАЮ»
CEO Sakhalin Energy /
Главный исполнительный
директор «Сахалин Энерджи»

Roman Dashkov/ Р.Ю. Дашков
«28» июня 2013 г.

Stamp / М.П
Компания «Сахалин Энерджи Инвестишн Компани Лтд.», имеющая филиал в г. Южно-Сахалинске
Company "Sakhalin Energy Investment Company Ltd." with branch in Yuzhno-Sakhalsk

ПРИКАЗ/ORDER
No. 2013-17-17-OR-0043-D

Дата/Date: 28 июня 2013 г.
28 June 2013

"О введении в действие Плана по предупреждению и ликвидации разливов нефти и нефтепродуктов для береговых объектов ПК «Пригородное».
"About activation of Oil Spill Prevention and Response Plan for Prigorodnoye Asset Onshore Operations".

Статус: ДИ

В соответствии с требованиями приказа МЧС России от 28 декабря 2004 года № 621,
To meet the requirements of the Russian MChS Executive Order No.621, dated 28 December 2004,

ГРИКАЗЫВАЮ:

Ввести в действие «План по предупреждению и ликвидации разливов нефти и нефтепродуктов для береговых объектов ПК «Пригородное» с 28 июня 2013 г.

Установить срок действия Плана 5 лет.
To set a term of the Plan as 5 years.

Дашков Р.Ю. / Roman Dashaov,
Главный исполнительный директор «Сахалин Энерджи» /
Chief Executive Officer of "Sakhalin Energy"

С приказом ознакомлен
I am aware of the Order
Личная подпись
Employee’s signature
Дата/Date

Питер Норман / Peter Norman

Гутник А.Н. / Alexander Gutnik

Город/City: Южно-Сахалинск/ Yuzhno-Sakhalsk
Исполнитель/Prepared by: Петр Пак / Petr Pak
Телефон/Phone: 66 46 13, 29 99 79

Page 1 of 1
Approved by the Emercom of Russia on March 12, 2013

Approval letter No 22-2-312 signed by K.I.Bekov Chief of the Emercom of Russia Department for Federal Support of the Territories

(Emercom of Russia)
3 Teatralny proezd, Moscow, 109012
Tel.: 626-39-01; fax: 624-19-46
Teletype: 114-833 “OPERON”
E-mail: info@mchs.gov.ru

12.03.2013 No.22-2-312
to No. 116 of 21.02.2013

P.N.Stadnik
Director
Sakhalin Branch of OAO CREO (Centre for Rescue and Environmental Operations)
10 Im.A.Buyukly Str., Yuzhno-Sakhalinsk, 693007

Sakhalin Energy Investment Company Ltd.
31 Novinsky Boulevard, Moscow, 123242

Far Eastern Regional Centre of Emercom of Russia
Main Department of Emercom for the Sakhalin Oblast


Based on the deliverables, the Plans are approved. I request to put the Plans in force in due order and in accordance with Section II of Appendix No.1 to the Rules for Development and Approval of the Guidelines for Development and Approval of Oil Spill Prevention and Response Plans in the Russian Federation (approved by Emercom of Russia Order No. 621 of December 28, 2004).

Please inform us separately on the fact of putting the Plans in force.

To master the Plans and oil spill response teamwork and check the engaged resources for sufficiency, as required by Para. 8 of RF Government Decree No.613 of
August 21, 2000, On Prompt Measures for Prevention and Response to Emergency Oil and Petroleum Products Spills, it is necessary to plan and conduct exercises with the participation of the representatives of the Emercom of Russia and/or its territorial units and the concerned federal executive authorities and KChS of the RF constituent entity.

The concept of the exercises shall be based on the maximum possible oil spill predicted by the Plans.

Before the above measures are taken, it is necessary to submit to the DFST the exercise plan and concept agreed with the territorial units of the Emercom of Russia.

Based on the exercise results, please submit to the DFST the Exercise Reports containing the conclusion as to whether the resources of the emergency response team engaged are sufficient and prepared to contain and clean up the oil spills predicted by the Plans.

The Exercise Reports shall be signed by You, the representatives of the territorial units of the Emercom of Russia (the regional centre and Main Department of the Emercom of Russia), concerned federal authorities, who have participated in the exercises, approved by the Chairman of the KChS of the RF constituent entity and agreed with the chiefs of the territorial units of the Emercom of Russia (the regional centre and Main Department of the Emercom of Russia).

/signed/
K. I. Bekov
Chairman
Chairman of the Commission for Organizational/Methodological Management and Planning of Oil Spill Emergency Prevention and Response Measures, Chief of the Department for Federal Support of the Territories

S.D. Maier
(495)276-46-41 ext. 93-84
Approved by RF Ministry of Energy Order No.286 of June 02, 2013

Approval letter No 05-565 signed by A.Ye.Savinov, Deputy Director of the Oil and Gas Production and Transportation Department of the Ministry of Energy of the Russian Federation

Ministry of Energy of the Russian Federation
(MINENERGO of RUSSIA)
Oil and Gas Production and Transportation Department
42 Schepkina Str., Moscow, 107996

03.06.2013 No.05-565

to No. _____________

OAO CREO (Centre for Rescue and Environmental Operations)
10 Im.A.Buyukly Str., Yuzhno-Sakhalinsk, 693007

The Oil and Gas Production and Transportation Department hereby informs that the Oil Spills Prevention and Response Plan for Lunskoye Offshore Operations was approved by RF Ministry of Energy Order No.286 of June 3, 2013.

/signed/
A.Ye.Savinov
Deputy Director

V.A. Gontar
8-495-631-88-43
Agreed Upon by Sakhalin Oblast KChS & FS Order No. 123 of June 11, 2013

SAKHALIN OBLAST COMMISSION FOR PREVENTION OF AND RESPONSE TO EMERGENCIES AND FIRE SAFETY MANAGEMENT

ORDER

June 11, 2013 Yuzhno-Sakhalinsk No.123


1. To agree upon the Sakhalin-Energy Investment Company Ltd.-submitted:
   - Oil Spills Prevention and Response Plan for Piltun-Astokh Offshore Operations;
   - Oil Spills Prevention and Response Plan for Lunskoye Offshore Operations;
   - Oil Spills Prevention and Response Plan for Onshore Processing Facility Site Operations;
   - Oil Spills Prevention and Response Plan for Onshore Pipeline Operations;
   - Oil Spills Prevention and Response Plan for Prigorodnoye Asset Offshore Operations;
   - Oil Spills Prevention and Response Plan for Prigorodnoye Asset Onshore Operations.

2. The approved copies of the Plans shall be submitted to the Sakhalin Oblast Main Department of the Emercom of Russia.

3. The control over the implementation of this Decree shall be imposed on the Sakhalin Oblast Main Department of the Emercom of Russia (T.B.Kasayev).

/signed/

S.G.Sheredekin

Chairman of the Commission For Prevention Of And Response To Emergencies And Fire Safety Management, First Deputy of the Chairman of the Sakhalin Oblast Government
Agreed Upon by the Sakhalin Oblast Main Department of the Emercom of Russia on May 29, 2013
Letter No.5002 of May 29, 2013, signed by T.B.Kazayev, Chief of the Main Department

EMERCOM OF RUSSIA
SAKHALIN OBLAST MAIN DEPARTMENT OF THE MINISTRY OF THE
RUSSIAN FEDERATION FOR CIVIL DEFENCE, EMERGENCIES AND THE
ELIMINATION OF THE CONSEQUENCES OF NATURAL DISASTERS
(Sakhalin Oblast Main Department of the Emercom of Russia)
129 Lenina Str., Yuzhno-Sakhalinsk, 693000,
tel. 72-26-02, fax 72-63-85
E-mail: mchs@emercom.dsc.ru
May 29, 2013 No.6002
To No. 218 of April 16, 2013

R.Yu.Dashkov
Chief Executive Officer
Sakhalin Energy Investment Company Ltd.

Dear Roman Yurievich,

The Sakhalin Oblast Main Department of the Emercom of Russia has reviewed the submitted:
- Oil Spills Prevention and Response Plan for Piltun-Astokh Offshore Operations;
- Oil Spills Prevention and Response Plan for Lunskoye Offshore Operations;
- Oil Spills Prevention and Response Plan for Onshore Processing Facility Site Operations;
- Oil Spills Prevention and Response Plan for Onshore Pipeline Operations;
- Oil Spills Prevention and Response Plan for Prigorodnoye Asset Offshore Operations;
- Oil Spills Prevention and Response Plan for Prigorodnoye Asset Onshore Operations,

and, within its terms of reference, agreed upon them.

The approved copies of the Plans (on paper and electronic data media) and copies of the orders for putting them into force are requested to be submitted to the Sakhalin Oblast Main Department of the Emercom of Russia.

/signed/
T.B.Kasayev
Chief
Main Department

A.A. Sterligov
49-85-52

D:\Мои документы\Стерлигов\Доклады ЛАРН\2013 год\Планы ПЛРН\СЭИК.doc
<table>
<thead>
<tr>
<th>AGREED</th>
<th>AGREED</th>
</tr>
</thead>
<tbody>
<tr>
<td>/signed/</td>
<td>/signed/</td>
</tr>
<tr>
<td>N.V. Salayeva</td>
<td>D.Yu. Yakovlev</td>
</tr>
<tr>
<td>Sakhalin Oblast Ministry of Natural</td>
<td>Chief</td>
</tr>
<tr>
<td>Resources and Environment Protection</td>
<td>Sakhalin Department of RTN</td>
</tr>
<tr>
<td>&quot;_<strong>&quot;</strong>________, 2013</td>
<td>&quot;_<strong>&quot;</strong>________, 2013</td>
</tr>
<tr>
<td>Stamp</td>
<td>Stamp</td>
</tr>
</tbody>
</table>
Emergency dispatching service phone no:
Sakhalin Energy +7 (4242) 66 25 00

Sakhalin Energy Investment Company
35 Dzerzhinskogo Str.
Yuzhno-Sakhalinsk, 693020
**Observer (the first person to spot the spill)**
- Take steps to safely stop the release of oil.
- Eliminate all ignition sources.
- Prevent flow of oil or oil products in inland water bodies.
- Informs nearest Supervisor or Duty Operator.

**Duty Operator**
- Inform Site Controller, PTS, OPF, BS-2 control room of the spill.
- Inform facility personnel of the spill.
- Receives and relays reports during response.

**Shift Manager**
- Inform the public and personnel in the area of the spill.
- Assess situation (for safety and spill response) and take appropriate immediate actions to control the spill.
- Initiate immediate deployment of OSR resources if needed.
- Obtain details of spill and complete Form OSR-1.
- Contact Site Controller (send OSR-1).
- Keep SC informed of weather, position & condition of slick.
- Maintain a record of events.

**Emergency Control Centre**

**Site Controller**
- Inform EC (Vuzhno) of EO, Send Form OSR-1.
- Monitor response and liaise with ECT.
- Mobilize additional OSR resources if necessary.

**ECT/ECC**

**Emergency Coordinator**
- Call in Duty EC Team.
- Assess OSR-1 Form (discuss it with OIM if required).
- Instruct HSE Rep to dispatch OSR-1 Form as per oil spill reporting procedure.
- If necessary, activate ECT (numbers as required).
- In consultation with Shift Manager (SC) determine response Tier.
- Inform Crisis Manager of response Tier. If Tier 2 or Tier 3, confirm this with CM and advise EMERCOM.
- Initiate public health warnings if required.
- Commission trajectory modeling from HSES.
- Initiate aerial surveillance.
- Develop Incident Action Plan.
- Monitor the situation and modify response plan as needed.

**CMT**

**Yuzhno**

**Observer**
- Take steps to safely stop the release of oil.
- Eliminate all ignition sources.
- Prevent flow of oil or oil products in inland water bodies.
- Informs nearest Supervisor or Duty Operator.

**Duty Operator**
- Inform Site Controller, PTS, OPF, BS-2 control room of the spill.
- Inform facility personnel of the spill.
- Receives and relays reports during response.

**Shift Manager**
- Inform the public and personnel in the area of the spill.
- Assess situation (for safety and spill response) and take appropriate immediate actions to control the spill.
- Initiate immediate deployment of OSR resources if needed.
- Obtain details of spill and complete Form OSR-1.
- Contact Site Controller (send OSR-1).
- Keep SC informed of weather, position & condition of slick.
- Maintain a record of events.

**Emergency Control Centre**

**Site Controller**
- Inform EC (Vuzhno) of EO, Send Form OSR-1.
- Monitor response and liaise with ECT.
- Mobilize additional OSR resources if necessary.

**ECT/ECC**

**Emergency Coordinator**
- Call in Duty EC Team.
- Assess OSR-1 Form (discuss it with OIM if required).
- Instruct HSE Rep to dispatch OSR-1 Form as per oil spill reporting procedure.
- If necessary, activate ECT (numbers as required).
- In consultation with Shift Manager (SC) determine response Tier.
- Inform Crisis Manager of response Tier. If Tier 2 or Tier 3, confirm this with CM and advise EMERCOM.
- Initiate public health warnings if required.
- Commission trajectory modeling from HSES.
- Initiate aerial surveillance.
- Develop Incident Action Plan.
- Monitor the situation and modify response plan as needed.

**Crisis Manager**
- Mobilise CMT if required.
- Mobilise EA team and HR if needed.
- Inform OPTS Manager.
- For higher-Tier responses, invite EMERCOM rep to Sakhalin Energy.

**Government and External Organisations to Be Notified of an Oil Spill**

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Agency/Organisation</th>
<th>Person Responsible</th>
</tr>
</thead>
<tbody>
<tr>
<td>All All ≤ 0,2 m³</td>
<td>Main Department of Emerson for Sakhalin Oblast / monthly</td>
<td>EC via Duty HSE Rep</td>
</tr>
<tr>
<td>All All &gt; 0,2 m³</td>
<td>Main Department of Emerson for Sakhalin Oblast / immediately</td>
<td></td>
</tr>
</tbody>
</table>
The Oil Spills Prevention and Response Plan for Prigorodnoye Onshore Facilities (OSRP) contains 19 Figures, 38 Tables and 21 Appendices. The Plan has been developed by, and is maintained by, Sakhalin Energy Investment Company (SEIC) and constitutes a Facility OSR Plan.

The OSRP provides for Tier 3 response to emergencies of Federal significance and has a five year term of validity from the moment of its introduction in action by the Sakhalin Energy company order.

The OSR Plan is limited to the Prigorodnoye Asset site in the south of Sakhalin Island, including the Anova Bay shoreline. This OSRP provides for Federal-Tier response and has a five year term of validity. This OSRP falls under the category of federal-level emergency response plans since the facility uses two tanks, each having the maximum capacity of 95,400 m³.

The OSRP includes responses to oiled areas that could be exposed to potential impact of the “worst-case” oil spill scenarios and is fully integrated into associated Emergency Response Plans and Fire Plans.

In accordance with the response tier the OSR Plan details such as measures aimed at prevention of and response to oil and oil product spills, and other contingencies and incidents that do not fall under the category of emergencies and accident, required OSR capability and resources, calendar action plans to be activated in case of a threat, commencement of and response to E/O, oil spills and emergency response procedures, algorithm (sequence) of E/O response operations and procedures for coordination and cooperation between the corporate and third-party OSR capabilities and resources.
PART I: GENERAL

1.1 OBJECTIVE AND REGULATORY FRAMEWORK
1.1.1 AIM AND OBJECTIVES
1.1.2 REGULATORY FRAMEWORK

1.2 MAJOR CHARACTERISTICS OF THE ORGANIZATION AND PREDICTED POLLUTION ZONE
1.2.1 PLAN COVERAGE, SAKHALIN ENERGY PREPAREDNESS FOR E/O CONTAINMENT AND CLEANUP OPERATIONS
1.2.2 OVERVIEW OF OPERATIONS WITH OIL AND OIL PRODUCTS
1.2.3 GEOGRAPHICAL AND NAVIGATION / HYDROLOGICAL CHARACTERISTICS OF THE SUBJECT TERRITORY
1.2.4 HYDROMETEOROLOGICAL AND ENVIRONMENTAL SPECIFICS OF THE AREA

1.3 SPILLS' PREVENTION. SPILL PLANNING GUIDELINES
1.3.1 POSSIBLE SOURCES OF AN E/O
1.3.2 PREDICTION OF VOLUMES AND AREAS OF OIL AND OIL PRODUCT SPILLS
1.3.3 BOUNDARIES OF E/O ZONES TAKING INTO ACCOUNT OIL AND OIL PRODUCTS SPILL RISK ASSESSMENT RESULTS
1.3.4 SITUATION MODELS OF THE MOST HAZARDOUS E/O'S AND THEIR SOCIOECONOMIC CONSEQUENCES FOR THE PERSONNEL, GENERAL PUBLIC AND THE ENVIRONMENT IN THE ADJACENT TERRITORY
1.3.5 DETERMINATION OF E/O RESPONSE TEAMS AND RESOURCES ADEQUATE COMPOSITION AS WELL AS FIRE-FIGHTING BRIGADES FOR EVENTUAL OIL AND HYDROCARBON FIRES, TAKING INTO ACCOUNT THEIR LOCATIONS
1.3.6 E/O PREVENTION MEASURES

1.4 E/O RESPONSE RESOURCES AND PREPAREDNESS
1.4.1 RESPONSE TIERS
1.4.2 RESPONSE RESOURCES, THEIR LOCATION AND TRANSPORTATION TO THE E/O ZONE
1.4.3 ZONES OF RESPONSIBILITY OF E/O RESPONSE TEAMS AND FIRE FIGHTING UNITS
1.4.4 MANAGEMENT BODIES, RESPONSE TEAMS AND RESOURCES PREPAREDNESS MEASURES FOR EMERGENCY RESPONSE

1.5 OIL SPILL RESPONSE SYSTEM
1.5.1 GENERAL ORGANISATION OF OIL SPILL RESPONSE
1.5.2 COMPOSITION AND RESPONSIBILITIES OF E/O WORKING BODIES
TABLE OF CONTENTS

1.5.3 THE HIGHER LEVEL COORDINATING BODY AND ORGANIZATION OF INTERFACING WITH SUCH A BODY 1.5-24
1.5.4 INTEGRATION OF EMERGENCY TEAMS AND RESOURCES 1.5-29
1.5.5 COMMUNICATION AND NOTIFICATION SYSTEM ORGANIZATION AND PROCEDURE 1.5-31
1.5.6 TRANSFER OF CONTROL IN CASE OF A CHANGE OF THE E/O TIER 1.5-32

PART II: RESPONSE

2.1 PRIORITY ACTIONS IN CASE OF AN E/O 2.1-2
2.1.1 NOTIFICATION OF AN EMERGENCY 2.1-2
2.1.2 HEALTH AND SAFETY PRIORITY MEASURES 2.1-8
2.1.3 MONITORING OF THE SITUATION AND OF THE ENVIRONMENT 2.1-13
2.1.4 IMMEDIATE OIL SPILL CONTAINMENT 2.1-14
2.2 OSR OPERATIONS PLAN 2.2-1
2.2.1 SEQUENCE OF OSR OPERATIONS 2.2-1
2.2.2 PROTECTION OF AFFECTED POPULATIONS AND SOCIOECONOMIC RESOURCES 2.2-4
2.2.3 PROTECTION OF HIGH RISK AREAS, PROTECTED NATURAL TERRITORIES AND RESOURCES 2.2-6
2.2.4 OSR RESPONSE TECHNOLOGIES 2.2-28
2.2.5 LOGISTICS, ENGINEERING, FINANCE AND OTHER SUPPORT FUNCTIONS 2.2-29
2.2.6 FIRE FIGHTING OPERATIONS CONTINGENCY PLANNING (FIRE FIGHTING OPERATIONS PLANNING) 2.2-37
2.2.7 SAFETY MEASURES DURING E/O RESPONSE OPERATIONS 2.2-37
2.2.8 SURVEILLANCE AND MONITORING 2.2-41
2.2.9 FINANCIAL CONTROL AND COST ACCOUNTING 2.2-44

PART III: E/O CLEANUP

3.1 CONTAMINATED SOILS AND WATER BODIES CLEANUP OPERATIONS 3.1-2
3.1.1 LOGISTICAL SUPPORT 3.1-1
3.1.2 SPILLED OIL RECOVERY TECHNOLOGIES AND TECHNIQUES 3.1-7
3.1.3 WASTE MANAGEMENT 3.1-20
3.1.4 POLLUTED SOILS CLEANUP TECHNOLOGIES AND TECHNIQUES 3.1-32

3.2. RESTORATION MEASURES 3.2-1
3.2.1 SITE CONTROL AND ACCESS 3.2-1
3.2.2 MODEL SCHEDULE (SITUATIONAL CALENDAR PLAN) FOR OPERABILITY OF DAMAGED ELEMENTS RESTORATION ACTIONS 3.2-2
3.2.3 MANAGEMENT OF OSR EQUIPMENT PREPAREDNESS TO IMPLEMENTATION OF SPECIAL TECHNICAL MEANS AND REPLENISHMENT OF FINANCIAL AND MATERIAL RESOURCES
Volume 2: Appendices

MANDATORY APPENDICES

1. LOCATION PLAN OF THE HAZARDOUS PRODUCTION FACILITY INDICATING BOUNDARIES OF HIGH RISK ZONES AND PRIORITY PROTECTION AREAS
2. OIL PROPERTIES AND OIL SPILL RISK ASSESSMENT
3. POTENTIAL CONSEQUENCES OF OIL SPILLS
4. SCHEDULES OF EMERGENCY OPERATIONAL PROCEDURES (CALENDAR PLANS)
5. CALCULATION OF ADEQUACY OF RESPONSE RESOURCES
6. INDUSTRIAL SAFETY DECLARATION
7. CONCLUSION OF AN EXPERT REVIEW ORGANIZATION
8. OIL SPILL RESPONSE RESOURCES
9. CERTIFICATES OF OSR TEAM AND CONTRACTORS
10. LICENSES ISSUED BY THE FEDERAL EXECUTIVE AUTHORITIES

ADDITIONAL APPENDICES

11. DECISION-MAKING ALGORITHMS (PROCEDURES)
12. PUBLIC RELATIONS AND MEDIA GUIDELINES
13. DOCUMENTATION AND FORMS
14. MONITORING PROGRAM
15. LIST OF TARGET AND R&D PROGRAMS
16. MAINTENANCE OF SPILL RESPONSE PLAN PREPAREDNESS
17. SHORELINE ACCESS
18. LIST OF RELEVANT LAWS AND REGULATIONS
19. LIST OF RELATED OSR PLANS AND DOCUMENTS
20. RESPONSE GUIDELINES
21. RECOMMENDED OIL RECOVERY METHODS AND ENVIRONMENTAL DAMAGE ASSESSMENT METHODOLOGY
**CONTROLLED COPY DISTRIBUTION RECORD**

This OSRP is a controlled document. The distribution of all copies must be recorded by the OSRP Custodian so that amendments can be distributed. Uncontrolled copies must be clearly marked “uncontrolled copy”.

<table>
<thead>
<tr>
<th>OSRP Number</th>
<th>Language</th>
<th>Agency/Location</th>
<th>OSRP Holder</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>English</td>
<td>Production Directorate, Yuzhno Office</td>
<td>Sergey Litvinov, D for coordination with Governmental Authority for control</td>
</tr>
</tbody>
</table>

**CUSTODIANSHIP OF ORIGINAL OSRP**

<table>
<thead>
<tr>
<th>OSRP Number</th>
<th>Language</th>
<th>Version</th>
<th>Agency/Location</th>
<th>Name / Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>1E &amp; 1R</td>
<td>English</td>
<td></td>
<td>Command Centre, Yuzhno Office</td>
<td>Duty EC</td>
</tr>
<tr>
<td>2E &amp; 2R</td>
<td>English</td>
<td></td>
<td>CMT Room, Yuzhno Office</td>
<td>Duty CM</td>
</tr>
<tr>
<td>3E &amp; 3R</td>
<td>English</td>
<td></td>
<td>Prigorodnoye Emergency Command Centre</td>
<td>Duty Site Controller</td>
</tr>
<tr>
<td>4E &amp; 4R</td>
<td>English &amp; Russian</td>
<td></td>
<td>Prigorodnoye Administrative Building</td>
<td>Prigorodnoye Asset Manager</td>
</tr>
</tbody>
</table>

**CONTROLLED COPIES OF ORIGINAL OSRP IS AVAILABLE VIA LIVELINK, PRINTED HARD COPIES FROM LIVELINK SHALL BE KEPT AT:**

<table>
<thead>
<tr>
<th>OSRP Number</th>
<th>Language</th>
<th>Version</th>
<th>Agency/Location</th>
<th>Name / Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>1E &amp; 1R</td>
<td>English</td>
<td></td>
<td>Command Centre, Yuzhno Office</td>
<td>Duty EC</td>
</tr>
<tr>
<td>2E &amp; 2R</td>
<td>English</td>
<td></td>
<td>CMT Room, Yuzhno Office</td>
<td>Duty CM</td>
</tr>
<tr>
<td>3E &amp; 3R</td>
<td>English</td>
<td></td>
<td>Prigorodnoye Emergency Command Centre</td>
<td>Duty Site Controller</td>
</tr>
<tr>
<td>4E &amp; 4R</td>
<td>English &amp; Russian</td>
<td></td>
<td>Prigorodnoye Administrative Building</td>
<td>Prigorodnoye Asset Manager</td>
</tr>
</tbody>
</table>

**UNCONTROLLED HARD COPIES OF ORIGINAL OR ELECTRONIC (PDF FILE) DISTRIBUTION (ENGLISH AND RUSSIAN) ON DEMAND BASIS**

<table>
<thead>
<tr>
<th>CD No.</th>
<th>Language</th>
<th>Version</th>
<th>Company</th>
<th>CD Holder</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>CD Lun OSRP 01</td>
<td>English &amp; Russian</td>
<td></td>
<td>Gazprom</td>
<td>Assignee person</td>
<td>Shareholder</td>
</tr>
<tr>
<td>CD Lun OSRP 02</td>
<td>English &amp; Russian</td>
<td></td>
<td>Shell, STASCO</td>
<td>Assignee person</td>
<td>Shareholder</td>
</tr>
<tr>
<td>CD Lun OSRP 03</td>
<td>English &amp; Russian</td>
<td></td>
<td>Mitsui</td>
<td>Assignee person</td>
<td>Shareholder</td>
</tr>
<tr>
<td>CD Lun OSRP 04</td>
<td>English &amp; Russian</td>
<td></td>
<td>Mitsubishi</td>
<td>Assignee person</td>
<td>Shareholder</td>
</tr>
</tbody>
</table>

Note: Also available via Livelink
<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Full Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO₂</td>
<td>Carbon Dioxide</td>
</tr>
<tr>
<td>H₂S</td>
<td>Hydrogen Sulfide</td>
</tr>
<tr>
<td>NO₂</td>
<td>Nitrogen Oxides</td>
</tr>
<tr>
<td>SO₂</td>
<td>Sulphur Dioxide</td>
</tr>
<tr>
<td>Livelink</td>
<td>Sakhalin Energy document flow and base system</td>
</tr>
<tr>
<td>ADIOS</td>
<td>Automated Data Inquiry for Oil Spills</td>
</tr>
<tr>
<td>OILMAP</td>
<td>US oil spill modelling software</td>
</tr>
<tr>
<td>SPA</td>
<td>Seaport Administration</td>
</tr>
<tr>
<td>API</td>
<td>American Petroleum Institute</td>
</tr>
<tr>
<td>PMD</td>
<td>Pipeline Maintenance Depot</td>
</tr>
<tr>
<td>MOSB</td>
<td>Marine operations support base</td>
</tr>
<tr>
<td>B/C/CC</td>
<td>Radio Frequency/Simplex Communication</td>
</tr>
<tr>
<td>BASU</td>
<td>Basin Emergency Management Department</td>
</tr>
<tr>
<td>TLU</td>
<td>Tanker Loading Unit</td>
</tr>
<tr>
<td>Gosmorspassluzba</td>
<td>Federal Budget-Funded Institution State Sea Emergency and Rescue Coordination Service of the Russian Federation</td>
</tr>
<tr>
<td>MECC</td>
<td>Maritime Emergency Coordination Centre</td>
</tr>
<tr>
<td>ECT</td>
<td>Emergency Response Coordination Team</td>
</tr>
<tr>
<td>CMT</td>
<td>Crisis Management Team</td>
</tr>
<tr>
<td>FERHRI</td>
<td>Far Eastern Region Hydrometeorological Research Institute</td>
</tr>
<tr>
<td>ICSS</td>
<td>Integrated Control and Safety System</td>
</tr>
<tr>
<td>DWT</td>
<td>dead weight tons</td>
</tr>
<tr>
<td>ASV</td>
<td>area of special value</td>
</tr>
<tr>
<td>IMO</td>
<td>International Maritme Organization</td>
</tr>
<tr>
<td>INMARSAT</td>
<td>International Marine Satellite</td>
</tr>
<tr>
<td>EC</td>
<td>emergency coordinator</td>
</tr>
<tr>
<td>CLC</td>
<td>Civil Liability Convention</td>
</tr>
<tr>
<td>WMC</td>
<td>Waste Management Coordinator</td>
</tr>
<tr>
<td>HSC</td>
<td>Health and Safety Coordinator</td>
</tr>
<tr>
<td>ECC</td>
<td>Emergency Coordination Centre</td>
</tr>
<tr>
<td>KChS</td>
<td>Emergencies mitigation &amp; response and fire safety commission</td>
</tr>
<tr>
<td>OSR</td>
<td>oil spill response</td>
</tr>
<tr>
<td>MARPOL</td>
<td>Marine Pollution Convention 73/78</td>
</tr>
<tr>
<td>CM</td>
<td>Crisis Manager</td>
</tr>
<tr>
<td>MNR</td>
<td>Ministry of Natural Resources of Russian</td>
</tr>
<tr>
<td>IUCN</td>
<td>International Union for the Conservation of Nature</td>
</tr>
<tr>
<td>MSV</td>
<td>Multipurpose Support Vessel</td>
</tr>
<tr>
<td>MChS, EMERCOM</td>
<td>Ministry of Civil Defense, Emergency Situations and Liquidation of Consequences of Natural Disasters of Russia</td>
</tr>
<tr>
<td>OIM</td>
<td>Offshore Installation Manager</td>
</tr>
<tr>
<td>LEL</td>
<td>Lower Explosive Limit</td>
</tr>
<tr>
<td>OPF</td>
<td>Onshore Processing Facility</td>
</tr>
<tr>
<td>ERP</td>
<td>Emergency Response Plan</td>
</tr>
<tr>
<td>OSRL</td>
<td>Oil Spill Response Limited (Southampton, UK)</td>
</tr>
<tr>
<td>HS</td>
<td>Health and Safety</td>
</tr>
<tr>
<td>HE</td>
<td>Health and Environment</td>
</tr>
<tr>
<td>SALM</td>
<td>Single Anchor Leg Mooring</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Description</td>
</tr>
<tr>
<td>--------------</td>
<td>-------------</td>
</tr>
<tr>
<td>SALM</td>
<td>Single Anchor Leg Mooring</td>
</tr>
<tr>
<td>BOP</td>
<td>Blow Out Preventer</td>
</tr>
<tr>
<td>OSRP</td>
<td>Oil Spill Response Plan</td>
</tr>
<tr>
<td>MERP</td>
<td>Medical Emergency Response Plan</td>
</tr>
<tr>
<td>FAS</td>
<td>field action station</td>
</tr>
<tr>
<td>Rostechnadzor</td>
<td>Federal Agency on Environmental, Technological and Nuclear Supervision</td>
</tr>
<tr>
<td>RSChS</td>
<td>Russian Unified Emergency Prevention, Preparedness and Response System</td>
</tr>
<tr>
<td>DHME</td>
<td>Sakhalin Department on Hydrometeorology and Monitoring of the Environment</td>
</tr>
<tr>
<td>PPE</td>
<td>Personal Protection Equipment</td>
</tr>
<tr>
<td>SOLAS</td>
<td>International Convention for the Safety of Life at Sea, 1974</td>
</tr>
<tr>
<td>LNG</td>
<td>Liquefied Natural Gas</td>
</tr>
<tr>
<td>PSDS</td>
<td>project specific design specification</td>
</tr>
<tr>
<td>WM</td>
<td>Waste Manifest</td>
</tr>
<tr>
<td>OET</td>
<td>Oil Export Terminal</td>
</tr>
<tr>
<td>ICS</td>
<td>Incident Command System</td>
</tr>
<tr>
<td>UHF</td>
<td>Ultra High Frequency. Frequencies between 300 MHz and 3 GHz.</td>
</tr>
<tr>
<td>kt</td>
<td>knot (nautical mile per hour)</td>
</tr>
<tr>
<td>VHF</td>
<td>Very High Frequency. Frequencies between 30 MHz and 300 MHz.</td>
</tr>
<tr>
<td>CCR</td>
<td>Central Control Room</td>
</tr>
<tr>
<td>STASCO</td>
<td>Shell International Trading And Shipping Company</td>
</tr>
</tbody>
</table>
Basic terms and definitions are given in accordance with Paragraph 4 of the Rules for Development and Coordination of Plans for Prevention of and response to Oil and Oil Product Spills in the Territory of the Russian Federation (approved by the MChS of Russia, Order # 621 of 28th December 2004) and Paragraph 2 of the Requirements to the Development of Plans for Prevention of and Response to Oil and Oil Product Spills in the Territory of the Sakhalin Oblast (approved by the Sakhalin Oblast Administration, Decree # 203-pa of 10th November 2005).

**Territorial sea waters of the Russian Federation** means waters located inshore from the baselines from which the width of the RF territorial sea is measured (Article 1 of the Federal Law on the Territorial Sea Waters, Territorial Sea and Adjacent Zone of the Russian Federation, # 155-FZ of 31st July 1998).

**Water body** means surface waters with underlying and associated land (the bottom and shores of a water body). (Water Code of the Russian Federation, Article 7).

**The Unified State System for Prevention of and Response to Emergencies (RSChS)** means a combination of regulatory bodies, capabilities and resources of the federal executive authorities, executive authorities of the constituent entities of the Russian Federation, local governments and organizations responsible for protection of the population and territories from emergencies (Paragraph 2 of the Regulations on the Unified State System for Prevention of and Response to Emergencies approved by the decree of the RF Government Decree #794 of 30th December 2003).

**Areas of special significance** means high-risk resources, public life support systems, sites of cultural and historical value, specially protected natural territories, and natural resources particularly sensitive to oil spill impact.

**Natural environment components** means land and subsurface resources, surface and ground waters, atmospheric air, plant and animal life and other living organisms, ozone layer and near-Earth space environment, which combine to create favourable conditions for the existence of life on the Earth planet (Article 1 of the Federal Law on Environmental Protection, # 7-FZ of 10th January 2002).

**Emergency Response Coordinator** means an authorized representative of the asset owner who is pre-appointed to act as such and is capable and obligated to manage emergency response operations.

**Commission for Prevention of and Response to Emergencies and Fire Safety Management** means a standing body coordinating emergency prevention and response activities.

**Oil Spill Cleanup** means activities aimed at restoration of an emergency affected facility and life-support facilities to ensure their normal operation; environmental rehabilitation to a state which excludes an adverse impact on human health, animal and plant life.

**Oil Spill Response** means recovery and utilization of spilled oil and oil products.

**Emergency Response** means emergency rescue and other urgent operations launched in case of emergencies to save people’s lives and human health, to minimize material and environmental damage, and to contain and control emergency zones and associated hazards (Article 1 of Federal Law # 68-FZ of 21st December 1994 On Protection of Population and Territories from Environmental and Industrial Emergencies).

**Oil spill containment** means activities that prevent oil and oil product from spreading further over land and/or water surface.
Oil means petroleum in any form including crude oil, fuel oil, sludge, oil refuse and refined products (Convention on the Protection of the Marine environment of the Baltic Sea Area (Helsinki, 22nd March 1974).

Oil Spill Sensitive Resources mean areas environmentally sensitive to oil spill impact that will be exposed to considerable long-term adverse effects of oil spills. They include terrestrial and water habitats of rare and protected mammals and birds listed in the IUCN Red Data Book and the Red Data Books of the Russian Federation and the Sakhalin Oblast; water protection zones; fishable water bodies of the highest and first value category; protected forests of group I and II, special protected forest areas, sanitary / protection zones of water supply sources; areas of traditional use; fisheries and sea animal hunting areas; other areas as designated in consultation with respective territorial government authorities.

High Risk Resources mean facilities that are associated with explosive, fire, chemical, radiation, and hydrodynamic hazards.

Life-Support Systems mean water supply and wastewater collection services, power- gas- and heat-supply facilities, transport and communication facilities, food supply services (farming and food industries, fish-farms, and agricultural lands).

Specially Protected Natural Territories mean land and water areas with associated air space, which contain natural systems and resources of special scientific, cultural, esthetical, recreational and sanitary value, which have been fully or partially withdrawn from economic use by decisions of respective government authorities, and for which special protection regulations have been established.

Environment means a combination of natural environment components, natural and natural / man-made resources, and industrial resources (Article 1 of Federal Law # 7-FZ of 10th January 2002 “On Environmental Protection”).

Emergency Prevention means a group of actions taken preventively to minimize the risk of emergencies, to save people’s health and minimize environmental and material damage, if any (Article 1 of Federal Law # 68-FZ of 21 1994 “On Protection of Population and Territories from Environmental and Industrial Emergencies”).

Shoreline means the area that is adjacent to the territorial seawaters and territorial sea of the Russian Federation (Water Code of the Russian Federation, Article 16).

Natural Environment means a combination of natural environment components, natural, and natural / man-made resources (Article 1 of Federal Law # 7-FZ of 10th January 2002 “On Environmental Protection”).

Professional Emergency Response and Rescue Teams (organizations) mean independent entities or structural units of an emergency response and rescue service specifically designed for the execution of emergency response and rescue operations and comprised of the rescuers outfits equipped with dedicated machinery, equipment, gear, tools, and materials (Federal Law on Emergency Response and Rescue Services and the Status of Rescuers, #151-FZ of 22nd August 1995, Article 1 / Para 2).

Oil Spill means a release of oil or oil product in a water body, on land surface or into underground water, irrespective of causes and circumstances of this release.

Sakhalin Territorial Sub-System of the RSChS means a combination of regulatory bodies, capabilities and resources of the executive authorities, local governments and organizations of the Sakhalin Oblast. Oil spill response function of this Sub-System incorporates all professional response teams irrespective of their form of ownership, both active and newly formed, that carry...
out on- and offshore response operations, that hold respective licenses, and that have been certified in accordance with the established procedure.

**Agricultural Land** means land resources that are used for agricultural production or are good for this purpose.

**Territories** mean all land, water and air space within the boundaries of the Russian Federation or a part thereof, of industrial and social facilities, and of the natural environment (Preamble of Federal Law # 68-FZ of 21st December 1994 On Protection of Population and Territories from Environmental and Industrial Emergencies).

**The Territory of the Russian Federation** means territories of its constituencies, territorial waters, territorial sea and the air space above these (Article 67 of the Constitution of the Russian Federation).

**Emergency Situation** (Emergency) means conditions that have developed / are developing within a certain territory as a result of an industrial accident, hazardous natural phenomenon, natural or other disasters which may lead or have led to the loss of human life, damage to human health or to natural environment, considerable material losses and disturbance of living conditions (of Federal Law On Protection of the Population and Territories from Environmental and Industrial Emergencies, # 68-FZ of 21st December 1994, Article 1).

**Marine Operations Staff Headquarters** (ShRO) is a body that will coordinate offshore emergency response and rescue operations; ShRO will include representatives of oil companies, the territorial RSChS, and the State Marine Emergency Rescue Service of the Russian Federation (Gosmorspassluzhba).
1.1.1 AIM AND OBJECTIVES

Aim

The aim of this document is to pre-plan the measures for potential oil and oil products spills prevention and response (hereinafter referred to as OSR) from offshore production facilities of the Lunskoye Field, to maintain instant readiness of the Company's OSR resources and manpower as well as to minimize the damage to environment in case of oil spill.

Objectives

The main objectives of planning of preventing activities and emergency and OSR (further called E/O) planning in general and of this particular OSRP are as follows:

- Determination of the level of possible E/O and its consequences.
- Formulation of basic principles of oil spill prevention and response at different levels to determine the adequacy of response capability based on conditions of possible spill sources, and geographical, navigational and hydrographical, hydrometeorological (metocean) specifics of the potential oil spills areas.
- Organization of socioeconomic and environmental monitoring in the oil spill affected areas, at hazardous production facilities and in adjacent areas.
- Establishment of coordination procedures and information exchange between industries, government agencies and other organizations involved in oil spill response.
- Assessment of available and required oil spill response capabilities and resources of M/s "Sakhalin Energy" (hereinafter referred to as the Company): emergency response teams, equipment and materials stockpiles certified in accordance with the established procedure, and/or the need to call on available emergency response teams of other organizations considering their dislocation in compliance with the current legislation.
- Establishment of procedures for maintenance and control of preparedness at the OSR management level, including planning of practical exercises, professional and advanced personnel training; creation of financial and material resources and assurance of the required level of OSR resources preparedness.
- Preparation of a situational schedule (calendar plan) of the OSR operational procedures in the event of an E/O.
- Implementation of target and scientific research programs aimed at oil spill prevention and improvement of OSR management performance in emergencies, including review, supervision and monitoring of arrangements for protection of the public and territories against E/O.
- Oil spill response planning to eliminate the consequences of E/O.
- Post-spill response and cleanup action planning to address the consequences of E/O.

The OSRP allows for the full integration and utilization of government expertise and resources through the formation of a Unified Command (Section 1.5).

1.1.2 RULING DOCUMENTS

All industrial facilities involved in production/processing/transportation/storage and consumer sales of oil and oil products are classified as hazardous production facilities in accordance with the requirements of Federal Laws on Industrial Safety of Hazardous Industrial Facilities and Protection of the Public and Territories from Natural and Industrial Emergencies.

This OSRP has been developed in compliance with Russian Federation legislation regarding emergency prevention and response including oil spills in a hazardous industrial facility. The OSRP contents encompass the range of requirements and recommendations regarding OSRP content and structure.

Applicable legislation includes the following:
- Ministry of Natural Resources of the Russian Federation Order On Ratification of Procedures for Determination of Minimal Amount of Spilled Oil Sufficient to Classify the Accidental Oil Spill as Emergency Situation - No. 156.of March 03, 2003.
- Sakhalin Oblast Administration Decree On Approval of Requirements for Development of Oil and Oil Product Spill Prevention and Response Plans in the Sakhalin Oblast - No. 203-pa of November 10, 2005 (in Revision No. 31-pa of February 16, 2007).

List of applicable laws and regulations is provided in Appendix 18 hereto.

RF Government Decree No 794 of 30.12.2003 (in Revision No.1179 of 19.11.2012) requires the co-ordination and management of actions to be taken in the event of an emergency, including an oil spill. Emergency Management bodies should be established where potentially hazardous facilities and oil spill response resources exist.

For the purpose of management of actions to be taken in the event of emergencies, including oil spills, an Integrated Emergency Management System has been established in Sakhalin Energy. A description of this system is given in Section 1.5.

In developing the OSRP, Sakhalin Energy has taken into account relevant IMO, Lenders’ and Shareholders’ recommendations, Shell corporate standards and International Treaties and Convention requirements ratified by the Russian Federation.

The OSRP uses the standards and provisions of the Recommended Practice for Development of a Model Oil Spill Prevention and Response Plan for Oil and Gas Companies (approved by Rosenergo on 04.04.2006).
1.2.1. SAKHALIN ENERGY PREPAREDNESS FOR E/O CONTAINMENT AND CLEANUP OPERATIONS

In planning its resources and activities Sakhalin Energy has ensured adequate containment of, and response to, potential oil spill emergencies within the area covered by this OSRP irrespective of the source, time of the spill and location of the spilled oil and oil products in accordance with MChS Order 621.

Sakhalin Energy preparedness for containment of and response to oil spills below E/O level is assessed based on availability of adequate OSR resources for management of local-level oil spills (see Appendix 5).

Response to oil spills that may be classified as oil spill emergencies (E/O) will require mobilisation of certified OSR teams, both contracted Professional ERTs of the contractors and the Company’s own Nonprofessional units.

Sakhalin Energy Preparedness

Sakhalin Energy preparedness has been assessed based on the capability to contain and control maximum fuel oil spill in accordance with the criteria set in MChS Order 621 of 28.12.2004. This OSRP has been reviewed for approval and the following has been ascertained:

• E/O prevention and response activities are provided in this OSRP and also in the Facility Emergency Response Plan (developed and approved in accordance with Guideline RD 09-536-03) and Facility Firefighting Plan;
• Required quantity and composition of OSR resources are defined in this OSRP (Section 1.4).
• Organisation of interaction between own and external oil ERT team is detailed in this OSRP (Section 1.5).
• Ongoing management and control of OSR activity planning and implementation is achieved through Sakhalin Energy Committee of Emergencies and Fire Safety (KChS).
• Sakhalin Energy performance in the field of emergency prevention / fire safety / environmental protection is regulated by the normative documents; Guidelines (RDs), industry Fire Safety Regulations (VPPB), industry Construction Standards (VSN), and internal Sakhalin Energy Procedures.
• No oil impacted/contaminated land areas currently exist within or associated with Sakhalin Energy facilities.
• A list of hazardous industrial facilities is in place.
• Sakhalin Energy ensures compliance with the HSE and fire safety requirements.
• a Contract with a certified oil ERT team has been concluded (see Appendix 9).

The following measures keep the organisation ready for Emergency Situation (Oil) prevention and response:

• Creating a system of education and training of E/O response personnel, including familiarising with specific facilities and areas of responsibility included in the Plan, special equipment and technologies for their application, as well as drills of tactical methods of Oil Spill Response (OSR) command within a single complex of measures and at the extent specified by OSR Plan.
• Availability of material and financial resources for ES (O) response.
ONSHORE PIPELINES OIL SPILL RESPONSE PLAN

MAJOR CHARACTERISTICS OF THE ORGANIZATION
AND PREDICTED POLLUTION ZONE

- Protection of the facilities from hazardous effects of natural and man-induced processes.

The Prigorodnoye Asset has its own Non-professional Emergency Response Team (SFT) certified in accordance with the established procedure (See Appendix 9).

Constant readiness of OSR personnel and equipment is ensured through OSR trainings and practical exercises aimed at preparation of all OSR-dedicated NERT personnel to exercise their duties quickly and effectively during spill response operations.

In order to ensure readiness of OSR personnel and equipment to containment and elimination of oil spill, special personnel training is conducted according to a plan (see section 1.4.4. for details).

Inspection of equipment and timely completion of equipment and material preparation in accordance with schedule and time norms for replacement of materials.

This OSRP must be studied by all personnel involved in operation and maintenance of the industrial facilities, including hazardous industrial facilities, personnel of non-professional OSR team, personnel of emergency response services organisation; personnel of professional fire safety/ firefighting teams, gas rescue service.

This OSRP and associated documents must be made available for review by the Manager of the Onshore OSR Contractor (Professional Oil ERT) for preparing and executing related Contracts and Work Plans.

Scope of the OSRP

This OSRP covers an area corresponding to the maximum possible zone of oil pollution from a ‘worst case’ spill in adverse weather conditions and with account of the season, time of the day, surface topography, environmental specifics and land use (as defined by MChS Order No. 621 of 28th December 2004).

This OSRP covers Prigorodnoye onshore operations at SAKHALIN ENERGY facilities located within the boundaries of the allocated land plot (see Appendix 1).

Calculations of potential impact zones are detailed in Section 1.3. They show that the area of the maximum oil pollution zone under ‘worst case’ oil spill scenario remains within the boundaries of Prigorodnoye onshore facilities.

Offshore oil spills which may potentially impact Aniva Bay and associated marine oil spill response is detailed in the SAKHALIN ENERGY Oil Spill Prevention and Response Plan for Prigorodnoye Port Operations (Document No: 5510-S-90-04-P-0001-00-E) and therefore they are not considered in this OSRP.

Level of the OSRP

In accordance with the requirements of RF Government Decree #613 of 21st August 2000 (as amended by the RF Government Decree #240 of 15th April 2002) this OSRP falls under the category of Federal-level Emergency Response Plans.
Integration with Other Response Plans

This OSRP is a part of the SAKHALIN ENERGY Integrated Emergency Management System. The OSRP conforms to the general Sakhalin Energy HSE Policies and Procedures and facility-based Site Emergency Prevention and Response Plans and Fire-Fighting Plans of the Company, Sakhalin Energy's guidelines on onshore and shoreline operations.

The OSRP is integrated into the Sakhalin Territory Oil Spill Response Plan and the overall system of facility-based Site OSRPs of Sakhalin Energy, fully listed in Appendix 19.

Using the OSRP

Structure of the OSRP


The Plan consists of two volumes (sections and appendices).

Volume 1:

Section 1: contains background information on the Facility and operations, the emergency response organization of the Russian Federation, Sakhalin Oblast and Sakhalin Energy, and also about the function and use of this OSRP.

Section 2: contains information about the Sakhalin Energy and Facility oil spill response organization including, safety and spill control measures, emergency oil spill response organization and functions.

Section 3: contains specific response guidelines and instructions covering:

- Methods of responding to oil spills at sea and on the shoreline.
- Protection priorities.
- Oil spill surveillance and monitoring.
- Management of recovered oil and oily waste.

Volume 2 (Appendices):

The mandatory and nonmandatory appendices provide a range of useful reference material including information on oil spill risks and impacts and response guidelines.

Supporting Documents

Volume 1 (Sections):

Section 1: contains background information on the Facility and operations, the emergency response organization of the Russian Federation, Sakhalin Oblast and SAKHALIN ENERGY, and also about the function and use of this OSRP.
Section 2: contains information about the SAKHALIN ENERGY and Facility oil spill response organization including, safety and spill control measures, emergency oil spill response organization and functions.

Section 3: contains specific response guidelines and instructions covering:
- Methods of responding to oil spills at sea and on the shoreline.
- Protection priorities.
- Oil spill surveillance and monitoring.
- Management of recovered oil and oily waste.

Volume 2 (Appendices):

Appendices provide a range of useful reference material including information on oil spill risks and impacts and response guidelines.

Supporting Documents

The OSRP is supported by, and integrated with, a range of SAKHALIN ENERGY documents (Figure 1.1).

Company policies and standards relating to oil spill response are documented in the Corporate Oil Spill Response Plan.

Procedures and OSR Handbooks can be produced on the basis of the OSRP, which provide information on particular aspects of oil spill response.

Handbooks should be used as background information or as support for decision making.

A full list of available OSR Handbooks is provided in Appendix 19.

OSRP Revision

Amendments to this OSR Plan may be made at the instruction of SAKHALIN ENERGY CEO, SAKHALIN ENERGY KChS Chairman or a person nominated by the KChS Chairman. The need for revision may caused by the following circumstances:
- Changes in composition of SAKHALIN ENERGY and external OSR resources (e.g. Tier 1 OSR Contractor).
- Formation of new Non-professional SAKHALIN ENERGY OSR teams.
- Changes to higher level (Government) OSR or ER plans of RSChS subsystems.
- Directions of Approval Authorities.
Minor changes, which do not require authorisation and approval of Approval Authorities must be made within three months from the time the need for these appears.

The OSRP will be reviewed annually, revised as required and re-issued by 1st February. Revisions should reflect conditions as of 31st December of the previous year.

The Chairman of the SAKHALIN ENERGY KChS will be informed of all changes and provided with an updated OSRP.

Changes to the Plan should be made in accordance with the following procedure:

- Revised Sections of the OSRP must be provided to all OSRP holders. This must include an updated Revision Log indicating each revision, page number and date of approval.
- SAKHALIN ENERGY and Contractor OSR Team members (E/O Response Teams) must be informed.
- All changes made to the OSRP must be reflected by changes to job descriptions, Guidelines and Handbooks provided to personnel involved in oil spill response operations.
- Each OSRP Holder must incorporate changes and amendments to their copy of the OSRP and will maintain the Plan in the up-to-date condition.
- Individuals and organisations will duly inform Chairman of the SAKHALIN ENERGY KChS of any changes in their contact information (telephone and fax numbers) and any changes in composition of OSR resources provided for in the OSRP.

Responsibilities for introduction of changes and re-approval of the OSRP are provided in Appendix 16.

1.2.1.4 Emergency Response Strategy

Response strategy for onshore oil spill emergencies at Prigorodnoye will focus on:

- Measures to ensure safety of the Company's personnel.
- Stopping the flow of oil from the spill source.
- Containment and recovery of spilled hydrocarbons directly at the spill source to prevent their spreading.
- Shoreline cleanup (as required).
- Recovery and rehabilitation of contaminated areas.

The OSRP activities provide for maximum reduction of potential negative environmental impact by giving priority to containment and recovery operations at the spill source. The plan however also contains description and procedures for application of all known oil spill response methods, including proposed sequence of operations if required.
Integrated Response

Oil spill responses require mobilization of a wide range of material and human resources. These are provided through the joint effort and resources of government agencies, oil industry and contractors.

In case of a Federal-Tier oil spill emergency the Sakhalin Oblast KChS (Committee of Emergencies and Fire Safety) and SAKHALIN ENERGY ECT will establish the Unified Command (the ShRO established by Sakhalin Oblast KChS&FS) to coordinate activities of different OSR teams comprising individuals from many agencies and utilizing equipment from many sources. Joint drills and exercises will be undertaken to ensure the compatibility of response equipment and procedures.

Response Preparedness

The aim of oil spill response is to seek to minimize the effects of the oil on the environment and on people’s safety and health. SAKHALIN ENERGY therefore maintains equipment, organisation, procedures and skills instantly prepared, i.e. to be able to respond effectively to oil spills wherever and whenever they occur (See Appendix 16).

Priorities for oil spill response

The priorities in an oil spill response are:

- **People**: Ensure safety of facility personnel, responders and the public.
- **Environment**: Protect sensitive areas and species in the environment.
- **Assets**: Protect property and socio-economic resources (e.g. fisheries), and SAKHALIN ENERGY installations.
- **Reputation**: Protect the Company’s reputation by:
  - Providing a rapid response capability, with appropriate resources and trained personnel.
  - Conducting regular tests of the response organization, procedures and communications.
  - Keeping people informed (company personnel, next of kin, the authorities, the public, and the media).
  - Being helpful and honest.
  - Restoring the environment to pre-spill state.
  - Dealing fairly with claims and compensation.
  - Learning from mistakes.

<table>
<thead>
<tr>
<th>Table 1.1 Sakhalin Energy Requirements and Standards for OSR Preparedness</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Instant Preparedness</strong></td>
</tr>
<tr>
<td>EQUIPMENT</td>
</tr>
<tr>
<td>Necessary resources available in the facility</td>
</tr>
<tr>
<td>Located the immediate vicinity to the facility</td>
</tr>
<tr>
<td>Kept in the working order, preventively maintained</td>
</tr>
<tr>
<td>Resources built up</td>
</tr>
<tr>
<td>Inventory taking and auditing performed on a regular basis</td>
</tr>
</tbody>
</table>
### 1.2.2. OVERVIEW OF OPERATIONS WITH OIL AND OIL PRODUCTS

The facilities are located at the southern end of Sakhalin Island, 11 km east of Korsakov, just east of the settlement of Prigorodnoye of the Korsakov District (local municipality area) (Figure 1.3).

The coastal and Aniva Bay facilities of the Prigorodnoye Asset include the Liquid Natural Gas (LNG) Plant, Oil Export Terminal (OET), Hose Handling Facility, an OSR equipment storage, offshore Tanker Loading Unit (TLU) to load LNG tankers, LNG export jetty and support vessels to support the operations, including tanker pilotage and servicing (Figure 1.2).
The Prigorodnoye Onshore Facilities will receive oil and gas delivered via the Onshore Pipeline Transport System (PTS) for final processing before loading on to tankers for transportation to clients and consumers of raw hydrocarbon materials. PTS will be used for transportation of PA crude and Lunskoye condensate blend.

The Prigorodnoye Onshore Facilities consist of the Oil Export Terminal (OET), the Liquid Natural Gas (LNG) plant, connecting pipelines and other auxiliary facilities located on the Prigorodnoye onshore operations site (diesel generators, boiler plants, etc.)

**Major Oil And Oil Products Handling Operations**

**Transport of oil and condensate via on site pipeline systems**

Blend of crude oil and condensate will be supplied from the PTS trunk pipeline to the tank farm of the Oil Export Terminal.

The OET and LNG sites also incorporate an integrated system of connecting pipelines (a simplified process flow chart is shown in Figure 1.3). Oil is transferred via 610 mm pipes at 2,650 m³/h. Small quantities of condensate separated from natural gas during dewatering at LNG will be transported to the OET facility via 100 mm condensate pipeline at 2.5/5.0 kg/s.

**Oil Storage**

OET oil storage consists of two storage tanks with a capacity of 95,400 m³ each.
On-site utilization of oil products for operation needs

Main power generator runs on natural gas supplied from the main gas pipeline. However, other petroleum products will be also used for production and operation purposes at the Prigorodnoye onshore facilities. Oil and oil products will be stored and used at the following facilities:

- Fuel tank with a daily reserve of diesel fuel for emergency compressor: 4.4 m³;
- Fuel tank with a daily reserve of diesel fuel for emergency diesel power generators (2 units): 22.7 m³;
- Fuel tank with a daily reserve of diesel fuel for heating needs: 24.8 m³;
- Fuel tanks with a daily reserve of diesel fuel for a diesel engine driven fire pump: 2.1 + 2.1 m³;
- Fuel tank with a daily reserve of diesel fuel for the office building boiler plant: 16.7 m³;
- Fuel tank with a daily reserve of diesel fuel for the boiler plant of the OET ETP building: 10.8 m³;
- Diesel fuel storage tank for emergency power generator: 330 m³;
- Fuel Tank Truck: 20 m³.

1.2.2.1 Oil Types

The following types of oil and oil products could be spilled during Prigorodnoye onshore operations:
Crude Oil and Condensate Blend

This is a blend of Vityaz crude from Piltun-Astokh and condensate from Lunskoye. Lunskoye crude oil is added to the blend. Both crudes are a light-medium crude with a low content of paraffin and sulphur. The characteristics of the exported blend are determined for each shipment. The main physical and chemical characteristics of the oil products are summarised in Table 1.2 and in Appendix 2, Paragraph 2.2.1., other physical and chemical properties of the oil products are discussed in Document No. 0000-S-90-04-T-8365-00: “Characteristics Of SAKHALIN ENERGY Oil And Condensates: Vityaz Crude”. For calculation purposes the approximate density of crude and condensate blend is assumed to be 0.82 t/m$^3$.

Diesel Fuel Oil

Summer, winter and arctic grade diesel fuel oils are used at SAKHALIN ENERGY Prigorodnoye onshore facilities.

Lubricating Oils

A variety of lubricating oils is used at SAKHALIN ENERGY Prigorodnoye onshore facilities.

Condensate

Condensates are very light volatile liquid hydrocarbons that are recovered from natural gas during extraction or processing. Due to their volatility they have a very low persistence time at sea and on land.

1.2.3 PHYSICAL GEOGRAPHY AND CLIMATE

1.2.3.1 Physical Geography

Sakhalin Island is located at the eastern coast of Asia and is the biggest island in the Russian Federation. The island is aligned north and south between 141°38’E and 144°55’E and is 948km long. Its maximum width is 160km and has a minimum of 26km at the Isthmus of Poyasok. Its area is 76,400km$^2$.

It is separated from continental Asia by the Tatar Strait. The narrowest part of this Strait is the Nevelski Strait; 7.5 km wide, and this freezes in winter. The La Perouse Strait separates Sakhalin from Hokkaido, Japan.

The Prigorodnoye Asset is situated within first marine terrace area which falls steeply over an almost sheer angled 10 to 15 m high bench onto sand coast of Aniva Bay.

Beach shoal running along the shoreline is 20 to 30 m wide. At the western end the site rises to the Mereya river terrace via a medium height bench. In the north the site ends with a steep 25 m high bench falling into a trough-like valley of the Tikhaya River.

The site topography is low, undulating and gently sloping with a general surface slope directed southward. Actual elevations vary from 3.2 to 10.8 m in the southern part to 22 to 30 m in the northern end.
1.2.4 AREA HYDROMETEOROLOGY AND ECOLOGY

HYDROMETEOROLOGY

The moderately humid climate with cold winters typical in the area of the facility location is formed in the active monsoon circulation zone of middle latitudes. In cold season a stable high pressure zone generally referred to as Siberian anticyclone is formed in over the north-east Asia while a low pressure zone, Aleutian minimum, persists over the north Pacific region. This season is dominated by strong winds of north-eastern direction. As the air gets warmer main atmospheric pressure systems regroup and the low pressure zone sets over the continent while a local anticyclone is formed over cold waters of the Sea of Okhotsk. Sea winds prevail and the summer monsoon season begins brining in humid air, fogs and a cool and cloudy summer with a lot of rain.

The LNG/OET site is situated in Climatic Region II, Climatic Sub-Region IIG.

Absolute minimum air temperature is -33°C.
Absolute annual duration of sunny days is 1,900 hours. The average number of sunless days is about 60. The maximum of sunny days is observed in October and the minimum is in January. Total solar radiation amounts to 108 kcal per square centimeter with the peak occurring in July.

Average number of days with fog is 39 with the maximum occurring in the period from June to August.

Annual average ambient air temperature is estimated to be 3.0°C. Spring begins in early April, when the average daily temperature rises above 0°C. The average air temperature of the warmest month (August) is 17°C.

Relative humidity remains high throughout the whole year. Average annual humidity is 82%. Registered monthly values vary within 76.5% (November) and 88.9% (August). The highest seasonal average relative humidity in summer was 87.45 and the winter minimum was 78.9%.

Frost begins in late September / early October and persists till late May. Total duration of the period with stable frost is approximately 100 days, from the first ten days of December to the second ten days of March. Stable snow cover appears in early December and may be as thick as 50 cm. Average air temperature in January is minus 10.7°C and the average of the absolute temperature minimums is -24°C.

The climate in the area of the project facilities is characterized by monsoon type of air circulation. Two distinct seasons are experienced in Aniva Bay, the winter season from approximately October to April when northerly cold winds prevail and the summer season from May to September with light, relatively warm winds from southerly directions. In coastal areas wind flow often deviates from normal direction and winds begin to follow the coastline contours: north-west direction in winter and east direction in summer. Average winds in December to January are 6-7 m/s and 4-5 m/s in June to August. Strong winds (15 m/s) are most frequent in November to December when the number of days with strong wind varies from 4 to 5. The wind speed with a 5% or lower frequency is 12 m/s. The average number of days with extreme wind speeds of more than 20 m/s is 5 per year. High wind speed over open water areas may reach 50 to 60 m/s. Calm periods are rare.

Precipitation averages about 200 mm in cold period and 500 mm in warm months. Total annual rainfall was 542 mm with the most of it registered in July through September. Total monthly average rainfall is within 5 mm in June and rises to 134 mm in September. The peak of the monthly average precipitation occurs in August – 102 cm. Snow cover usually persists over 200 days per year.

Autumn and winter are characterized by glazed frost and up to 30 mm thick icing. Facility buildings and structures of the temporary base will be exposed to icing 21 days per year. Icing events are most typical of December. Absolute maximum air temperature is +33°C.

Thunderstorms are relatively rare and generally occur in summer. Thunderstorm intensity in the area of the SAKHALIN ENERGY facilities is less than 10 hours per year.
Storm surges are also likely to impact the Prigorodnoye Asset area at the time of deep cyclones and typhoons. A storm surge is an onshore gush of water associated with a low pressure weather system, typically a tropical cyclone. Storm surge is caused primarily by high winds pushing on the ocean's surface. The wind causes the water to pile up higher than the ordinary sea level. Low pressure at the center of a weather system also has a small secondary effect, as can the bathymetry of the body of water. It is this combined effect of low pressure and persistent wind over a shallow water body which is the most common cause of storm surge flooding problems. Storm surge events may result in flooding of the coastal onshore area, including that of the facility site. It also poses a risk of damage to jetties and other waterside structures, port equipment and machinery.

Most hazardous natural climatic events in the subject area are:

- High winds with wind speed ≥ 25 m/s;
- Rainstorms with precipitation intensity ≥ 30 mm/h;
- Heavy snow with rain with precipitation intensity 50 mm/h;
- Long-lasting rains persisting over 120 hours and more;
- Heavy snowfalls with precipitation in excess of 20 mm per 24 hours;
- Strong blowing snow with prevailing wind speed ≥ 15 m/s;
- Hard long-lasting frosts (ca -24°C and lower);
- Glazed ice with sediment diameter of up to 20 mm;
- Complex deposits and balling of sleet and saturated snow 35 mm in size or greater;
- Heavy persistent fogs with a visibility of less than 100m.

Human Environment

A brief socio-economic profile of the OSRP coverage area is provided in Table 1.2.
Table 1.1 Human Environment

<table>
<thead>
<tr>
<th>Character</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infrastructure</td>
<td>Sakhalin Island has limited infrastructure, although there is a good sealed road from Yuzhno to Korsakov. An earth road connects Prigorodnoye Onshore Facilities with Korsakov. This road is maintained in good condition by Sakhalin Energy. The bridges on the coastal road around Aniva Bay are built to carry fishermen’s trucks and have load limits of between 20-30 tonnes. Further details are provided in Appendix 17 and on the Sakhalin Energy GIS.</td>
</tr>
<tr>
<td>Population</td>
<td>Korsakov is the largest town in the Aniva Bay area. Other small towns include Aniva, Ozersky and Taranay. The population in the Korsakov District of the Sakhalin Oblast amounts to 41,300 people.</td>
</tr>
<tr>
<td>Fishing</td>
<td>Fishing activity in Aniva Bay is significant, with many seasonal fishing camps setting nets along the coast and in river mouths in the fishing season. Fishing operations range from small coastal fishing to large ocean trawlers. Fishing companies are major employers of local inhabitants. For many families living close to the coast, fish is a substantial source of food and income. Several salmon hatcheries operate in the area and release juvenile salmon into the rivers that flow into Aniva Bay. There is also a sea cucumber farm at Busse Lagoon.</td>
</tr>
<tr>
<td>Algae Gathering</td>
<td>In Aniva Bay the main commercial aggregations of kelp are near Ozersky. Brown algae, kelp and sea kale are gathered during a period from June until September. Red algae are widely spread in Aniva Bay. The main commercial source of red algae, is in the Busse lagoon.</td>
</tr>
<tr>
<td>Tourism</td>
<td>None at present</td>
</tr>
<tr>
<td>Ports</td>
<td>Korsakov is one of the major ports of Sakhalin, as ice-free conditions prevail for most of the year. Cargo ships travelling into and out of Korsakov provide the primary method of importing and exporting goods from Sakhalin Island. Ozersky is a minor fishing port to the south-east of Korsakov.</td>
</tr>
<tr>
<td>Coastal Recreation</td>
<td>The main recreational activities in Aniva Bay are fishing, shellfish gathering, swimming and sunbathing. Beaches near Prigorodnoye onshore facilities are popular recreational beaches used by local population.</td>
</tr>
</tbody>
</table>

Natural Environment

This section provides only a brief summary on biological resources and areas of special value, which can be impacted by oil spills from Company’s facilities. For more detailed information refer to EIA, Vol. 5 ((1000-S-90-04-T-7036-00)).

Areas of Special Value (ASVs)

Areas of Special Value have been identified by SAKHALIN ENERGY through the EIA and Russian Federation legal designations. ASV’s are natural resources or socio-economic resources of importance. Locations have been identified as either sensitive environmental habitat, areas of commercial or social importance or designated areas that are afforded protection under Russian Federation Law and Sakhalin Oblast regulations. ASVs are identified as Natural Assets or Social and Economic Assets.

Natural Assets may include:

- Specially protected natural territories: nature parks, nature reserves, nature sanctuaries, natural monuments.
- Water protection zones around rivers and seas.
- Rare and endangered bird habitats not included in protected areas.
- Habitats of rare sea mammal species.
Social and Economic Assets may include:

- Areas of traditional use inhabited by minority groups.
- Archaeological sites.
- Health resorts and spas.
- Beaches, hiking sites, populated areas' recreational zones.
- Industrial and transportation facility areas.
- Seaports.
- Socio-economic facilities.
- Farms and food-industry facilities.
- Fish farms.
- Farm land.

**Environmental Protection Priorities**

Environmental priorities for protection include:

- Land and water habitats of all rare and protected mammal and bird species, as listed in the International Red Book and the Red Books of the Russian Federation and the Sakhalin Oblast.
- Other areas of special significance and environmentally sensitive natural resources.

**Coastal Flora**

Sedge (*Carex crytocarpa*), or reed-grass meadows develop in areas with high moisture levels, with thick stalked plants such as *Angelica gmelinii* and Scottish licorice-root (*Ligusticum scoticum*) also being present.

In relatively young areas where sand dunes have recently developed, thickets of plants such as the Japanese rose (*Rosa rugosa*), saw-wort (*Saussurea sachalinensis*), wormwood (*Artemisia opulenta*), seaside rag-wort (*Senecio pseudoarnica*) and the sea-pea (*Lathyrus japonica*) are characteristic. Dune grass (*Elymus mollis*) is dominant in places where the stabilised sand has formed coastal meadows.

Other species within this habitat include the large-head sedge (*Carex macrocephala*), the tree lupin (*Thermopsis lupinides*), and the oyster plant (*Mertensia maritima*). Coastal lagoons are dominated by *Chorisis repens*.

**Birds**

According to published sources and field studies (EIA Volume 5 Chapter 2), about 135 bird species are present in the area. These species can be broadly categorised as:

- Seabirds.
- Wetland species.
- Terrestrial species.

Species of seabird and waterfowl are relatively abundant, although not as significant as in other areas of the Sea of Okhotsk in terms of diversity. The littoral zone and lagoons of Aniva Bay appear to be an area of intensive seasonal migration of both
seabirds and waterfowl. The bay also includes colonially-nesting seabirds (guillemots, gulls, terns), and species valuable for commercial hunting (sea and fresh water ducks, geese, waders), and a number of protected species.

Aniva Bay also serves as an important area in the annual migration of numerous species from and to northern areas such as the Chukotka and Kamchatka regions and the northern coasts of the Sea of Okhotsk during autumn and spring.

There are 19 species of rare and endangered birds listed in the Red Data Book of the Russian Federation and protected by Russian Federal law that live in, or migrate through, the Aniva Bay area (as listed below). A full list of species that can be found in Aniva Bay can be found in the EIA-Vol 5.

- Temminck's cormorant (*Phalacrocorax filamentosus*).
- White-billed loon (*Gavia adamsii*).
- Bewick's swan (*Cygnus bewickii*).
- White-tailed sea-eagle (*Haliaeetus albicilla*).
- Oystercatcher (*Haematopus ostralegus osculans*).
- Spoon-billed sandpiper (*Eurynorhynchus pygmeus*).
- Japanese (Latham’s) snipe (*Gallinago hardwickii*).
- Long-billed murrelet (*Brachyramphus marmoratus perdix*).
- Whooper swan (*Cygnus cygnus*).
- Osprey (*Pandion haliaetus*).
- Steller’s sea-eagle (*Haliaeetus pelagicus*).
- Kentish plover (*Charadrius alexandrinus*).
- Red-necked phalarope (*Phalaropus lobatus*).
- Long-toed stint (*Calidris subminuta*).
- Curlew sandpiper (*Calidris ferruginea*).
- Broad-billed sandpiper (*Limicola falcinellus*).
- Far eastern curlew (*Numenius madagascariensis*).
- Aleutian tern (*Sterna aleutica*).
- Little tern (*Sterna albifrons*).

Spring migration occurs between the end of March and the end of May. During the summer period (June - August), juvenile and non-nesting birds periodically migrate along the coast. The autumn migration occurs between September and November with migrating bird population increasing by 20 to 30%. In November, wintering sea birds arrive in the offshore coastal waters. Numbers in coastal waters vary, depending on ice conditions, but wintering birds can be encountered up to February.

No nesting grounds of Red-Book species were observed near Prigorodnoye onshore facilities. However, they may be present there during seasonal migration. Considerable concentrations of migrating birds near the industrial site is very unlikely for reasons of industrial noise generated by the onshore facilities.

**Terrestrial Habitat**

Spruce and fir forests grow on the valley slopes and river terraces, whilst willow and poplar scrub dominate the floodplains. Wet-meadows and marshes have developed in waterlogged and coastal areas. Tall grasses (2 to 4m high) grow in the river valleys.
The area near the LNG/OET Facility consists of mixed forest with predominant conifers (spruce, fir, larch and Dahurian and Erman’s birches). Sakhalin willows, poplars, Mongolian oak, Sakhalin cork tree are also found in the forest. Associated plants include cedar elfin wood and alder bushes, and bamboo in open areas. No first category (group) forests are found in the area of the LNG/OET site.

**Water Resources**

The LNG/OET site is located within the Susunaisk Basin, which is part of the wider Tunaihinskii inter-mountain artesian basin. The water table at the LNG/OET site is 3.9 m below ground level. Groundwater in the area falls into two categories:

- Interstitial groundwater occurring in near surface quaternary sediments of different origin.
- Deeper groundwater within fissured bedrock formations.

The interstitial groundwater level varies through the seasons, and discharges are normally into nearby surface watercourses. The deeper groundwater forms an aquifer from which potable water is extracted for use in the Korsakovski area.

The Mereya River is situated adjacent to the western boundary of the LNG/OET site and is one of the many rivers that flow into Aniva Bay. The river is in the highest classification category (Category 1) according to RF National Standards as it is an important spawning ground for salmon.

Water protection zone of the Mereya River is 100 m and the size of the sanitary protection zone is 15m. The sizes of these water protection zones and sanitary protection zones comply with the requirements of the paragraphs 4, 5 and 11 of the Article 65 of the Russian Federation water Code adopted as the federal law No. 74-FZ of 3rd June 2006 (as amended on 25 June 2012). The Mereya is a salmon spawning river for such salmon species as pink salmon and chum salmon.

Pink salmon spawning period continues from July till October. Young fish migrates down in the sea from April to July. Chum salmon spawns in September. Young fish migrates down in the sea from April to July.

The Goluboi Creek flows across the territory of the facilities dividing the LNG and OET sites. The creek belongs to the highest fishing category, so its sanitary protection zone is 35 m and the size of water protection (buffer) zone is 50 m. The sizes of these water protection zones and sanitary protection zones comply with the requirements of the paragraphs 4, 5 and 11 of the Article 65 of the Russian Federation water Code adopted as the federal law No. 74-FZ of 3rd June 2006 (as amended on 25 June 2012).

SAKHALIN ENERGY has produced environmental sensitivity maps for Aniva Bay. These maps provide detailed information about presence and seasonal distribution of biological and socio-economic resources, and areas of special value (significance). These maps are available in SAKHALIN ENERGY in GIS format softcopy and hardcopy printouts. They will be used in OSR operations planning.

**Seismic Conditions**

The area of the onshore facilities is part of grade 8 seismic intensity zone with an
average seismic impacts return period of 1000 years (SniP 11-7-81* Construction in seismically active areas). However, considering the hazard rating of the facility (which is 1) the seismicity requirements for the site were raised to grade 9.

The south-eastern part of the site is considered to be most vulnerable in terms of seismic impact, as it is likely to rest on ruptural tectonic disturbance, which complicates the structure of creased bedrock.

Earthquakes may result in emerging risk factors: engineering / geological risks (landslides, landfalls, subsidence of rock, etc.); hydrometeorological risks (tsunami), Environmental risks (water and atmospheric air pollution); man-induced risks (fires, explosions, industrial accidents).
1.3 INTRODUCTION

This Section presents Sakhalin Energy’s approach to OSR planning. This encompasses a number of stages including:

- Oil spill risk assessment based on Sakhalin Energy’s “Project Specific Technical Specification on Quantitative Risk Assessment”. This includes;
  - Identification potential source of spills
  - Calculation of potential spill volumes.
- An assessment of the resources at risk from spills. This is based on;
  - Spill scenarios and trajectory modeling and identification of areas at risk of oil impact.
  - Identification of resources (biological, social and economic) that may be impacted (see Section 1.2.3 and Appendix 1).
  - Evaluation of the character and behaviour of the oils, particularly persistence and weathering.
- Assessment of spill prevention methods.
- Calculation and assessment of required spill response capabilities.

1.3.1 POSSIBLE SOURCES OF AN E/O

Possible sources of spills include the following:

- Onshore process pipelines.
- OET storage tanks.
- Fuel tanks for diesel storage at LNG and at auxiliary facilities (boiler plants, emergency generators, etc.).
- Fuel tanks of automobiles (vehicles);
- Fuel tank trucks for diesel fuel transportation.

1.3.2 PREDICTION OF VOLUMES AND AREAS OF OIL AND OIL PRODUCT SPILLS

For oil spill response planning purposes, including trajectory modeling, the spill volumes indicated in RF Government Decree No 613 of 21st August 2000 have been used.

Table 1.3 contains quantitative risk assessments (QRAs) to determine a number of possible spill scenarios. These include the calculation of the maximum credible spill size for Prigorodnoye onshore operations (see Table 1.2).

Maximum Credible Spill Size

Maximum credible spill volumes are those considered possible within the lifetime of a facility (see Appendix 2). They are based on worst-case scenarios but make allowance for implemented safeguards, spill prevention and spill minimization strategies.

Maximum credible spill size for Prigorodnoye Onshore Operations is 95,400$m^3$ (OET storage tank, see Table 1.2). The spill will be contained within OET tank farm bunding.
### Table 1.2 Spill Causes and Worst Case Volumes

<table>
<thead>
<tr>
<th>Ref</th>
<th>Spill Scenario</th>
<th>Estimated Max Spill Size</th>
<th>Oil Type</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Process lube oils</td>
<td>Up to 14 m³</td>
<td>Lube oil</td>
<td>Minor leak or loss of entire contents.</td>
</tr>
<tr>
<td>2</td>
<td>Leaks from hoses during transfer</td>
<td>&lt; 1 m³</td>
<td>Hydraulic oils</td>
<td>Minor leak</td>
</tr>
<tr>
<td>3</td>
<td>Leak from diesel fuel storage tank</td>
<td>330 m³</td>
<td>Diesel fuel</td>
<td>Minor leak or loss of entire tank contents. Spill will be contained within bunding.</td>
</tr>
<tr>
<td>4</td>
<td>Leak from tank truck.</td>
<td>20 m³</td>
<td>Diesel fuel</td>
<td>Loss of entire tank contents</td>
</tr>
<tr>
<td>5</td>
<td>Leak from tanks</td>
<td>95,400 m³</td>
<td>Crude-Condensate blend</td>
<td>Calculated in accordance with RF Government Decree No. 613. Loss of entire tank contents</td>
</tr>
<tr>
<td>6</td>
<td>Rupture of a process pipeline.</td>
<td>273.4 m³</td>
<td>Crude-Condensate blend</td>
<td>Actual volume is 100% maximum flow for 3 min. required to stop it (emergency shutdown) plus contents between stop valves at the damaged pipe section.</td>
</tr>
<tr>
<td>7</td>
<td>25% of the 6-hour leak from a ruptured pipeline</td>
<td>4,101.4 m³</td>
<td>Crude-Condensate blend</td>
<td>Calculated in accordance with RF Government Decree No. 613</td>
</tr>
<tr>
<td>8</td>
<td>2% of the 14-day leak from a punctured pipeline</td>
<td>17,741 m³</td>
<td>Crude-Condensate blend</td>
<td>Calculated in accordance with RF Government Decree No. 613</td>
</tr>
<tr>
<td>9</td>
<td>Risk of oil spill from auxiliary oil spill containment structures:</td>
<td>95,400 m³</td>
<td>Crude-Condensate blend</td>
<td>100% of oil leak from the tank in the heavy rain case which may results in that the closed hydrocarbon waste water drainage system is overfilled, the oil-containing water finds its way into the drainage system for the waste water that is contaminated with oil products only occasionally and the waste water enters the effluent treatment facilities</td>
</tr>
</tbody>
</table>

### 1.3.3 BOUNDARIES OF E/O ZONES TAKING INTO ACCOUNT OIL AND OIL PRODUCTS SPILL RISK ASSESSMENT RESULTS

Boundaries of E/O zones are shown in Appendix 2. These are based on oil spreading analysis. Adequate measures have been provided at Prigorodnoye onshore facilities to reduce contamination of the environment resulting from potential oil spills from process and auxiliary equipment as well as from bunded areas around oil and diesel fuel tanks. Drainage system is installed on the territory of complex, for collecting of rain and snow waters, including the sites inside of bunding of OET tanks. During winter, personnel regularly monitor the territory (including bunds around tanks) for snow accumulation and clean-up. These and other activities aimed to prevent spreading of oil patch caused by emergency oil spill.

Thus the potential oil spill impact zones remain within the boundaries of the
Prigorodnoye onshore facilities.

The area of the potential oil spill is determined in accordance with the methods of calculation used for the assessment of oil spill impact zones, which take into account the existing slopes (Recommendations for ensuring fire safety of oil processing and storage facilities located at residential areas, Fire Safety Research Institute/VNIIPo, Moscow, 1997).

Oil spill impact zone is calculated in accordance with the following formulas:

**Area of oil spill impact zone:**

\[ F_{iz} = f_z \times E_s \times V_s \]  \hspace{1cm} (1.3.1)

where:

- \( F_{iz} \) is the area of oil spill impact zone in m\(^2\)
- \( f_z \) is the spill factor m\(^{-1}\), which equals 5 if the slope does not exceed 1 degree.
- \( E_s \) is the filling degree of the tank - quotient.
- \( V_s \) is the rated tank volume in m\(^3\)

**Radius of oil spill impact zone:**

\[ R_{iz} = \sqrt{\frac{F_{iz}}{\pi}} \] \hspace{1cm} (1.3.2)

where:

- \( \pi = 3.14 \) (pythagorean number)

**Perimeter of oil spill impact zone:**

\[ P_{iz} = 2R_{iz} \times \pi \] \hspace{1cm} (1.3.3)

1.3.4 SITUATION MODELS OF THE MOST HAZARDOUS E/O/S AND THEIR SOCIOECONOMIC CONSEQUENCES FOR THE PERSONNEL, GENERAL PUBLIC AND THE ENVIRONMENT IN THE ADJACENT TERRITORY

**Resources Located within Zones of Potential Impact**

Once the Zones of Potential Impact (ZPI) are identified, Sakhalin Energy has surveyed and mapped the area. Surveys undertaken at Prigorodnoye include both aerial surveys and ground surveys.

Ecological sensitivity maps have been prepared based on these surveys and other available data from government or other sources. Paper copies of the seasonal ecological sensitivity maps are located in the ECC. Maps and data on the biological resources of the area are also on the Sakhalin Energy GIS.

1.3.4.2 Most Hazardous E/O Scenarios and Their Potential Impacts

Consequences of hazardous incidents may be:

- Health effects on personnel and population.
- Environmental effects.
- Economic effects.
Effects may encompass all or some of the above. Generally, the most hazardous scenarios are those associated with explosions of gas or condensate or fires associated with spills. Scenarios for Prigorodnoye onshore operations are described in Appendix 2.

In terms of spill size the worst-case scenario for Prigorodnoye Onshore operations involves complete structural failure of an OET storage tank (95,400m³/78,228t). These tanks have a 4m bund for each capable of holding 120,000m³. Even in case of a worst-case scenario the entire volume of spilled oil will be contained within the bund to be subsequently recovered with OSR equipment.

1.3.5 DETERMINATION OF ADEQUATE CAPABILITY OF EOS RESPONSE TEAMS AND RESOURCES AND FIRE-FIGHTING UNITS TO RESPOND TO OIL/OIL PRODUCT IGNITION, TAKING INTO ACCOUNT THEIR LOCATIONS

In compliance with RF Government Decree of August 21, 2000 #613 (as of April 15, 2002) and Sakhalin Oblast Administration Decree of November 10, 2005 #203-pa (as of 16.02.2007, #31-pa) the primary objective of spill response is “to contain any spill on site and to recover oil as quickly as possible”.

Spill response must consider the safety of personnel, including responders.

Based on preferred response strategies, an analysis has been carried out on the amount and type of resources that are required to provide an effective response to a number of spill scenarios.

Response Capability Requirements

RF Government Decree of August 21, 2000 #613 and Sakhalin Oblast Administration Decree of November 10, 2005 #203 stipulate that the facility should have the capacity to contain a "maximum possible onshore spill volume" within 6 hours from either the moment the spill was detected or the moment that a spill report was received. For Prigorodnoye onshore production facilities this “maximum possible spill volume” is 78,300t (95,400m³) of crude oil-condensate blend spilled from oil storage tanks into a bunded area.

OSR Resources

The Sakhalin Energy response includes an immediate on site response by specially trained LNG/OET personnel as well as by contracted professional OS ERT -, and additional response involving other Sakhalin Energy and OSR contractors’ resources. The resources available to Sakhalin Energy for responding to oil spills in Sakhalin are described in detail in Appendix 8.

Effective onshore response requires a balance of:

- Containment (land booms).
- Recovery (vacuum pumps of various capacity and sorbents), and
- Temporary storage for oil and oily waste.

Oil spill response resources are accumulated at the Prigorodnoye Asset. This includes Onshore and Offshore ER depots. Onshore ERD (OSR Garage) contains two OSR trailers, two mobile OSR packs based on Urals as well as specialized OSR
equipment for the PMD (see Appendix 8). Equipment includes booms, skimmers, sorbent materials and is kept in a permanent state of readiness and is maintained by the Sakhalin Energy OSR Contractors.

**Mobilisation Times**

Prigorodnoye Onshore OSR resources will be mobilized within 30 min (First Intervention Team (FIT) and Back-up Team (BUT)). Response times for other Sakhalin Energy OSR resources are detailed in Section 1.4.2.

Response time calculations are detailed in Appendix 5.

**Capability Calculations Results Including Fire Fighting Units**

**Oil Spill Response Capability**

The oil spill response capability at the Prigorodnoye Asset is sufficient to meet the requirements of RF Decree 613, which stipulates that onshore production facilities should have the capability to contain a worst-case spill within 6 hours. Appendix 5 provides details of response calculations and the Calendar Plans provided in Appendix 4 illustrate typical response timelines for selected spill scenarios.

Response to onshore oil spills is undertaken primarily from the OSR Garage located directly on site of the Prigorodnoye onshore facilities. This facility contains all necessary OSR equipment and materials. OSR resources and materials include containment and response equipment. OSR Resources from the Emergency Marine Base can be also used if necessary.

**Fire Response Capability**

A short-term high fire risk will accompany any release of crude-condensate blend at Prigorodnoye onshore facilities.

Prigorodnoye onshore Asset has a fire unit of 16 firemen: 3 units and the fire fighting commander. Besides, off-duty personnel can be deployed for the fire fighting operations. A group of 30 people can be assembled on the territory of the Prigorodnoye onshore facilities within one hour. The Asset has 4 stationary fire monitors with the capacity of 150 m³/h, 4 foam monitors, 3 fire engines with monitors on top and all the required firefighting equipment. Detailed list of fire protection and firefighting equipment is presented in the Sakhalin Energy Prigorodnoye Asset Fire Fighting Plan (Document Number: 7000-S-90-04-P-7012-00).

Responsibilities / functions of the fire unit:

- Contain fire spreading;
- Ensure safety of guarded assembly post;
- Ensure evacuation of Prigorodnoye onshore facility personnel.
1.3.6. **E/O PREVENTION MEASURES**

**Oil Spill Prevention**

Oil and oil products pipelines, storage tanks and all process equipment at Prigorodnoye onshore facilities are designed and equipped with oil spill prevention systems and equipment to prevent a spill occurring and minimise the amount released.

The pipelines will be monitored by pipeline leak detection software. This software interfaces with the pipeline to detect the leak location based on flow imbalance, pressure change and statistical methods.

Controls and measures to prevent a leak and to control liquid hydrocarbon leaks include:

- Design to address pipeline surge effects.
- Detailed Operating Procedures for handling and management of oil and petroleum products.
- Emergency Shutdown Systems (ESD).
- Emergency disconnection systems (hoses).
- Isolation Valves.
- Breakaway couplings.
- Tank overflow detectors.

A general summary of spill prevention systems and procedures covering Prigorodnoye onshore operations is provided in Table 1.4.
Table 1.3 Summary of Spill Prevention Measures for Prigorodnoye Onshore Operations

<table>
<thead>
<tr>
<th></th>
<th>General Procedures to Prevent Hydrocarbon Leaks</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
<td>Sakhalin Energy follows safe operating procedures and safe systems of work in order to minimise oil spill hazards at its production facilities.</td>
</tr>
<tr>
<td>A2</td>
<td>Equipment and technology used at Prigorodnoye onshore facilities meet published regulatory standards, including Russian and International standards developed by the leading international organisations of the oil and gas industry, and industrial safety standards.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>B</th>
<th>Spill Risk Mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>B1</td>
<td>Refuelling will operate under a permit system (i.e. in accordance with time schedule and procedures).</td>
</tr>
<tr>
<td>B2</td>
<td>Process pipelines will be routinely inspected and maintained (i.e. in accordance with Terminal procedures).</td>
</tr>
<tr>
<td>B3</td>
<td>Oil spill response and cleanup equipment onshore will be maintained in a constant state of readiness at all times.</td>
</tr>
<tr>
<td>B4</td>
<td>Safety procedures will be in place at every processing facility for all operations that involve the handling of fuel, oil and oily effluents.</td>
</tr>
<tr>
<td>B5</td>
<td>Relevant personnel will be adequately trained in oil spill response.</td>
</tr>
<tr>
<td>B6</td>
<td>All permanent and temporary fuel storage tanks and containers are designed and constructed for compatibility with the materials to be stored within them and clearly labelled.</td>
</tr>
<tr>
<td>B7</td>
<td>Materials known to be incompatible with petroleum products will be segregated in storage areas to prevent mixing during handling or accidental spills.</td>
</tr>
<tr>
<td>B8</td>
<td>Safe and environmentally sound procedures for using petroleum products are followed. These procedures are based on the Material Safety Data Sheets (MSDSs) / Safe Handling of Chemicals (SHOC) recommended handling guidance and material incompatibility information.</td>
</tr>
<tr>
<td>B9</td>
<td>The onshore facility HSE Management System and Emergency Response Manuals including OSRPs are kept up to date in accordance with relevant procedures.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>C</th>
<th>Prevention of Structural Failure to Tanks</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1</td>
<td>An extensive program has been undertaken to collect information on the environmental conditions to ensure that these potential forces were and are addressed in the design and installation of facilities.</td>
</tr>
<tr>
<td>C2</td>
<td>Measures preventing the occurrence and potential consequences of structural failures are detailed below.</td>
</tr>
<tr>
<td>C3</td>
<td>Environmental Design: Specific phenomena such as wind, waves, current, temperature, tide, marine growth, chemical components of air and water, snow and ice, earthquakes, tsunami, and Sakhalin Energy have been addressed.</td>
</tr>
<tr>
<td>C4</td>
<td>Corrosion Protection: Facilities are protected from the effects of corrosion by a corrosion protection system and anticorrosive coatings which take into account the possible existence of stress corrosion, corrosion fatigue during the facilities’ life.</td>
</tr>
<tr>
<td>C5</td>
<td>Inspections: Regular inspections will be carried out to monitor the condition of the structures in accordance with the adopted inspection strategies.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>D</th>
<th>Mitigation of Risk During Oil Handling Operations</th>
</tr>
</thead>
<tbody>
<tr>
<td>D1</td>
<td>Preventive and protective measures will be taken to reduce the risks and causes of oil spills.</td>
</tr>
<tr>
<td>D2</td>
<td>Compliance with codes and standards (together with establishment of adequate training programs and adherence to safe operating procedures).</td>
</tr>
<tr>
<td>D3</td>
<td>Formal hazard analysis studies identified in published industry standards have been undertaken to ensure that oil loading related hazards have been identified, analysed, and controlled.</td>
</tr>
<tr>
<td>D4</td>
<td>Loading hoses and pipes are equipped with breakaway couplings.</td>
</tr>
<tr>
<td>D5</td>
<td>An emergency shutdown system is provided to initiate appropriate shutdown and isolation actions to prevent escalation of abnormal conditions into a major hazardous event.</td>
</tr>
<tr>
<td>D6</td>
<td>Hazard and operability (HAZOP) studies of the loading operations have been performed.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>E</th>
<th>Spill Response Preparedness</th>
</tr>
</thead>
<tbody>
<tr>
<td>E1</td>
<td>The Prigorodnoye OSR storage (garage) has all necessary equipment and resources to ensure adequate response to oil spills.</td>
</tr>
<tr>
<td>E2</td>
<td>The personnel supporting onshore operations at Prigorodnoye is trained in the deployment and operation of dedicated oil spill response equipment.</td>
</tr>
</tbody>
</table>
Safety Systems at Prigorodnoye Onshore Facilities

Prigorodnoye onshore facilities are equipped with fire and gas hazard detection, alarm and protection system. This system is the primary means of detecting fire hazards and presence of gas in closed and semi-closed rooms and working space at Prigorodnoye onshore facilities.

The system is designed to send a signal and activate emergency shutdown system along with sound and light alarm system at LNG and OET facilities.

These safety and protection measures form an integral part of overall safety and emergency shutdown system covering onshore facilities of the OET and LNG plant. Detailed description of emergency procedures for onshore operations is included in respective facility emergency response plans.

Emergency Shutdown Procedures

In the event of a spill it is important that procedures are undertaken to prevent further spillage by stopping the spill and isolating the source. The guidelines below should be followed.

**Spills from Tanks:**

- Stop all operations and close valves using emergency shutdown systems of the TLU, OET and onshore TTS.
- Lower fuel level in the tank by discharging part of the loaded fuel in an empty or partially filled tank.
- Prepare mobile pumps to recover and transfer spilled oil where possible in an empty or partially filled tank.
- Ensure compliance with all personal safety measures during shutdown operations.

**Leaks from Process Pipelines:**

- Stop all transfer operations, and close stop valves.
- Identify leak source.
- If the valve is operated manually, find a safe way to access it (stay away from gas clouds or oil vapours).
- Ensure compliance with all personal safety measures during shutdown operations.
1.4 RESPONSE TIERs

Under RF legislation, the resources of the Russian System for Prevention of and Response to Emergencies (RSChS) should be used to respond to any emergency situations from asset level through to federal level and associated responses are classified across tier levels both for onshore and inland fresh water oil spills.

The escalation of Tiers can vary but, generally, it is envisaged that in the event of an emergency that cannot be contained and responded to by the available resources of any level, the appropriate Emergency Commission will request the next level Emergency Commission (KChS&FS) to provide assistance.

In such cases, the higher (KChS&FS) might assume coordination and/or management of the response and control of resources.

According to the existing RF laws/regulations, tiered response to onshore and inland fresh water oil spills onshore spills consists of five tiers:

- Tier 1 (local or asset level),
- Tier 2 (municipal level),
- Tier 3 (territorial level),
- Tier 4 (regional level),
- Tier 5 (federal level).

Table 1.5 Definitions of Tiers of Response to Onshore and Inland Fresh Water Oil Spills

<table>
<thead>
<tr>
<th>Response Tier</th>
<th>Description of Tier (Significance of Spill and Level of Response)</th>
<th>Indicative Spill Volume (1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tier 1</td>
<td>Local: Emergency of local importance(^\text{1}). The oil spill should be contained and effectively responded to by resources of the organisation/company that owns the facility where the spill has occurred (Asset Resources). For this OSRP a Tier 1 response is a response managed by Sakhalin Energy resources.</td>
<td>0.2(^\text{2}) or from the MNR defined lower limit(^\text{3}) up to 100 t. All spills into water bodies(^\text{4}),(^\text{5})</td>
</tr>
<tr>
<td>Tier 2</td>
<td>Municipal: Emergency of municipal importance(^\text{1}). The resources on a municipal area may be engaged in addition to the asset resources (Tier 1 Resources). Any spill where Sakhalin Energy needs to call in assistance, e.g. other industry resources under existing agreements.</td>
<td>100 to 500 t or to 100 t beyond the asset territory limits</td>
</tr>
<tr>
<td>Tier 3</td>
<td>Territorial: Emergency of territorial importance(^\text{1}). The response resources of the Sakhalin subsystem of RSChS may be engaged in addition to the Tier 1 and Tier 2 Resources.</td>
<td>500 to 1000 t or to 500 t beyond the municipal territory limits</td>
</tr>
<tr>
<td>Tier 4</td>
<td>Regional: Emergency of regional importance(^\text{1}). The response resources of RSChS on Far East region may be engaged in addition to the Tier 1, 2 and 3 resources.</td>
<td>1000 to 5000 t or to 1000 t beyond the RF constituent entity limits</td>
</tr>
<tr>
<td>Tier 5</td>
<td>Federal: Emergency of federal importance(^\text{1}). The response resources of RSChS on Russian Federation territory, foreign companies and international OSR Centres may be engaged in addition to the Tier resources above.</td>
<td>Up 5000 t or one beyond the state boundary of the Russian Federation irrespective of size</td>
</tr>
</tbody>
</table>

(1) From RF Government Executive Order of 15th April 2002 No. 240
1.4.1.1 Tier 1 (Local)

Tier 1 response corresponds to an oil spill emergency of local significance occurring on land or in surface water bodies (spills from 0.2 to 2t within facility site). A Tier 1 response is defined as a response that is effectively managed by the organisation or company that owns the facility from which the spill has occurred.

If need be resources from district area may be engaged in addition to the asset’s resources, including contracted professional emergency response and rescue units (services), resources of dedicated and properly certified/licensed OSR contractors.

1.4.1.2 Tier 2 (Municipal)

Tier 2 response corresponds to an oil spill emergency of municipal significance occurring on land or in surface water bodies (spills from 100 to 500t).

Spill to the extent of the municipal formation administrative boundaries or spill beyond the facility territory limits. Resources from district area may be engaged in addition to the asset’s resources, including contracted professional emergency response and rescue units (services), resources of dedicated and properly certified/licensed OSR contractors.
1.4.1.3 Tier 3 (Territorial)

Tier 3 response corresponds to an oil spill emergency of territorial significance occurring on land or in surface water bodies (from 500t to 1000t).

Resources from Sakhalin Oblast area may be engaged in addition to resources for Tier 1 and 2. The RSChS Oil Spill resources, resources of oil companies and support organisations may be mobilised, including OSR resources of organizations with own OS emergency response and rescue teams and respective licenses.

1.4.1.4 Tier 4 (Regional)

Tier 4 response corresponds to an oil spill emergency of regional significance occurring on land or in surface water bodies (from 1000t to 5000t).

Resources from Far East area may be engaged in addition to above tiers. The RSChS Oil Spill Response resources, resources of oil companies and support organisations may be mobilised, including OSR resources of organizations with own OS emergency response and rescue teams and respective licenses.

1.4.1.5 Tier 5 (Federal)

Tier 5 response corresponds to an oil spill emergency of federal significance occurring on land or in surface water bodies (>5000t).

In addition to above tiers, oil spill resources of RSChS, MChS (EMERCOM), and international oil spill response resources may be engaged by arrangement with the authorized governmental bodies. Federal spill response is managed by the Interdepartmental KChS&FS attached to the RF Government and EMERCOM of Russia.

1.4.1.6 Determining the Response Tier

According to classification of onshore oil spills both on land and surface water bodies based on spill volumes the worst case spill scenario, which is associated with crude oil leak from storage tank, falls under the category of federal level E/O (95,400 m³). However, in the event of an actual spill oil will be contained within the facility site boundary and it will not escape the site of Prigorodnoye onshore facilities. Sakhalin Energy has all necessary resources and OSR capability to contain and respond to oil spills of any tier within the site boundary of (Section 1.3). Other potential oil spills at the site of Prigorodnoye onshore facilities can be attributed to Tier 1 and 2 and do not escape the site boundaries.

In coordination with a specially authorized government body (at the district or oblast level) Site Controller can recognize a spill to be of a higher response tier based on specific location, weather conditions, environmental and health impact, including exposure of local public. Then a higher level of authority will assume the coordination of response operations and additional resources are mobilised and activated and the control will be transferred to the Unified Command under the Korsakov District or Oblast Emergency and Fire Safety Committee.
1.4.2 RESPONSE RESOURCES, THEIR LOCATION AND TRANSPORTATION TO THE E/O ZONE

The Prigorodnoye Onshore OSRP is part of an integrated series of OSRPs covering all Sakhalin Energy facilities. The OSR Equipment stored by Sakhalin Energy at any of the Sakhalin Energy facilities is available for response at Prigorodnoye. This ensures that the equipment is interchangeable and that all emergency response teams (ERT) are familiar with the safe operation of equipment.

Sakhalin Energy’s OSR Resources

Location of OSR Equipment

Emergency Response Depots

Planned Emergency Response Depots (ERDs) are listed below and shown on the map (see Figure 1.5).

- Nogliki (Marine and Onshore bases).
- OPF (Onshore).
- BS2 (Onshore).
- Sovetskoye (Onshore).
- Yasnoye (Onshore).
- Prigorodnoye (Onshore OSR Storage and Marine Base (MOSB)).
- Kholmsk (Marine Base).

Rapid Deployment Packs

In addition to these ERDs, bases and storages, Rapid Deployment Packs (RDPs) are deployed, at certain times of the year, close to sensitive areas to provide extra resources. RDPs consist of light equipment contained in a helicopter sling, Ural road trailer or other container.

This equipment is designed to be located in areas of seasonal sensitivity, at locations that are difficult to access from a PMD due to great distance, or to provide support to construction, maintenance or other temporary activities. During the winter RDPs will be stored at ERDs for maintenance and protection. The equipment is listed in Appendix 8.

Human Resources

For response to Tier 1 and 2 oil spills at the onshore facilities of the Prigorodnoye Asset the First Intervention Team (FIT) consisting of 8 shift operators, who are specially trained in the OSR issues, will be engaged. Additionally, the Back-Up Team (BUT), in which off-shift operators are included, may be engaged. Total size of the two groups amounts to 16 men (8 operators in each of two shifts). The FIT can be mobilized in the established muster station within a ten-minute period after the notification is given. The mobilisation period for the Reserve Emergency Response Group is 30 minutes.

In addition personnel from another Sakhalin Energy ERDs can be also mobilised for response if necessary. Table 1.4 lists the OSR/Emergency Response teams.
Qualifications and Training

According to RF Government Resolution No. 1479 on Certification of Emergency Rescue Units and Rescuers (November 22, 1997) all personnel involved in emergency response are to be registered or operate under management of properly accredited and licensed OSR Contractor. In case of an emergency oil spill the personnel based in Yuzhno-Sakhalinsk will be called in to support the OST Contractor’s resources kept in instant preparedness at Prigorodnoye. The time for mobilization and arrival of the oil emergency response team with OSR equipment to the Prigorodnoye Asset site is 2 hours. The oil spill response drills and exercises are outlined in Appendix 16.
Table 1.6 Emergency Response Teams Available from Sakhalin Energy’s Facilities

<table>
<thead>
<tr>
<th>Oil spill type</th>
<th>Facility / Location</th>
<th>Non-professional ERT</th>
<th>Professional ERT</th>
<th>Standby Contractor groups</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>On-Site Duty OSR Team total/shift</td>
<td>OSR Contractor</td>
<td></td>
</tr>
<tr>
<td>Offshore spills</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Progorodnoye Asset OSR Storage and Prigorodnoye Port MOSB</td>
<td>79/13</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Onshore and inland waters spills</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nogliki PMD</td>
<td>-</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nogliki NMT base</td>
<td>-</td>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lunskoye PMD, OPF</td>
<td>43/8</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yasnoye PMD</td>
<td>-</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poronaysk CMT base</td>
<td>-</td>
<td>12</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gastello PMD, BS-2</td>
<td>22/11</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sovetskoye PMD</td>
<td>-</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yuzhno-Sakhalinsk SMT Base</td>
<td>-</td>
<td>12</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prigorodnoye Asset OSR Storage and Prigorodnoye Port MOSB</td>
<td>79/13</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time limit</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personnel size</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>within 12 hours</td>
<td>25 persons, minimum</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>within 24 hours</td>
<td>20 persons, minimum</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>within 36 hours</td>
<td>138 persons, minimum</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Under the Contract, the PERT Contractor (Task No.3) shall, as and when requested by the Company, grant access to the additional resources by mobilizing the personnel (up to 183 persons) of the Contractor’s other territorial units if it is necessary to conduct emergency OSR operations (see the table given below).
Figure 1.5 Locations of OSR Emergency Response Depots
Transportation to O/E Zone

Table 1.7 indicates mobilisation and travel time of OSR resources from other ERDs and bases of Sakhalin Energy to Prigorodnoye onshore facilities.

<table>
<thead>
<tr>
<th>Spill Type</th>
<th>ERD</th>
<th>Mobilization Time (hours)</th>
<th>Time on Site (hours)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oil spills on land and inland water bodies</td>
<td>Nogliki</td>
<td>4</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>OPF</td>
<td>4</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>BS-2</td>
<td>4</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Sovetskoye</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Yasnoye</td>
<td>4</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>Kholmsk (base)</td>
<td>4</td>
<td>3</td>
</tr>
</tbody>
</table>

Third Party Resources

Government Resources

Government equipment is available for Prigorodnoye onshore oil spill responses through the district and oblast KChS.

In the event of an oil spill of local or territorial significance, Main Department of MChS of Russia for Sakhalin Oblast is able to call on the support of local emergency rescue services and fire fighting teams based in the Oblast territory, as well as public health and internal affairs departments of the municipality.

For spills of regional significance, manpower and equipment may be called on from MChS of Russia and civil defence forces in the Far East Region and other regional resources.

For spills of federal significance, manpower and equipment may be called on from MChS of Russia, the State Sea Rescue Service (Gosmorspassluzhba) of Russia, and the Centre for Rescue and Environmental Operations (Moscow and Far East, including Sakhalin Island), as well as international resources.

Oil Industry Resources

Mutual Aid Agreement - Exxon Neftegas Limited (ENL)

ENL response equipment and services are available to Sakhalin Energy through a bilateral Mutual Aid Agreement. Sakhalin Energy and ENL jointly own response equipment for shoreline and bay protection and shoreline cleanup. This equipment is located at the Nogliki ERD and at the ENL OPF (Chaivo).

International Resources

Shell Response Ltd (STASCO) can make available the international resources located at bases in Southampton, U.K., and Singapore and owned by the International Organisation [Oil Spill Response Limited (OSRL)], the worldwide leader in oil spills prevention and response.
For the access to the equipment of this organization, refer to Appendix 8. It should be noted that response times for these resources are in excess of 12 hours.

1.4.3 ZONES OF RESPONSIBILITY OF E/O RESPONSE TEAMS AND FIRE FIGHTING UNITS

All Sakhalin Energy OSRPs are coordinated through the Sakhalin Energy Corporate OSRP which sets out primary responsibilities for responding to oil spills from facilities and third parties. These are listed in Table 1.8. Tier 1 OSR Contractor and site ERT responsibility zone is consistent with the zone of this Plan and covers all the onshore facilities. In case of a spill hits neighbouring territory they will also respond to such spill.

Prigorodnoye Asset Fire Fighting Team is responsible for containment and control of fires in the territory of the Asset onshore facilities and personnel evacuation from the hazardous zone.
1.4.4 MANAGEMENT BODIES, RESPONSE TEAMS AND RESOURCES PREPAREDNESS MEASURES

Equipment Maintenance

Facility management is responsible for the maintenance of OSR equipment stored on site. Equipment maintenance and audit programmes are outlined in Appendix 16.

Maintenance of Staff Skills

Arrangements for oil spill response training, exercises and drills are discussed in Appendix 16.

Response Preparedness Plan

Spill response preparedness encompasses three stages of response:

- Normal / routine operations.
- OS ERT training (drills).
- Regular OSR Plan maintenance.
- OSR equipment maintenance.

State of Alert. These procedures are set out in the Prigorodnoye Emergency Response Plan.

Emergency Response: as set out in this OSRP.

Procedures, responsibilities and schedules for these are set out in Appendix 16.

The actions to maintain E/O response preparedness of the management bodies, resources should be taken in accordance with the “Plan of Main Actions in the Sphere of Civil Defense, Emergency Prevention and Response, Fire Safety and Security Assurance at Sakhalin Energy’s facilities” to be developed on an annual basis.

Pursuant to this Plan:
- desktop exercises are conducted with the participation of the representatives of the MChS of Russia and the organizations which have agreed this OSRP.
- exercises, desktop exercises, audit tactical exercises, drills conducted by the civil defense and emergency management bodies of the city/town and district levels of the RSChS subsystem;
- exercises, drills, practice alerts conducted at the facilities in accordance with the Company-developed plan;
- drills, training sessions, group and field classes conducted by the Emergency Response Management Team of Sakhalin Energy.

Preparedness of Sakhalin Energy’s NERT (O) for O/E response is maintained by conducting regular drills at the served facilities with the participation of the OSR Contractor.

Preparedness of the ERT(O) to perform its tasks is checked:
- in the process of certifications;
- in the process of exercises and drills
- 1. in the process of ERT(O) audits.
Table 1.8 Coverage (Application) of Sakhalin Energy Oil Spill Response Plans
(Note coverage does not imply liability for spills or for response)

<table>
<thead>
<tr>
<th>OSRP</th>
<th>Coverage (Spill Source or Location)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Piltun-Astokh OSRP</td>
<td>Offshore pipelines to the high water mark.</td>
</tr>
<tr>
<td></td>
<td>Spills at sea from onshore pipelines in the vicinity of PA landfall.</td>
</tr>
<tr>
<td></td>
<td>Platforms.</td>
</tr>
<tr>
<td></td>
<td>Support vessels at site.</td>
</tr>
<tr>
<td></td>
<td>Supply vessels in transit to facility</td>
</tr>
<tr>
<td></td>
<td>Third party shipping spills as requested under the Unified Command.</td>
</tr>
<tr>
<td></td>
<td>Shorelines impacted due to the above.</td>
</tr>
<tr>
<td>Lunskoye OSRP</td>
<td>Offshore pipelines to the high water mark.</td>
</tr>
<tr>
<td></td>
<td>Spills at sea from onshore pipelines in the vicinity of Lunskoye pipeline landfall.</td>
</tr>
<tr>
<td></td>
<td>Platforms.</td>
</tr>
<tr>
<td></td>
<td>Support vessels at site.</td>
</tr>
<tr>
<td></td>
<td>Supply vessels in transit to facility</td>
</tr>
<tr>
<td></td>
<td>Third party shipping spills as requested under the Unified Command.</td>
</tr>
<tr>
<td></td>
<td>Shorelines impacted due to the above.</td>
</tr>
<tr>
<td>Prigorodnoye Offshore OSRP</td>
<td>Offshore pipelines to the high water mark.</td>
</tr>
<tr>
<td></td>
<td>Tanker Loading Utility.</td>
</tr>
<tr>
<td></td>
<td>LNG terminal.</td>
</tr>
<tr>
<td></td>
<td>Tugs and line boats.</td>
</tr>
<tr>
<td></td>
<td>Standby and support vessels.</td>
</tr>
<tr>
<td></td>
<td>Third party shipping spills as requested under the Unified Command.</td>
</tr>
<tr>
<td></td>
<td>Shorelines impacted due to the above.</td>
</tr>
<tr>
<td>Prigorodnoye Onshore OSRP</td>
<td>Spills within Oil Export Terminal or LNG Plant.</td>
</tr>
<tr>
<td></td>
<td>Spills to land from OET/LNG Plant.</td>
</tr>
<tr>
<td>Onshore Pipeline OSRP</td>
<td>Pipelines onshore (at or above high water mark).</td>
</tr>
<tr>
<td></td>
<td>Booster Station 2.</td>
</tr>
<tr>
<td></td>
<td>Rivers, river banks and shorelines impacted by spills from the pipeline.</td>
</tr>
<tr>
<td>OPF OSRP</td>
<td>Spills within the OPF, including fuel transfer operations.</td>
</tr>
<tr>
<td>Kholmsk Port Operations OSRP</td>
<td>Spills from port operations including loading/offloading operations.</td>
</tr>
<tr>
<td></td>
<td>Spills from vessels undertaking Sakhalin Energy operations.</td>
</tr>
<tr>
<td>Vessel Oil Pollution and Emergency Plans (SOPEP)</td>
<td>Spills from the vessel.</td>
</tr>
</tbody>
</table>
1.5. GENERAL MANAGEMENT PRINCIPLES AND MANAGEMENT STRUCTURE

Regulatory Requirements


RF Federal Law No. 68-FZ On Protection of Population and Territories from Environmental or Industrial Emergencies (21st December 1994) established the Unified State System for Prevention of and Response to Emergencies (hereafter referred to as the RSChS) in the Russian Federation. This system is aimed at:

- Assuring the preparedness of management bodies and resources for responding to emergencies.
- Organizing the response to emergencies.
- Creation of financial and material resources sufficient to respond to emergencies.
- The collection, processing and exchange of information in the field of protection of populations and territories from emergencies.
- Social protection of people suffering as a result of emergencies.
- Establishing international co-operation in the field of protection of population and territories from emergencies.

The RF Government Decree of December 30, 2003 No 794 On Unified State System for Prevention of and Response to Emergencies (as per the RF Government Decree of November 19, 2012) details the composition, functioning and interaction with the Russian governmental agencies in an emergency.

The RSChS encompasses and organizes federal, territorial, regional and local agencies and other organizations authorized to resolve issues related to protection of population and territories from emergencies. The RSChS provides for five levels:

- Federal.
- Interregional.
- Regional.
- Municipal.
- Asset.

Each organization level defines and documents:
- Coordinating authorities.
- Standing management bodies.
- Day-to-day management bodies.
- Manpower and equipment resources.
- Financial and material reserves.
- Communication systems.
- Notification and information support systems.

The Sakhalin Oblast Governor Decree of No 566 dated December 11, 1996 established the territorial subsystem of the RSChS.

The response management system employed by Sakhalin Energy (ERMS) is designed to address all emergencies, including oil spills. It is authorized to address...
all issues relating to protection of the public and territories from emergencies, and
to carry out activities aimed at fulfilling the tasks formulated in RF Federal Law No.
68-FZ On Protection of Population and Territories from Environmental or Industrial
Emergencies (21st December 1994).

The key elements of Sakhalin Energy response management system are:
Emergencies and Fire Safety Committee (KChS), Emergency Coordination Team
(ECT), Crisis Management Team (CMT), Site Control Teams (SCT) providing
onsite response to oil spills, and OSR Contractors.

Sakhalin Energy response management system is a part of the RSChS system of
the Russian Federation, although it has some peculiarities borrowed from the best
world practice.

Introduction

This Section details the organisation, responsibilities and OSR functions of the
Sakhalin Energy Emergency Response Teams (Emergencies and Fire Safety
Committee, Crisis Management Team, Emergency Coordination Team and Site
Control Team) and OSR management procedures. Procedures are consistent with
the general emergency procedures detailed in the Sakhalin Energy and
Prigorodnoye Onshore Emergency Response Plans.

Within Sakhalin Energy, the following management bodies exist:

- Coordinating bodies: the Sakhalin Energy KChS for Sakhalin Energy-wide
  coordination.
- Standing Management bodies. These include departments and divisions of
  Sakhalin Energy which may be mobilised in an emergency and also those
dedicated to emergency management. The latter include:
  - The OSR Group within the HSES Department.
  - For Prigorodnoye onshore operations this is the Prigorodnoye OSRP
    Custodian.
- Day-to-day Management bodies:
  - For Sakhalin Energy this is the SEB-1 Telephone Switchoard and the
    Sakhalin Energy Emergency Coordination Centre (ECC) in Yuzhno-Sakhalinsk.
  - For Prigorodnoye onshore operations this is the central control room of
    the Prigorodnoye Asset.

The general coordination of the activity of emergency response management
bodies is laid to the department of ERMT. In order to organize and perform the
functioning of the emergency response management bodies (CMT and ECT), the
Administrators of the emergency response management bodies should be
appointed from among the employees of EA and ERMT departments (Refer to the
“Guidelines on administering emergency response management bodies of the
Company “Sakhalin Energy” (Document No. 0000-S-90-04-P-0150-00).

The Main Control Room, which provides internal and external communications at
the site.

Functions of the above mentioned management bodies are described in the
following sections for one of the operating conditions as determined by the Emergencies and Fire Safety Committee based on the situation and the extent of the expected or existing emergency at Prigorodnoye onshore facilities.

- Routine (day-to-day) operating conditions. During this condition, bodies operate to maintain spill prevention and preparedness.
- Increased state of readiness; when a situation occurs with an increased potential for an emergency situation.
- Emergency situation; i.e. during an emergency response.

Figure 1.6 illustrates the inter-relationship of the Sakhalin Energy Emergency Teams. The function of each is outlined below and detailed in other Sakhalin Energy ER documents.

**Company's Emergencies and Fire Safety Committee (KChS&FS)**

The Sakhalin Energy KChS was established on July 12, 2007 by Sakhalin Energy Company Order 38 in compliance with RF Government Decrees No. 794 of 30/12/2003 as an asset level KChS. Primary objectives of Sakhalin Energy KChS as formulated in the Committee Regulations include:

- Establish and maintain interfaces on the subject of emergency prevention and response with the Sakhalin Oblast Administration, Chief Department of Russian Ministry of Emergencies (MChS) in Sakhalin Oblast and other authorities in the matters of emergency prevention and oil spill response.
- Review the development and further improvement of the Company's system for prevention and response to emergencies, engagement of additional personnel, equipment and finance resources if required in order to achieve the objectives.
- Coordinate and ensure proper interface between Sakhalin Energy subdivisions in the matters of emergency prevention and oil spill response.

Sakhalin Energy KChS performs its functions the following operating conditions: routine operations, state of increased readiness, and emergency (response) conditions.

Responsibilities and actions of Sakhalin Energy KChS for three operating conditions are described below.

**Routine Operations:**

- Interface with the Sakhalin Oblast Administration, Main Department of EMERCOM for Sakhalin Oblast and other oblast executive authorities on the subject of oil spill emergency prevention and response at Sakhalin Energy facilities.
- on implementation of measures to achieve the above objectives of KChS&FS.
- on consideration of E/O prevention and response issues at KChS meetings (including visiting / field sessions) and subsequent control of follow-up actions.

**State of Increased Readiness**

- Maintain interfaces on the subject of oil spill emergency prevention and response at Sakhalin Energy facilities with the Sakhalin Oblast Administration, Main Department of EMERCOM for Sakhalin Oblast and other oblast executive authorities.
- Increase readiness of components comprising Sakhalin Energy emergency
1.5. OIL SPILL RESPONSE SYSTEM

Prevention and response system; align emergency response plans and their implementation options.

- Predict time and scenarios of potential emergencies, their scale in time and space, expected human losses and material damage.
- Undertake comprehensive urgent measures to improve operational stability of the Company’s facilities located in the area of predicted emergencies.
- Provide operational instructions for managers of Sakhalin Energy structural subdivisions in the area of potential (predicted) emergencies.

**Emergency Response:**

- Control of emergency response operations will be assumed by the duty members of Emergency Coordination Team and/or Crisis Management Team. These teams will act in compliance with the Company’s existing procedures and regulations.
- KChS Chair(man) will preserve authority to maintain interfaces on the subject of emergency prevention and response with the Sakhalin Oblast Administration, Main Department of EMERCOM for Sakhalin Oblast and other oblast executive authorities.

In emergency conditions Sakhalin Energy KChS shall transfer the duties of coordination of emergency response to the duty members of the Emergency Coordination Team and Crisis Management Team. ECT/CMT membership, mobilisation and operation procedures in emergencies are established in the relevant documents of the Company.

**Sakhalin Energy KChS&FS Members**

Sakhalin Energy Production Director will chair the Committee.

Managers of Sakhalin Energy subdivision and assets will be members of the Committee functioning in routine operations conditions. Other Sakhalin Energy employees with specific knowledge and authority may be engaged by the Committee to address current issues.

Regulation on KChS&FS will be approved by the Sakhalin Energy Director. KChS&FS activities will be financed from the budget of the organization. Provision of material and technical resources for KChS is regulated by the management of the Company.

**Crisis Management Team**

Crisis management involves managing those aspects of any incident that threaten the business (commercial) integrity or reputation of Sakhalin Energy. Crisis Management Team personnel deal with external agencies; shareholders and lenders, public organizations and NGOs, relatives of Sakhalin Energy affected employees and Contractors or affected customers.

In an OSR incident, the CMT’s function is to monitor the activities of the ECT and to undertake Sakhalin Energy crisis management. Typically, supporting the ECT will be the initial priority, while the Crisis Manager fulfills the crisis management role.
functions.

**Sakhalin Energy Crisis Manager**

The role of the Crisis Manager (CM) is to maintain an overview of an incident and to ensure that appropriate communications are maintained to locally based senior personnel and stakeholders. The responsibilities of the Crisis Manager are detailed in the "Sakhalin Energy Crisis Management Emergency Management Team Procedures".

**Figure 1.6 Relationship Between CMT, ECT and SCTs**

![Diagram showing the relationship between CMT, ECT, and SCTs]

**External Affairs Team (EAT)**

The role of E/O Team of EA department (EA Team) is to be the focal point for internal and external communications during and after an incident. They provide information to the state bodies, external agencies and organisations and provide feedback to Sakhalin Energy on the outside perception of the handling of an incident.

**Emergency Coordination Team (ECT)**

**Functions**

The ECT operates on the “on-duty” basis by means of weekly assignment of the Team members to duty. The responsibility for the forming of the duty contingent of the Team is with the Administrator of the E/O management bodies (Administrator of MB). The procedure for forming the ECT and CMT is determined in the Guidelines for administering the emergency response management bodies of the Company (Document No. 0000-S-90-04-P-0150-00).
Structure

The Emergency Coordination Team (ECT) structure and Team’s relationship with the Site Control Teams (SCTs) is shown in Figure 1.6. The ECT is responsible for managing all oil spill responses other than those small enough to be managed by the Site Team (Section 1.5.2.2).

Figure 1.7 Structure of the ECT

- Key positions on the full ECT are:
  - **Emergency Coordinator (EC):** The EC is responsible for coordinating the ECT and spill response.
  - **Planning Section Leader** (refer to chapter 1.5.2).
  - **Operations Section Leader** (refer to chapter 1.5.2).
  - **Logistics Section Leader** (refer to chapter 2.2.5.).
  - **Health and Safety Coordinator (HSC):** The role of the HSC is to support response teams with specific plans and guidelines, to coordinate the provision of medical and safety services, and to ensure that appropriate safety training and information is being provided (see Section 2.1.2).
  - **Human Resources (HR):** Provides support to the ECT on human resource matters and to assist with information flow to relatives and friends of personnel involved in the incident.
  - **Health Safety and Environment (HSE) Representative:** The primary role of the HSE Rep is to advise on environmental matters including sensitivities, priorities and potential adverse effects of oil and cleanup activities.
  - **Planning:** (see Section 1.5.2).
  - **Operations:** (Section 1.5.2).
1.5. OIL SPILL RESPONSE SYSTEM

- **Logistics**: (Section 2.2.5).
- **Support**: The Support function includes a range of Support Teams and Contracted services (Section 2.2.5).

Figure 1.8 Prigorodnoye Site Control Team Structure

**Site Control Team (SCT)**

The Prigorodnoye Site Control Team (SCT) will provide management and on-scene response to both offshore and onshore spills at Prigorodnoye Asset (See Prigorodnoye Offshore OSRP). Initial onshore response will be provided by the First Intervention Team (FIT) and Back-Up Team (BUT) (see Section 1.4.2). These teams will also provide support for offshore response teams in shoreline cleanup (if necessary). The function and composition of the Prigorodnoye Site Control Team is detailed in the Prigorodnoye Emergency Response Plan and outlined below (see Figure 1.8).

**Site Controller**

The Site Controller (SC) at Prigorodnoye Onshore Facilities is the Operations Shift Superintendent at the Prigorodnoye Onshore Facility. In the event of oil spills on site the SC will direct overall response operations.

**Mobilization Procedures**

Mobilization of Site Control Team and FIT and BUT groups to Prigorodnoye complex commences after the notification of Emergency Site Controller from the message reception board. Members of the Site Control Team shall gather in
Emergency Operations Centre in the Main Administrative Building. The FIT on duty upon receiving an emergency alert signal proceeds to a designated muster point - area near fire engines, and awaits instructions from the Onshore Site Controller (Emergency Response Manager). OSR Contractor is called from Yuzhno-Sakhalinsk if the Onshore Site Controller may consider it necessary.

Procedures of Emergency Control Team mobilisation and establishment of Emergency Control Centre are detailed in Appendix 20.1 to this OSRP. Emergency Control Team shall be called by Emergency Coordinator. Duty members of Emergency Control Team shall gather at Emergency Control Centre for induction provided by Emergency Site Controller.

The list of members of Emergency Control Team on duty, is updated weekly and placed at the Company’s Livelink corporate network.

**Incident Control Function**

The Control function encompasses all aspects of the management of a response to an emergency or other incident. This encompasses the formulation or response objectives and the approval of strategies, methods and all support functions.

**Responsibility**

**Emergency Coordinator**

The Emergency Coordinator (EC) is responsible for the overall coordination of an emergency oil spill response and directs of the Emergency Coordination Team (ECT). The functions of the EC are set out in Checklist ECT-1 (Appendix 20.1).

**Site Controller**

The functions of the SC during an oil spill emergency are to:

- Obtain all the facts about the incident.
- Assess the severity of the incident.
- Observe spill movement and behaviour.
- Decide if there is any risk of continuing operations.
- Decide if there is a need to evacuate an area.
- Request medical, fire fighting, OSRV (if there is a risk of spilled oil impacting water area) and other emergency support as required.
- Report incident details and response actions to Emergency Coordinator.

**Duty Manager**

The functions of the Duty Manager during an oil spill emergency are:

- Coordination of communication at Prigorodnoye onshore facilities during emergency alert state and oil spill response proper.
- Communication between Prigorodnoye onshore facilities and ECT Command Center in Yuzhno;
1.5. OIL SPILL RESPONSE SYSTEM

- Communication between the facility and OSR Contractors.

**Establishing the Emergency Coordination Centre (ECC)**

Response to small oil spills that do not require mobilisation of external resources will be managed from the Emergency Operations Control Centre to be established at Prigorodnoye Asset.

Emergency Coordination Team in Yuzhno will be mobilised to control response to larger spills involving additional resources. The Emergency Coordination Centre (ECC) is located on the third floor of the Company’s office (SEB-1) in Yuzhno: Dzerzhinskogo 35.

Guidelines for establishing the ECC are provided in Appendix 20.1 and the Emergency Management Body Administration Manual.

The first duty ECT member to arrive at the ECC will commence set-up.

---

**Information Management**

The Board Keeper is responsible for maintaining the currency of information displayed in the ECC.

Information must be effectively controlled and coordinated to ensure that accurate and consistent information is released. The Planning Section is responsible for the coordination and assessment of information (see Section 1.5.2.8). Information flow to external parties is controlled by External Affairs (in the CMT).

**Briefings**

ECT briefings are initiated and conducted by the EC. In larger tiered responses Section Leaders may also need to hold regular briefings with Section members. Briefings should precede planning meetings and work periods. Guidelines are provided in Appendix 20.1.

**Ongoing Reporting: Situation Reports**

Regular Situation Reports (Form OSR-3) should be compiled and issued to the ECT. The frequency of these will depend on the incident (e.g. after Planning Meetings).

Situation Reports must be authorised by the EC and should be sent to External Affairs (EA) Leader, Crisis Manager and Government agencies that are part of any Unified Command. The Crisis Manager may send these to Shareholders and Lenders.
Forms

In most spills very few forms are required. For larger or more prolonged response the number of forms required is greater. The forms provided are a resource and, with the exception of Form OSR-1, their use is not compulsory. Like all other resources available, they should be used if required and modified as required.

Status Boards

Only a designated person should write information on Status Boards. The designated person will record existing data using a separate log or digital camera before entering updated information.

Wall Maps

A laminated map of the affected area should be displayed in the ECC and Main Control Room in Prigorodnoye during all spill responses. Information can be written on these. The information on these must also be recorded before being updated. This can be done using digital cameras to capture the data or by copying information onto smaller photocopied maps. The ECC contains Environmental Sensitivity Maps in hard copy and in electronic format in GIS. Electronic maps may be uploaded into the ECT Computers.

Health and Safety Functions

The Health and Safety role is essentially one of coordination and monitoring of the safe execution of works.

It is the responsibility of all Section Leaders, Unit Coordinators, facility Controllers and Managers, field Supervisors and Team Leaders to ensure that safe work practices are followed on the work sites under their responsibility. Normally the Health and Safety Functions are controlled by the EC at field. He may delegate the control of Health and Safety issues to the responsible person at the site.
The Emergency Coordinator is responsible for ensuring that Health and Safety procedures are implemented to ensure that response activities are carried out safely.

The Health and Safety organisation must be flexible and will be designed according to the needs of the incident.

For smaller responses, the various Health and Safety functions (see Figure 1.9) will be undertaken by the heads of the other Units within the ECT (Operations, Logistics or Planning) Sections.

In case of the large-scale spills requiring the responses on Tier 3 and higher, the Health and Safety Coordinator may be directed by the EC to form specific Teams to undertake some functions.

The Health and Safety function draws on a range of expertise within the Sakhalin Energy Health, Safety and Environment and Human Resources departments.

It is the responsibility of all Section Leaders, Unit Coordinators, facility Controllers and Managers, field Supervisors and Team Leaders to ensure that safe work practices are followed on the work sites under their responsibility.

Responsibilities are detailed in the template HS Sub-Plan provided in Appendix 20.5.

Planning Function

Responsibility

The Planning Section is responsible for the acquisition, assessment and distribution of information about the incident, circumstances and environment. The Planning function is also responsible for the development of the Incident Action Plan (IAP) and monitoring of the performance of the response against the objectives of the IAP.

Development of the IAP is controlled by the EC and involves most ECT members.

The Planning function in the ECT is assigned to the Planning Section Leader. The Planning Section Leader's role is to:

- Monitor the response.
- Advise the EC as to when the Incident Action Plan (IAP) requires revision.
- Coordinate and provide information inputs to the planning process.
- Assist the EC in developing the IAP.

Organization and Functions

For large-scale responses, the Planning Section Leader will appoint staff to undertake the planning functions (Figure 1.10).
**Situation:** Responsible for the collection, processing and organisation of information

**Environment:** Responsible for the collection and collation of environmental data, protection prioritization and advice, and for modelling of spill behaviour.

**IAP Coordination:** Responsible for the coordination, development and review of the Incident Action Plan (IAP).

**Documentation:** Ensures that IAP and other information is recorded and distributed.

**Resources:** Responsible for compiling and monitoring requests for Logistics and for monitoring acquisitions.

### Development of the Incident Action Plan (IAP)

Steps in development of the IAP are as follows:

**Step 1 Setting Response Aim**

This Response Aim is a broad statement of the over-riding aim of the response, i.e. what the response is aiming to achieve. It may also set priorities. The aim may be set by the CMT, Sakhalin Energy CEO or, in a Government-controlled response, by KChS.

**Step 2 Setting Objectives**

These are “goal statements” and indicate desired individual outcomes of the response (e.g. protection of the shoreline between points A and B). They are generally set by the Emergency Coordinator.

Objectives may be set for all functions within the response. For example "Delivery of cleanup teams and equipment to the shoreline between point A and B" might be an objective for the Logistics Section.

Objectives should be ranked according to priorities, which are decided by the EC in consultation with the ECT, the CMT and relevant Government Agencies.

Often, the initial information available is incomplete and some of the initial Incident Action Plan objectives may be focused on obtaining data.

**Strategies employed may be:**

- Surveillance and monitoring (see Section 2.2.8).
- Calculation of spill spreading area / trajectory (see Section 2.2.8).
Step 3  **Determining Response Strategies**

Strategies describe how the ECT and Field Teams plan to achieve the stated objectives (e.g. deployment of vacuum pumps and temporary storage containers for recovered oil).

Preferred strategies are developed by the EC in consultation with ECT Section Leaders.

Strategy options may be limited by weather (data from Planning), availability of equipment (data from Logistics) or by a range of operational constraints (input from Operations). A wide range of information inputs may be required for the development of priorities and strategies (see Figure 1.11).

Step 4  **Determining Tactics or Methods**

Methods for implementing may be written as a series of tasks detailing the deployment of personnel and equipment. "Tactical Plans" are developed by the relevant Section Leader in consultation with Section personnel.

Step 5  **Collating Logistics Requirements**

The Planning Section will assist the Logistics Section in compiling a list of equipment, personnel and service requirements for the planned response.

Step 6  **Collation of the IAP**

The Planning Section will collate the IAP (Aim, objectives, strategies, methods and logistics) and distribute to ECT Section Leaders.

Following each Planning Meeting a designated Planning Section member will:

- Prepare Resource Requisition Forms for the Logistics Section Leader.
- Prepare a Situation Report (Form OSR-3) for distribution by the EC (Appendix 13).
Ongoing Revision of the Incident Action Plan

The response should be monitored and the IAP revised when objectives are met or when changed circumstances require objectives, strategies or methods to be revised.

The Planning Section IAP Unit is responsible for monitoring the response and progress of the IAP and for assessing when the IAP needs revision. The Situation Unit is responsible for obtaining the data on which this assessment is made.

The frequency of revisions to the Incident Action Plan will be determined by the EC and will vary according to the nature of the incident and the scale of the response.

Environmental Risk Assessment

Priorities (objectives), strategies and methods should be developed so that the most effective response is mounted, that this response results in the maximum environmental protection and minimizes potential harm from cleanup activities.

Monitoring and Assessment of the Response

The Planning Section Leader will ensure that spill spreading analysis, surveillance and monitoring information (Section 2.2.8), environmental resource and sensitivity information is collated and that an assessment of environmental risks is prepared for each planning meeting.
The Planning Section is responsible for assessing response strategies and for monitoring the environmental impacts of the oil spill and the oil spill response. The Planning Section Leader will provide daily feedback to the ECT and will:

- Maintain a summary of response activities during the day, in the form of a log.
- Monitor the overall effectiveness of the cleanup activities and advise if changes in strategy are required.
- Carry out net environmental benefit assessment (NEBA) for response activities.
- Coordinate and seek advice from environmental specialists where required, e.g. water and sediment sampling, analysis of effects of oil on wildlife.
- Gather evidence of the effects of cleanup activities, e.g. ‘before and after’ photos, studies on environmental recovery, reports from environmental specialists.
- Assess aerial surveillance reports and computer modelling outputs.
- Provide specialists for land area/territory assessment.
- Explain the technical aspects of the oil spill response to the EA Team (e.g. NEBA methods and results).
- Advise on when it is appropriate to cease response operations.

Operations Section Function

The Operations Function encompasses all cleanup activities and key field deployments of support operations. This includes onshore response, land protection, land cleanup, waste management and any monitoring and any aerial surveillance in support of these.

Responsibility

Operations Section Leader

The Emergency Coordination Team (ECT) has a nominated Operations Section Leader who is responsible for:

- Appointing members to the Section and for coordinating operations activities.
- Ensuring that the Objectives and Strategies outlined in the Incident Action Plan are carried out effectively. This is done through the preparation and implementation of an Operations Sub-Plan.
- Determining how resources are distributed amongst the various functions or units in the Section.
- Coordinating joint activities.

A Checklist of Operations Section Leader responsibilities and tasks is provided in Appendix 20.1. The Operations Section Leader is supported by the Site Controllers. The Operations Section Leader is supported by the Site Controller at the Prigorodnoye Onshore Facilities. A Checklist of Operations Section Leader responsibilities and tasks is provided in Appendix 20.1.

The Operations Section leader is responsible for ensuring that an information bulletin is issued notifying the public of the location of any oil spill or onshore response operations, and for activating reconnaissance of the affected area at the earliest opportunity.

Prigorodnoye Onshore Site Controller

Immediate onshore response strategies are to be initiated by the Prigorodnoye Site Controller. Subsequent actions offsite may to be authorized by the EC through the
ECT Operations Section Leader.

If the incident is escalated and the ECT in Yuzhno is activated, response operations will be authorized by the ECT Operations Section Leader. In Tier 3 or higher responses, the Operations Section Leader may appoint an Onshore Coordinator who will direct all onshore response at the Prigorodnoye Onshore Facilities.

**Organisation and Functions**

Functions within the Operations Section are outlined below (see also Figure 1.12):

**Onshore Response:** Plans and coordinates all Prigorodnoye Onshore Facility assessment (including site conditions), site protection and cleanup activities.

**Wildlife Response:** Coordinates the prevention of wildlife oiling and the collection, treatment and rehabilitation of oiled wildlife.

**Waste Management:** The Waste Management function encompasses the coordination of the on-site and offsite containment, storage, transport and disposal of recovered oil and oily waste. Waste management personnel may also be required to instruct onshore response teams in the safe handling and storage of waste and/or in on-site separation and treatment.

**Other Functions:** Additional tasks may be assigned to the Operations Section if additional field operations are required.

---

**Operational Planning**

The Emergency Coordinator will oversee the development of the Incident Action Plan, assisted by the Planning Section. As part of this Planning Procedure the Operations Section Leader will prepare an Operations Sub-Plan, which will be incorporated into the IAP.

**Operations Sub-Plan**

The Operations Section Leader must determine the methods (or tactics) to be used to implement the Strategies and achieve the Objectives set by the Incident Action Plan.

Operations personnel should request the on-site assistance of an Environmental Adviser if advice on environmental issues is required. This request should be made through the Operations Section Leader.

The Operations Sub-Plan should be a series of short statements of planned activities and should include:

- Organization structure including establishment of AOCs.
- Names of nominated Supervisors and Team Leaders.
- Reporting, briefing and debriefing arrangements.
- Induction procedures.
- Location of Work Sites.
• Organization of field activities into Sectors (if applicable).
• The deployment of response teams and distribution of equipment.
• Communications.
• Response priorities (see Sections 2.2.3).
• The methods to be employed to implement each strategy and the resources deployed or required for each.
• Anticipated time required for each method.
• Logistical support.

**Supervision**

Levels of supervision are dictated by:

• The skills of the teams deployed.
• The nature of the task undertaken.
• Presence of hazards.
• Communications.

A number of terms are used to describe the role of various personnel and these are defined below.

**Coordinators**

These are responsible for particular functions and generally are in charge of a team or number of teams. Within Operations this typically includes Onshore Coordinator, Waste Coordinator. The terms "Manager" or "Officer" are also used.

**Supervisors**

In large-scale responses, Supervisors may be appointed to direct a number of teams, usually within a defined Sector (geographic region). Supervisors are responsible for the deployment of Teams within their Sector and may undertake on-site induction of teams.

**Team Leaders**

A Team Leader directs individual work crews or teams. The Team Leader is responsible for the on-site direction of team members and provision of technical instructions and (usually) on-site induction. For field deployments teams should be small, usually between 10-12 persons.

**Field Advisers**

Advisers may be sent on-site to assist teams or to audit procedures. These advisers may cover a number of functions including:

• Health and safety instructions or auditing.
• Advice on handling of chemicals.
• Waste handling and storage.
• Technical instruction on the use of equipment.
• Other technical advice.
Reporting and Documentation

Reporting procedures implemented for a response will vary according to the nature of the incident and the location of the response. A number of reporting Forms are supplied in Appendix 13 and the use of each is described in the relevant Section of this OSRP.

Induction Procedures

The Operations Section Leader must ensure that all field operatives receive suitable induction and training before commencing field work:

- Occupational Health and Safety (see Section 2.2.7).
- General introduction to the response organisation.
- Emergency procedures (if applicable).

The general induction procedures should be supported by on-site instruction to cover:

- Worksite hazards.
  - Natural hazards.
  - Oil hazards.
  - Equipment hazards.
- Materials handling.
- Use of equipment.
- Location and use of facilities.
- Communications.
- Emergency procedures.
- Decontamination procedures.
- Location of exclusion areas.

Personnel Tracking

The Operations Section Leader must nominate Section personnel to be responsible for the effective tracking of all response personnel in their care. Normally this will be assigned to Section Unit Officers (e.g. Response Coordinator) and Site Controllers.

Field teams will generally be deployed from an Advanced Operations Centre or from a Staging Area. It is the responsibility of the Site Controller or Staging Area Manager to ensure that a Procedure is in place for tracking the movement of deployed personnel.

This Procedure must contain (as a minimum):

- Requirement for the Supervisor/Coordinator authorising the deployment to register the names and locations of personnel with the Site Logistics Officer, or nominee.
- Requirement for all vehicle drivers to report the following to the Site Logistics Officer or Site Security Officer (nominated person is to be clearly identified):
  - Time of departure.
  - Name of personnel travelling in the vehicle(s).
  - Type of vehicle, vehicle description and registration number.
  - Destination.
  - Estimate Time of arrival at destination.
  - Estimated time of return or arrival at final destination for the day.
• Communications (radio channel or telephone number). If there are no effective communications, a Procedure must be implemented to check on safety of personnel.
• Requirement for field teams to report arrival at destination and to report return to base of arrival at the final destination for the day.
• Requirement for the safe return to be logged by the Site Logistics Officer and Procedures for tracking and retrieval of field teams that have not returned by logged time or who have not reported their safe return.

Communications

For large scale responses, a Communications Sub-Plan will be prepared by the Communications Officer within the ECT Logistics Section. It is the responsibility of the Operations Section Leader to ensure that Field teams under Operations control are equipped with suitable communications equipment.

It is the responsibility of each Team Leader to ensure that they are suitably equipped to remain in contact with their Coordinator, Staging Area or Advanced Operations Centre. Contact may be via relay from other field teams. Each Coordinator, or nominated officer in the Staging Area or Advanced Operations Centre, must make regular contact with field teams to ensure that communications are maintained.

Health and Safety

All Operations personnel should be familiar with the Site Health and Safety Plan, if issued, and any other Health and Safety directives issued by the Operations Section Leader.

Wildlife Response

Managing the cleanup, care and rehabilitation of oiled wildlife requires a high level of training and poses significant risks to personnel. Response must be supervised by a trained person at all times and all personnel must be equipped with eye protection. A list of organizations that can supply trained personnel is provided in Appendix E and the Sakhalin Energy Emergency Response Contact Directory. Guidelines for management of wildlife during a response are included in Appendix 20.4.

Logistics Requirements

Materials and Services

The Operations Section Leader is responsible for determining the support materials and services that field deployed teams require. A list of requirements must be supplied to the Logistics Section Leader as early as possible.

Site Controllers must compile requisition lists and supply these to either Site Logistics Officers or to the ECT Logistics Section Leader via the Site Logistics Officer or Operations Section Leader.

Decontamination

Temporary decontamination facilities may need to be established at work sites. These may be required for decontamination of vessels, equipment and/or personnel.

For small-scale responses, the establishment of these will be the responsibility of the Person in Charge of the work site. For larger scale responses the Logistics Section
1.5. OIL SPILL RESPONSE SYSTEM

Leader will be assigned the task of constructing decontamination facilities.

Removal of waste waters and oily materials from decontamination facilities, and transfer to Waste Management Sites, is the responsibility of the Logistics Section Leader or Site Logistics Officer. Waste management is the responsibility of the Waste Coordinator (Operations).

1.5.2.11 Logistic Functions

Logistics is responsible for the provision of equipment, personnel, services and support materials for the Emergency Coordination Team (ECT) and Site Team(s).

**Responsibility**

Logistics Section Leader

Logistics is the responsibility of the nominated ECT Logistics Section Leader. In a larger scale response, Advanced Operations Centres (AOCs) may be established. In these cases, local logistics may be managed by a Site Team Logistics Officer.

The key tasks of the Logistics Section Leader are listed in the Checklist provided in Appendix 20.1.

**On Site Teams**

A small scale response may be coordinated by the Prigorodnoye Site Team. The Site Controller (SC) may manage the Logistics Function or nominate a Site Logistics Officer.

In larger-scaled responses, it is the responsibility of the Site Controller (SC) to ensure that the person delegated to on-site logistics informs, and remains coordinated with, the ECT Logistics Section Leader.

**Organization of Logistics Functions**

In larger-scale responses a team may be required to manage the Logistics function.

The precise size and structure of the Logistics Section will depend on the needs of each incident and these needs may vary during a response.

The Logistics Section Leader is responsible for identifying and assigning staff to the Logistics Section. The main Logistics functions are described in Figure 1.13.

**Procurement**: Identification of sources of personnel and equipment and the acquisition of these (Section 2.2.5).
1.5. OIL SPILL RESPONSE SYSTEM

Services (Facilities): Responsible for the acquisition of services and facilities other than transport, communications and medical. This would include catering, security, decontamination and washing facilities, toilets and accommodation (Section 2.2.5).

Transport: Responsible for the provision of aviation, land and sea transport services and materials (Section 2.2.5).

Communications: Responsible for ensuring the provision of communications services and support and for preparing a Communications Sub-Plan (Section 2.2.5).

Staging Area Management: Staging areas may be established for the forward storage and deployment of equipment, and personnel or for provision of services in remote areas. Each Staging Area may be under the management of a Staging Area Manager.

Finance Organization

The Finance role is essentially one of support, monitoring and control. The Finance and accounting representatives must work with all Sections of the ECT and CMT. These activities will require the provision of support to Planning, Operations and Logistics.

Finance Advisor

The role of the Finance Advisor in the CMT is defined in the Crisis Management Procedure (0000-S-90-04-P-0102-00-E BM).

His/her role is to provide advice to the Crisis Manager on the financial impact, liabilities and implications of the crisis on the Company, and of the impact of proposed strategies and decisions made to manage the crisis.

As a senior member of the Sakhalin Energy Finance Department he/she will be empowered to ensure mobilisation of the required resources to support the ECT, EC and ECT Finance Representative.
ECT Finance Representatives

The Finance Representative shall not be a core member of the ECT. He/she shall be brought into the ECT if required by the EC.

The role of the Finance Representative is to ensure that processes to enable immediate finance are undertaken and finance is made available to support any non-routine expenditure in the early stages of an emergency.

On arriving in the ECT the Finance Representative shall immediately establish contact with members in the Finance Department and the Finance Advisor through the CMT to ensure that authorisations for emergency contracts and expenditures can be obtained without delay.

The ECT Finance Representatives shall be responsible for coordinating the different functions within the Finance Directorate in consultation with the CMT.

The Sakhalin Energy finance department can provide additional support (Table 1.7) to emergency response upon request by the CMT Finance Advisor or the ECT Finance Representative.

Twenty-four-hour message reception room

Twenty-four-hour message reception room is established to receive all kinds of emergency reports from the facility, including reported oil and petroleum products spills. Operator may be contacted at all times by radio channel 1 VHF or by telephone 66-55-55. Operator will receive reports 24 hours and will immediately inform Emergency Coordinator.
Table 1.7 Finance Roles and Responsibilities

<table>
<thead>
<tr>
<th>Finance Position</th>
<th>Emergency Responsibilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treasurer</td>
<td>Ensures that the Company has sufficient funds to cover expenses related to emergency situations and normal business activities; Ensures emergency payments are made after they are duly approved as per MoA without delay.</td>
</tr>
<tr>
<td>Budget &amp; Reporting Manager</td>
<td>Sets up specific budget code(s) to capture crisis and emergency costs that will be incurred by the Company and advising all appropriate parties. Explains as to which costs can be charged to specific budget code in accordance with the Insurance Advisor's advice.</td>
</tr>
<tr>
<td>Financial Accounting Manager</td>
<td>Ensures that Project Accountants/Outposted Accountants accrue estimates on a monthly basis. Advise on accounting treatment of expenditures relating to emergency response activities.</td>
</tr>
<tr>
<td>Project Accountants / Outposted Accountants / Accounts Payable Accountants</td>
<td>Check invoices for compliance, obtain approval of expenditure as per MoA. Charge emergency expenses to an appropriate budget code in SAP so that all such costs are collected in one place and available for insurance claim submission. Ensure that the emergency expenses are accrued monthly. Retain copies of relevant documentation for subsequent insurance claim processing.</td>
</tr>
<tr>
<td>Insurance Advisor</td>
<td>Advise Finance Advisor within CMT, CM, ECT and EC of applicable insurance coverage; Advise Company’s Insurers of insurable incident; Advise relevant parties which emergency costs are covered by the Company's insurance; Coordinate preparation and submission of insurance claim; Ensure collection of insurance claim payments.</td>
</tr>
<tr>
<td>Tax Manager</td>
<td>Advising if the incurred costs not covered by the Insurers are cost recoverable.</td>
</tr>
<tr>
<td>Contracts &amp; Procurement</td>
<td>Prepare through the agencies contracts with workers for the provision of manpower; Create and approve blank POs necessary to make payments toward emergency expenses that are outside of regular contractual arrangements of Sakhalin Energy.</td>
</tr>
</tbody>
</table>

1.5.3 THE HIGHER LEVEL COORDINATING BODY AND ORGANIZATION OF INTERFACING WITH SUCH A BODY

RSChS Coordinating Authorities (Emergency Commissions)

The RSChS Coordinating Authority organization comprises a hierarchy of Emergency & Fire Safety Commissions - KChS & FS (Figure 1.15).

Figure 1.15 RSChS Coordinating Authorities

- Federal Level
- Interregional Level
- Regional Level
- Municipal Level
- Asset Level
- Governmental KChS and KChS of federal authorities
- Presidential Envoy to a federal district of the Russian Federation
- KChS of the Russian Federation constituent authorities
- KChS of bodies of local self-government
- KChS of an organisation
KChS & FSs are mainly responsible for:

- Coordinating emergency response preparedness.
- Initiating an emergency response.
- Supporting the nominated Standing Management Body in the control of the emergency response.

Asset level covers the land occupied by an organisation or its facility. The KChS & FS is set up when it is necessary and if materials and technical resources are available for emergency response purposes. If the organisation has no emergency response resources, the Asset Commission’s responsibilities are assumed by a higher-level territorial KChS & FS.

**KChS & FS of the Sakhalin Oblast**

The Emergency Commission of the Sakhalin Oblast is a Territorial-level Emergency Commission, and is responsible for the following key tasks:

- Preparation of proposals for implementation of the uniform government policy in the field of prevention of and response to emergencies and fire safety in the Sakhalin Region.
- Coordination of management bodies and resources of the RSChS.
- Ensure coordinated action by federal executive authorities in dealing with emergency prevention and response / fire safety issues; ensure stable operation of hazardous industrial facilities in emergencies.
- Organisation and control over execution of emergency prevention and response activities, including fire safety.
- Management of environmental monitoring and monitoring of hazardous industrial facilities, prediction of emergency situations and fire hazards.

The Vice-Governor is the chairman of the Emergency Commission of the Sakhalin Oblast. The Commission comprises EMERCOM, directors of departments and divisions of the Sakhalin Oblast Administration, heads of governmental agencies and military units, heads of industrial enterprises and regulatory bodies (Table 1.8).

In the event of emergency, a Staff Headquarters (ShRO) will be established by the Sakhalin Oblast Emergency Commission. This will include members of the Emergency Commission of the Sakhalin Oblast and representatives of the organization that owns the facility where the emergency has occurred.
Korsakov District KChS & FS

The chairman of the Emergency Commission of Korsakov District is an official person specially appointed the District Mayor. The Commission comprises the Head of the Korsakov District Emercom Control Centre, directors of departments and divisions of the Korsakov District Administration, etc.

In the event of emergency, a Staff Headquarters (ShRO) will be established by the Korsakov District Emergency Commission. This will include members of the Emergency Commission of Korsakov District and representatives of the organization that owns the facility where the emergency has occurred.

RSChS Standing Management Bodies

Standing management bodies are government agencies responsible for the execution of emergency response. These agencies are arranged in parallel to the Emergency Commissions (Figure 1.16).

The standing management body of the RSChS on Sakhalin is the Main Department of the Ministry for Emergency Situations of the Russian Federation (hereinafter MChS of Russia) for the Sakhalin Oblast. This Department is a specially authorized body able to resolve issues related to civil defense, prevention of and response to environmental and industrial emergencies in both peace-time and war-time.

The Governor of the Sakhalin Oblast is in charge of activities of the Main Department, but issues related to military and mobilization readiness are governed by the MChS of Russia. The Far East Regional Centre of the MChS of Russia is located in Khabarovsk and is a higher level management body to the Main Department of the MChS of Russia for the Sakhalin Oblast.

1.5.3.3 Day-to-Day Management Bodies

Day-to-day management bodies include:

- Emergency coordination centers, information centers, operations duty services of the federal agencies.
- Emergency coordination centers of the regional centers.
Emergency coordination centers of the MChS Main Departments for the RF constituencies, information centers, operations duty services of the RF constituencies executive bodies and regional offices of the federal agencies; Municipalities’ operations duty services. Organizations’ operations duty services.

As a rule, the day-to-day management bodies operate 24 hours a day and are equipped with communications facilities for notification, collection and processing of information.

Functions of Local Regulatory Bodies in Emergencies in the Sakhalin Oblast

General functions of the governmental authorities in the field of protection of population and territories from emergencies within RSChS are defined by The RF Government Decree of December 30, 2003 No 794 On Unified State System for Prevention of and Response to Emergencies (as per RF Government Decree No. 1179 of November 19, 2012) and by existing governmental regulations describing responsibilities of each of these governmental agencies. Functions of the governmental authorities within Sakhalin oblast RSChS subsystem are approved by the Sakhalin Oblast Government Decree No.442-pa of September 5, 2012.

### Table 1.10 Functions of Regulatory Bodies in Emergency

<table>
<thead>
<tr>
<th>Regulatory Body</th>
<th>Function</th>
<th>Normative Document</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main Department of the Russian Federation's Ministry of Civil Defense, Emergencies and the Elimination of the Consequences of Natural Disasters (MChS of Russia) for Sakhalin Oblast</td>
<td>Responsible for emergency response management, all emergency plans and activities approvals, emergency prevention and response co-ordination in the Sakhalin Oblast of the Russian Federation, arrangements for emergency information access and dissemination both at the Sakhalin Oblast and regional levels.</td>
<td>Decree of the President of the Russian Federation No. 868 of July 11, 2004 (in amended revision No. 1523 of November 12, 2012)</td>
</tr>
<tr>
<td>Department of the Federal Service of Natural Resource Management Supervision (Rosprirodnadzor) for Sakhalin Oblast</td>
<td>Monitoring and control of environmental conditions in the areas affected by contamination resulting from emergency. Systematic supervision and control over emergency response activities.</td>
<td>RF Government Decree No. 400 of July 30, 2004 (in amended revision No.1027 of October 8, 2012)</td>
</tr>
<tr>
<td>Department of the Federal Service for Veterinary and Phytosanitary Supervision (Rosselkhoznadzor) for Sakhalin Oblast (former FGU SakhalinRybyVod)</td>
<td>Government control of fisheries and conservation of aquatic biological resources Investigation of causes of fish and other water bio-resources kill, determination of damage inflicted on water bio-resources and aquatic environment by all types of economic activities, filling claims to violators.</td>
<td>RF Government Decrees No. 327 of June 30, 2004 (in amended revision No.845 of October 17, 2011)</td>
</tr>
<tr>
<td>Territorial Department of the Federal Service for Supervision of Consumer Rights Protection and Human Wellbeing of Russia (Rospotrebnadzor) for Sakhalin Oblast</td>
<td>Execution of operational control and measurement of chemical contamination level in the areas of emergency. Implementation of sanitary and antiepidemic activities in the area of emergency.</td>
<td>RF Government Decree No. 322 of June 30, 2004 (in amended revision No.612 of June 19, 2012); No.794 of 30.12.2003 (in amended revision No.1179 of November 19, 2012)</td>
</tr>
<tr>
<td>Department of the Federal Environmental, Industrial and Nuclear Supervision Service of Russia (Rostechnadzor) for Sakhalin Oblast</td>
<td>State supervision and control of implementation of and compliance with standards, rules and regulations for subsurface resource protection, safe industrial practice; licensing of hazardous economic activities, including operation of oil and gas production facilities, major</td>
<td>RF Government Decree No. 401 of July 30, 2004 (in amended revision No.1027 of October 11, 2012) and No.794 (in amended revision of No.1179 of November 19, 2012)</td>
</tr>
<tr>
<td>Regulatory Body</td>
<td>Function</td>
<td>Normative Document</td>
</tr>
<tr>
<td>-----------------</td>
<td>----------</td>
<td>--------------------</td>
</tr>
<tr>
<td>Sakhalin Territorial Department for Hydrometeorology and Environmental Monitoring (Sakhydromet)</td>
<td>Provision of the RSChS management bodies with hydrometeorological information, including information about potentially hazardous natural processes, actual and forecasted sudden changes in weather and environmental pollution conditions potentially hazardous to human health and environment. Execution of operational control and measurement of chemical contamination level in the areas affected by emergency.</td>
<td>RF Government Decree No. 372 of July 23, 2004 (in amended revision No.210 of March 24, 2011) and No.794 (in amended revision of No.1179 of November 19, 2012)</td>
</tr>
<tr>
<td>Committee of Natural Resources and Environmental Protection of the Sakhalin Oblast Administration</td>
<td>Responsible for execution of environmental protection activities and implementation of environmental safety arrangements on the territory of the Sakhalin Oblast. Implementation of rights and fulfillment of commitments of the Sakhalin Oblast Administration under all relevant provisions of Production Sharing Agreements for “Sakhalin-1” and “Sakhalin-2” Projects except issues to be resolved exclusively and directly by the Sakhalin Oblast Administration proper.</td>
<td>Resolution of the Sakhalin Oblast Administration No. 514-pa of December 15, 2009</td>
</tr>
</tbody>
</table>

1.5.4 STRUCTURE AND INTEGRATION OF EMERGENCY TEAMS AND RESOURCES

The RF Unified Command concept reflects internationally recognized best practice. The Unified Command System provides for the reciprocal integration of Sakhalin Energy and RSChS personnel into response teams. In practice this can be divided into responses for Tier 1 incidents and response for higher Tier levels.

Sakhalin Energy Emergency Coordinator is responsible for interfacing the deployed OSR resources, whereas the Prigorodnoye Assets Emergency coordinator is responsible for directing response activities on scene.

Tier 1 Responses: Government-Industry Liaison

For spill responses under the control of a site or operating company, one or more Sakhalin Oblast Emergency Commission representatives, will be invited to participate in the response. The function of the RSChS representative is to:

- Provide technical, operational or logistics support and information.
- Liaise with RSChS agencies, and keep them informed of response progress.
- Facilitate the incorporation of Agency personnel into the response.
- In the event of an escalation of response, facilitate any transition of control to the RSChS.

Sakhalin Energy has a bilateral OSR Mutual Assistance Agreement with ENL.
Tiers 3 and Higher

The Emergency Commission of the Sakhalin Oblast may assume control of a large-scale response or direct the RSChS Standing Management Agency depending on the scale of the spill.

A Unified Command may be established and it is anticipated that Sakhalin Energy will fully participate in any Unified Command formed in response to a Sakhalin Energy Tier 2 or 3 spill incidents.

Sakhalin Energy will also assist in other responses at the request of the Emergency Commission of the Sakhalin Oblast.

Major oil spill responses require the mobilization of a wide range of material and human resources and that diverse skills and knowledge are also required. These are located in Government agencies, Oil Industry and Contractors (see Figure 1.17).

The Unified Command will require the formation of teams comprising individuals from many agencies and utilizing equipment from many sources. Joint exercises and drills will be undertaken to ensure the compatibility of response equipment and procedures.

If the resources available from Sakhalin Energy are not sufficient or efficient enough for ultimate and reliable control (“liquidation”) of an oil spill, then, according to the tiered response concept the Site Controller (or Emergency Coordinator) must inform KChS&FS, Sakhalin Energy, authorized governmental bodies and request assistance. This may occur as a consequence of adverse weather conditions, incomplete or late containment of the spill, incidents and failures of response equipment and technology, response personnel errors, escalation of the spill to a higher-than-local level or other unforeseen and unavoidable circumstances.
1.5. COMMUNICATION AND NOTIFICATION SYSTEM ORGANIZATION AND PROCEDURE

Public Notifications

Notification of the public of the situation at the Prigorodnoye Asset will be organised by territorial MChS bodies through radio broadcasting networks, TV channels (announcements must be preceded with electric alarm siren) and through loudspeaker installations mounted on police (public order service) vehicles.

Local notification system (sirens, fire alerts) are maintained in a state of constant readiness.

Notification of the local communities is undertaken by Sakhalin Energy is done by the ECT and External Affairs Team via the CLO network.

A Unified Alert Dispatcher Service (UADS) has been established on the Territory of Sakhalin Oblast in order to create an effective system of prevention and response to emergencies.

Sakhalin Unified Alert Dispatcher Service (UADS)

The UADS is a special managing body under the authority of Sakhalin Oblast Administration set up to coordinate activities of the existing alert dispatcher centres of the region, local government bodies, municipalities, enterprises, organizations and establishments providing life support to the population irrespective of their pattern of ownership and departmental affiliation, supervising authorities and permanent preparedness units of the Sakhalin Territorial Sub-system of the RSChS.

One of the UADS basic tasks is notification of Sakhalin Oblast population on threats of possible emergencies and provision of information on an emergency actual status and response procedure and progress.

The UADS consists of Dispatcher Services of the Sakhalin Oblast Emercom, alert dispatcher centers of administrative bodies and departments within the region, departmental organizations and level readiness forces of the Sakhalin Territorial SEPR. Sakhalin Energy Alert Dispatcher Centre has been also included in the UADS.

In case of a threat of an emergency or an actual emergency the UADS is to be managed by the Sakhalin Oblast Emercom.

The Duty Officer of the Sakhalin Oblast Emercom Control Centre is senior to all other alert dispatcher centres as far as collection and exchange of information on emergencies is concerned, and is a coordinating body of mutual activities of the regional alert dispatcher centres.

Depending on the situation, scale of possible or actual emergency the following modes of the UADS functioning should be established:

- Routine mode – in case of normal situation.
- High preparedness mode – in case the situation is deteriorating or there is a forecast of possible emergency.
- Emergency mode – in case of emergencies and in the course of emergency response.
Modes of the UADS functioning are introduced and cancelled by a decree of the Sakhalin Oblast Emergency Commission.

**Sakhalin Energy Communication and Notification System**

Sakhalin Energy employs a variety of communications means and technologies to ensure that there are backup or secondary systems for all primary modes of communication (Table 11). This principle of ‘redundancy’ is key to uninterrupted communication between personnel at the site of the spill, the Site Controller, the ECT at Sakhalin Energy Yuzhno, and the various Russian Federation agencies and authorities, such as Emercom Main Department.

When there is a notification of a site emergency, radio communication is the prime means of communication, with telephone as a back-up. Internal plant communications during an emergency will normally be by radio on UHF Channel 1 for all Emergency Response Personnel and VHF Channel 16 or telephone for mustering communications.

**Table 1.11 Description of Communications Systems**

<table>
<thead>
<tr>
<th>System</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Telephone</strong></td>
<td></td>
</tr>
<tr>
<td>Land line</td>
<td>For use between Control Centres. Relatively secure.</td>
</tr>
<tr>
<td></td>
<td>Most populated areas covered.</td>
</tr>
<tr>
<td></td>
<td>Lines may be limited in some areas.</td>
</tr>
<tr>
<td></td>
<td>Local capacity may be low (^2).</td>
</tr>
<tr>
<td>Satellite telephones</td>
<td>Remote locations.</td>
</tr>
<tr>
<td></td>
<td>Directional antenna systems need to be orientated to connect to satellite.</td>
</tr>
<tr>
<td></td>
<td>Iridium and Globalstar handhelds easy to use and transport. All require clear outdoor view of sky. Remote antennae available for indoor and vehicle/vessel use. Capable of internet, email and fax connection.</td>
</tr>
<tr>
<td><strong>Facsimile</strong></td>
<td></td>
</tr>
<tr>
<td>Land line</td>
<td>Relatively secure (mobiles and satellite telephones are secure).</td>
</tr>
<tr>
<td></td>
<td>Transmit graphic material (e.g. maps).</td>
</tr>
<tr>
<td></td>
<td>Hard copy and digital copy.</td>
</tr>
<tr>
<td>Mobile/satellite phone</td>
<td></td>
</tr>
<tr>
<td>computer</td>
<td></td>
</tr>
<tr>
<td><strong>E-mail</strong></td>
<td></td>
</tr>
<tr>
<td>Internet satellite telephone</td>
<td>Digital copy.</td>
</tr>
<tr>
<td></td>
<td>Requires modem, fax/telephone line/satphone, and computer.</td>
</tr>
<tr>
<td></td>
<td>Automatic record of dispatch and receipt of message.</td>
</tr>
<tr>
<td><strong>Trunk Radio(^1)</strong></td>
<td></td>
</tr>
<tr>
<td>Telephone/Radio system</td>
<td>Shore-shore.</td>
</tr>
<tr>
<td><strong>Radio(^1)</strong></td>
<td></td>
</tr>
<tr>
<td>VHF/FM</td>
<td>Portable systems available. Not secure.</td>
</tr>
<tr>
<td></td>
<td>Limited range; generally, at sea level approximately line of sight (^2).</td>
</tr>
<tr>
<td>UHF</td>
<td>Line of sight. Portable systems available.</td>
</tr>
<tr>
<td></td>
<td>Very limited range; at sea level approximately 10-km (^2).</td>
</tr>
<tr>
<td>HF/SSB</td>
<td>Suitable for long range communications (^3).</td>
</tr>
<tr>
<td></td>
<td>Marine band is not secure.</td>
</tr>
<tr>
<td></td>
<td>Can experience distortion and interference due to atmospheric conditions.</td>
</tr>
<tr>
<td></td>
<td>Not portable.</td>
</tr>
</tbody>
</table>

\(^1\) Range can be extended using repeater stations.
1.5.6 TRANSFER OF CONTROL IN CASE OF A CHANGE OF THE E/O TIER

Authority

A higher-level (municipal, oblast, federal) KChS&FS may decide that the response tier needs to be escalated. This may be at the request of the Sakhalin Energy Crisis Manager. Based on this decision, a new EC may be appointed. Responsibilities and authority of KChS&FS (OSR Command/Headquarters) may be terminated or suspended only after establishing of respective (local, territorial, regional or federal) level KChS, formal handover/takeover of control of OSR operations and handover of current OSR operations control functions to respective KChS&FS.

Handover

In the event that control of a spill response is transferred to a new KChS, it is important that all relevant information is provided to the incoming KChS. This is particularly important if the transfer involves a change of controlling agency.

Transfer of control in case of a change of the E/O will be performed in accordance with the tiered OSR response system and the emergencies classification.

Responsibilities and authority of KChS&FS of Sakhalin Energy may be terminated or suspended only after formal handover/takeover of control of OSR operations and handover of current OSR operations control functions to respective KChS&FS.

The following will require direct instruction from KChS&FS: termination or suspension of current OSR operations; release of previously contained oil (oil product); removal of spill containment equipment; removal/demobilisation of OSR resources; termination of control and monitoring of the spill behaviour.

After authority has been transferred to KChS&FS Sakhalin Energy personnel and mobilised OSR resources of third parties will follow instructions of the KChS&FS in accordance with the procedure established by the RSChS.

Transfer of authority / control to KChS&FS will not exempt Sakhalin Energy from liability for compensation of OSR costs and spill caused damage.

For this to be achieved the following is required:

- Response activities must be monitored throughout the response.
- All information and data must be recorded and kept current.
- Information must be in a form that can be easily transferred
- Information must be in a form that is easily accessed and
- Information must be in a clear and understandable format.

The outgoing EC will hold a handover briefing and, if requested, will provide ongoing support to the incumbent EC.
2.1. PRIORITY ACTIONS IN CASE OF AN E/O
2.1.1 NOTIFICATION OF AN EMERGENCY

Reporting and Activation procedures are designed to ensure that:

- Sakhalin Energy notifies relevant Government Agencies that a spill has occurred. This is done to:
  - Comply with Russian Federal and Sakhalin Oblast Regulations.
  - Expedite any assistance that may be required from those agencies.
- Oil spills are rapidly reported to Sakhalin Energy’s duty response personnel:
  - "2500” service duty dispatcher,
  - Site Controller (SC),
  - Duty EC (according to duty list),
  - Duty Crisis Manager (according to duty list).
- All spills of oil and oil products are reported to the Company's management:
  - Prigorodnoye Manager,
  - HSES Manager,
  - Sakhalin Energy’s Shareholders and Lenders.
- Appropriate actions are rapidly taken to:
  - Control the source of the spill of oil or oil,
  - Contain the spread of oil or oil products,
  - Recover oil and oil products.

The order of internal and external notifications is given in the Company's Oil spill notification and reporting Manual (document № 0000-S-90-04-M-0008-00).

Allocation of Responsibility

All staff and Contractors of Sakhalin Energy must timely report all oil and oil products spills to the nearest work supervisor (Table 2.1) and to take all steps necessary to safely stop an oil spills at the source.

Having received a spill signal the direct Work Supervisor shall report the emergency to the Duty Officer at the facility or directly to the Site Manager (Prigorodnoye Asset Manager), who takes over the responsibility of the Site Controller (SC) right away in case of emergency.

Table 2.1 Persons In Charge

<table>
<thead>
<tr>
<th>Facility/Location</th>
<th>Person In Charge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prigorodnoye Onshore Facilities</td>
<td>Nominated Site Controller (Shift Superintendent)</td>
</tr>
</tbody>
</table>

The Person in Charge is responsible for ensuring that immediate actions are promptly taken and activating the wider response, for ensuring that On Site actions are speedy and appropriate.

The Site Controller is responsible for activating the wider response and for ensuring that On Site actions are speedy and appropriate.

The Site Controller is responsible for obtaining information on the size of the oil slick and likely volumes of oil spilled and other information required for the initiation of, and planning for, the response.

The Emergency Coordinator is also responsible for ensuring that the ECT members
are mobilised (see Figure 2.1), for notifying the Crisis Manager of Sakhalin Energy, Operations Manager and HSE Manager of the Company.

The Crisis Manager is responsible for notifying Shareholders and Lenders, mass media and other stakeholders in the cases of higher-Tier (Tier 3-5 onshore) spills in accordance with Sakhalin Energy’s internal procedure (Document No.0000-S-90-04-P-7002-00).

Table 2.2 Government and External Organizations to be Notified of an Oil Spill

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Agency/ Organisation</th>
<th>Person Responsible</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spill Source</td>
<td>Location Volume/Tier</td>
<td></td>
</tr>
<tr>
<td>All</td>
<td>All ≤ 0.2 m³</td>
<td>Main Dept. of MChS for Sakhalin Oblast / Monthly by letter</td>
</tr>
<tr>
<td>All</td>
<td>All &gt; 0.2 m³</td>
<td>Main Dept. of MChS for Sakhalin Oblast / immediately Korsakov Dept. of MChS / Immediately Rosenergo Operations Controller / Immediately TEC Operations Control Centre / Immediately</td>
</tr>
<tr>
<td>All</td>
<td>All</td>
<td>EC or Authorized Officer</td>
</tr>
</tbody>
</table>

Spill Detection Actions

Visual inspection of the Prigorodnoye Asset site territory is performed and pressure in pipelines checked and pipeline pressure is monitored as required by technological regulations. If a spill has been detected then Emergency Shutdown Procedures are initiated (see Section 1.3.6.).

Any person who detected an oil spill or a slick must, provided it is safe to do the following:

- Notify the duty operator.
- Halt the flow of oil;
- Eliminate possible ignition sources or other unsafe conditions;
- The operator must immediately report the incident to the Person In Charge (see Figure 2.1).

The observer should, as a minimum, note and report the following:

- Location and source of the spill (equipment or facility involved).
- The time of observation and time of the incident (if determinable).
- Any associated injuries to personnel.
- Potential impact on water bodies.
- Actions taken and effectiveness of these actions.
Immediate Work Supervisor (Person in Charge)

The Person in Charge must ensure the safety of personnel and the integrity of equipment in the vicinity of the incident.

The Person in Charge may dispatch a person to determine the details of the incident but this should not delay reporting the spill.

Take immediate actions to ensure safety:

- Respond to any alarm as per vessel or site emergency procedures.
- Assess hazards and immediate requirements:
  - Fire or explosion risk.
  - Gas or vapour hazard. Consider whether to stop air intake into accommodation and non-essential air intake to engine-room.
  - Need to evacuate an area.
  - Casualties. Provide assistance.
  - Risk to personnel by continuing operations.
- Until all the details of the spill are known, assume the worst case.
- Request medical, fire fighting and other emergency support if required.
- Decide if there is a need for special safety precautions near the spill source.
- Decide if there is a need to establish a safety exclusion zone.
• Ensure that everyone in the area of the spill uses appropriate PPE. In the case of freshly spilled crude oil or condensate, at least one member in every group should carry an explosion-metre or gas detector.

Site Controller

Immediate Safety Assessment

The overall management of safety of personnel and the general public following an emergency incident is described in the Sakhalin Energy Emergency Response Plan. General safety procedures (gas, fire, explosion etc.) for personnel on site are described in the relevant Site/Vessel emergency procedures.

Preliminary Incident Assessment

Having been notified about the spill, the Emergency Site Controller will make a preliminary assessment of any incident. The Emergency Site Controller may dispatch personnel to investigate the cause of the spill or to update information on the spill (volume, slick size etc).

An estimate of the size of the spill should be made based on the incident details or using the Guidelines provided in Section 2.2.8.

The Emergency Site Controller will also make a preliminary estimate of the likely response Tier (Section 1.4.1).

Initial Reporting

The Emergency Site Controller should immediately report spills to the Duty EC by phone and then send Form OSR-01 by fax. The dispatch of the initial Form OSR –01 should not be delayed even if only partial information is available. Additional information should be sent through to the Duty EC as soon as it becomes available (a clearly marked “updated”, Form 1-OSR should be used) (see Appendix 13).
A Checklist for the Prigorodnoye Onshore Emergency Site Controller is provided in Appendix 20.1.

Emergency Coordinator (EC)

Reporting

Upon notification of a spill, the Emergency Coordinator (EC) will immediately inform the following Company's personnel:

Upon notification of a spill, the Duty Emergency Coordinator (EC) will immediately inform:
- Crisis Manager.
- Prigorodnoye Asset Manager.
- Sakhalin Energy HSE Manager.
- Agencies as per Table 2.2 and Figure 2.1.

Incident Assessment

The EC will determine if the spill can be effectively managed by Sakhalin Energy or whether additional resources are likely to be required. The EC will inform the Crisis Manager of this assessment.

ECT Call-Out Procedures

For oil spills the EC may activate the ECT.
ECT members will assemble at the Emergency Coordination Centre (ECC) on the 3rd floor of the Company's Yuzhno Office at the following address: Yuzhno-Sakhalinsk, 35 Dzerzhinskogo Str, suite 321.

Crisis Manager

Having received a report from the EC, the Crisis Manager will:

- Inform the Prigorodnoye Asset Manager about the spill.
- Contact Emercom to confirm the Sakhalin Energy's assessment of the response Tier.
- Inform the shareholders and lenders.

If the response is determined by Sakhalin Energy to be a major response (i.e. Tier 2 or Tier 3), or if Emercom determines that it is a major response, the Crisis Manager may:

- After consultation with the EC, invite Emercom to send representatives to the ECT.
- Discuss the formation of a "Unified Command" with the nominated Emercom representative. The "Unified Command" is discussed in Section 1.5.4.

The Crisis Manager may decide to mobilise the following teams:

- CMT.
- External Affairs Team.
- Human Resources Team.

The function of these teams is detailed in the Sakhalin Energy Emergency Response Plan.

Determining the Response Tier

The EC will, in consultation with the Prigorodnoye Site Controller and key ECT members, determine if the spill can be effectively managed by Sakhalin Energy (i.e. a Tier 1 and Tier 2 response is required) or whether additional resources are likely to be required (i.e. a Tier 3 or higher-tier response is required).

2.1.2 HEALTH AND SAFETY PRIORITY MEASURES

Responsibilities

Personnel and public safety is the highest priority in the event of an oil spill emergency. All personnel who are not directly involved in oil spill response must be immediately removed (evacuated) from the spill site to safe locations.
The Emergency Coordinator is responsible for ensuring that Health and Safety procedures are implemented to ensure that response activities are carried out safely.

In Tier 2 or Tier 3 responses, the EC may appoint a Health and Safety Coordinator (HSC) to assume responsibility for this function.

It is the responsibility of all Section Leaders, Unit Coordinators, facility Controllers and Managers, field Supervisors and Team Leaders to ensure that safe work practices are followed on the work sites under their responsibility.

Responsibilities are detailed in the template HS Sub-Plan provided in Appendix 20.

Supporting Documents

Medical Emergency Response Plan

The "Sakhalin Energy Medical Emergency Response Plan (MERP)" details the actions to be taken in the case of serious illness or injury.

Material Safety Data Sheet (MSDS)

All personnel handling chemical products should be issued with the relevant Material Safety Data Sheet (MSDS).

The Health and Safety Coordinator, or other delegated person must ensure that this is done and that personnel understand the correct materials handling procedures and personal protective equipment needed.

MSDSs are contained in a folder in the ECC and also in the HSE Department Library.

Health and Safety Handbook for Oil Spill Response

This Manual (document № 0000-S-90-04-P-0175-00) contains guidelines for safe operations during oil spill containment and response.

Environmental Hazards

OSR operators may encounter a variety of environmental hazards including:

- Ice conditions.
- Adverse Weather.
- Marine environment.
- Shoreline character.

Measures to remove, isolate or minimise environmental hazards should be addressed in the preparation of site-specific health and safety plans. Guidance is provided in Appendix 20.

2.1.2.4 Fire and Explosion Hazards

Of particular concern during oil spill incidents in Lunskoye is the possibility that there may be gas or explosive vapour present as a result of hydrocarbon spills. This will almost always be the case close to the source of freshly spilled crude oil or condensate. For this reason immediate containment of gas condensate is not an
acceptable response strategy.

2.1.2.5 Human Health Hazards

The human health hazards can be broadly grouped into two areas:

- The hazards arising to the public, from direct contact with spilled oil, or because of ingestion of contaminated seafood;
- To personnel involved in oil spill response, which may be at risk from hydrocarbon vapour, from handling recovered oil and contaminated matter, or from exposure to the hazards associated with oil spill response methods.

Public health risks from oil spills are generally regarded as minor, while for oil spill response teams there are numerous health hazards, primarily associated with working with heavy equipment, dispersants, boats and oil, and from being exposed to adverse environmental conditions.

Examples of health hazards to responders include:

- Inhalation of volatile hydrocarbons evaporating from condensate, freshly spilled crude oil or from working in confined spaces where oil and recovered waste is present.
- Handling of toxic oily waste, possibly including rotting organic matter, dead birds and other contaminated materials.
- Fatigue from heavy physical work and/or long hours.
- The effects of prolonged exposure to heat, cold, wet, sun, wind.
- Stress or shock from personal involvement in the causes and consequences of serious incidents.

Worker Health and Safety Requirements

Workers will not be allowed to respond to oil spills unless they have received appropriate safety training and have been given safety briefings relating to the site in which they will be working. In some areas where oil spill response is carried out, workers must hold valid safety certificates and have attended specific health and safety training. The Health and Safety Coordinator will ensure that adequate procedures are in place to monitor these requirements.

Specific PPE will be provided and must be worn according to the task in hand, and workers must be familiar with the procedures and guidelines set out in the Sakhalin Energy Oil Spill Response Health and Safety Handbook.

Decontamination

Decontamination sites for personnel will be established at major work sites and waste management centres. The Health and Safety Function should monitor the effectiveness of personal decontamination (e.g. washing hands, removal of oiled PPE), but the responsibility for setting up the decontamination facilities is with the Logistics Function.

Guidelines for the construction of decontamination facilities are contained in Appendix 20.1.
Setting Up Exclusion Zones

It is recommended that a 0.1 kilometre exclusion zone be established from the source of a significant or ongoing spill of crude oil or condensate. This exclusion zone may be varied once a safety assessment has been completed.

If there is a gas or vapour risk, the Site Controller (SC) will identify which areas may be dangerous, and where to set up exclusion zones. The exclusion zones may restrict boats, helicopters, or people from entering.

The SC will:

- Make sure that all personnel, vessels and aircraft are warned of these areas, and are informed of the rules for operating close to exclusion zones.
- Mobilize assistance to prevent public from entering the danger zone.
- Specify fire and gas precautions in order to prevent all sources of ignition within the danger zone, for example no smoking, no use of mobile phones, and restrictions on vessels starting their engines.
- Constantly review the location of the safety zone remembering that the slick is moving and there may be changes in the speed and direction of current and wind.

The EC is responsible for ensuring that exclusion zones are removed when there is no longer a gas or vapour hazard and that this is communicated to all relevant parties, including the public.

Public Warning and Safety Alerts

In the first instance the need for public warning will depend on the presence of gas or explosive vapours.

The Emergency Coordinator will immediately communicate details of possible affects or impacts on public safety to the Russian Authorities if such affects/impacts are predicted.

Public Warning will be performed by executive authorities of the RF constituents, local government agencies and organizations via mass media and other communication channels.

If there is a large slick of freshly spilled crude oil-condensate close to the marine facilities, then the Site Controller will alert all nearby vessels, and may decide to sound the terminal general alarm. Details of the emergency alarms and procedures are contained in the Prigorodnoye Emergency Response Plan.

There are no population centers near the Prigorodnoye Asset. The owners of the garden plots situated to the north-west of the LNG Plant will be notified if threatened by a fire or explosion hazard

Health and Safety Sub-Plan

For large-tiered or prolonged response, a Health and Safety Sub-Plan may be required. This plan will encompass all of the procedures relating to removing or minimizing hazards and dealing with health and safety issues or accidents that may occur during the conduct of the response operations.
The Health and Safety Coordinator will develop the Health and Safety Sub-Plan as part of the Incident Action Plan planning process. This should also be done in consultation with the ECT Sections Leaders.

The primary objective of the Health and Safety Sub-Plan is to ensure that the oil spill response operation is completed without injury or damage to health of response personnel or members of the public.

### Site Specific Health and Safety Plan

The Health and Safety Coordinator (HSC) will monitor the implementation of the Health and Safety Sub-Plan and Site Specific Health and Safety Plans.

All health and safety incidents will be reported to the Health and Safety Coordinator, who will ensure that corrective actions are undertaken.

For large-tiered, prolonged or hazardous responses the Health and Safety Coordinator may implement Health and Safety Audit Procedure.

Specific instructions may be required for safe operations within a particular work site, such as a vessel or shoreline segment. These may form part of a Work Order or be issued as a Site Health and Safety Plan.

In either case, Site Procedures must be issued to the Person in Charge of each site and to all personnel entering the work site. As a minimum, all personnel must receive a health and safety induction based on the Site Health and Safety Plan. Guidelines and templates for preparing both an Onshore and Offshore Site Health and Safety Plan are provided in Appendix 20.5.

All personnel involved in a spill response and all visitors to a work site must receive Health and Safety training. This should be both general training and site-specific training. Guidelines for this training are provided in Appendix 20.5. The Health and Safety Coordinator is responsible for developing the training programmes and for ensuring that it is undertaken to a satisfactory level.

#### 2.1.3 MONITORING OF THE SITUATION AND OF THE ENVIRONMENT

Monitoring will also be undertaken during an oil spill and associated response. This may include:

- Aerial surveillance (see Section 2.2.8), primarily for tracking the oil at sea but also to monitor oil persistence (slick break-up) or ice conditions.
- Shoreline Surveys (Section 2.2.8), to determine oil distribution and persistence, or the effectiveness of cleanup methods.
- Monitoring of oil weathering, to determine the degradation of the oil in order to predict persistence or potential residual oil character (for waste management).
- Monitoring of cetacean (particularly Western Grey Whale) behaviour and exposure to oil and response vessels.

The results of response phase monitoring will directly influence the priorities,
strategies and methods employed during a spill response ensuring that:

- Response efforts are directed at areas where the most oil is present, and there is the greatest potential to recover spilt oil.
- Protection and cleanup strategies are directed at the most sensitive areas or resources.
- Cleanup strategies are effective and result in the maximum oil recovery and least environmental damage.
- Sensitive areas or species (e.g. seal colonies, haul-out areas or bird nesting areas) are protected from both oil and response activities.

Monitoring Guidelines for the response phase are provided in the Company’s “Manual for Monitoring and Assessment During Oil Spill Response” (document № 0000-S-90-04-P-0177-00).

The type of monitoring done, and the scale of monitoring operations during a response will be determined by the EC in consultation with the Planning Section Leader, Operations Section Leader, HSE Representative and Government agencies.

### 2.1.4 IMMEDIATE OIL SPILL CONTAINMENT

In assigning equipment it is essential that a balance is achieved between:

- Containment capacity (sorbent booms, berms, dams, etc.).
- Recovery capacity (vacuum systems/pumps).
- Temporary waste storage.

Oil spill response at Prigorodnoye Onshore Facilities will be provided by equipment from the OSR storage (garage) and personnel based on the Asset premises (see Section 1.4). If spill control is beyond on-site capabilities then OSR resources from other bases and ERDs and the oil ERT are engaged.

**Temporary Waste Storage and Transport**

If OSR waste generation should exceed available disposal and utilization capacity temporary waste storage will be arranged at Prigorodnoye Onshore Facilities.

Temporary waste storage sites must have:

- waterproofing layer (course);
- rain shelter;
- storm-water drainage;
- easy access for transport vehicles for loading and unloading (handling operations).

Temporary waste storage facilities must be located close to response sites.

Solid waste will be collected in 50 liters plastic bags and stored in specially designated locations.
2.2.1 SEQUENCE OF OSR OPERATIONS

2.2.1.1 Immediate Response

The immediate onshore response is to be conducted by Oil Spill Response Contractor permanently stationed on site at Prigorodnoye Onshore Facilities under the direction of the Person in Charge. OSR Contractor and Site Control Team must ensure that the spill is quickly contained and preventive measures are taken to exclude migration of spilled oil into water bodies, OSR equipment is deployed and effective oil spill response is mounted (see table 2.3).

Mobilization of OSR Resources

Facility OSR resources will be permanently stationed on site. These will include 16 responders of the main oil spill response team and additional personnel of 16 workers capable of mobilization to site within 2 hours. OSR resources from other Sakhalin Energy ERDs may be also mobilized if required (see 1.4.2.). OSR Contractor will be mobilized from Yuzhno-Sakhalinsk within two hours.

Authorization

The Prigorodnoye Onshore Site Controller will instruct Site Control Team and OSR Contractor to contain and recover oil unless the Site Controller decides that:

- The Site Control Team / OSR Team is needed for rescue, fire fighting, or other safety purpose.
- The safety of personnel is at risk due to adverse weather or other conditions.
- Fog or light conditions reduce visibility to the extent that the response is unsafe.
Table 2.3 Oil Spill Onshore: Summary of Response Procedures *

<table>
<thead>
<tr>
<th>Response Action</th>
<th>Person Responsible</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Immediately implement all fire, gas and explosion safety precautions.</td>
<td>Shift Supervisor</td>
</tr>
<tr>
<td>2 Stop the spill and isolate the source if safe to do so.</td>
<td>Shift Supervisor</td>
</tr>
<tr>
<td>3 Assess hazards and immediate requirements, preliminary assessment. Fresh crude oil and condensate must be treated as dangerous until personnel on site can assess the fire/gas hazard.</td>
<td>Shift Supervisor</td>
</tr>
<tr>
<td>4 Emergency shutdown if required.</td>
<td>Site Controller</td>
</tr>
<tr>
<td>5 Report spill to Prigorodnoye Onshore Site Controller.</td>
<td></td>
</tr>
<tr>
<td>6 Report spill to ECT.</td>
<td></td>
</tr>
<tr>
<td>7 Evacuate if required.</td>
<td></td>
</tr>
<tr>
<td>8 Ensure medical emergency response is alerted.</td>
<td></td>
</tr>
<tr>
<td>9 Alert local population and nearby installations, that there is danger of condensate and explosive vapours or gas</td>
<td></td>
</tr>
<tr>
<td>10 Notify Russian Authorities.</td>
<td>EC</td>
</tr>
<tr>
<td>11 Ensure proper use of PPE, gas detectors and explosimeter.</td>
<td>All</td>
</tr>
<tr>
<td>12 Determine response tier.</td>
<td>EC in consultation with Site Controller</td>
</tr>
<tr>
<td>13 Develop IAP.</td>
<td></td>
</tr>
<tr>
<td>14 Commence on site monitoring.</td>
<td>EC</td>
</tr>
<tr>
<td>15 Authorize surveillance. Assess the size of spill and spreading trajectories.</td>
<td></td>
</tr>
<tr>
<td>16 Implement Health &amp; Safety procedures.</td>
<td>EC &amp; HSC</td>
</tr>
<tr>
<td>17 Ensure safe work practices are followed.</td>
<td>HSC</td>
</tr>
<tr>
<td>18 18.1 Alert on site fire unit and OSR team.</td>
<td></td>
</tr>
<tr>
<td>18.2 Contain spill if not done so yet.</td>
<td>Site Controller</td>
</tr>
<tr>
<td>19 19.1 Use berms, sorbent booms to minimize the possibility of oil escaping into water bodies.</td>
<td></td>
</tr>
<tr>
<td>19.1a DO NOT attempt to recover pure condensate.</td>
<td></td>
</tr>
<tr>
<td>19.1b DO NOT attempt in ignite condensate and oil.</td>
<td></td>
</tr>
<tr>
<td>19.2 Consider recovered oil storage and transport.</td>
<td></td>
</tr>
<tr>
<td>20 Utilize manual calculations to determine spill spreading trajectory.</td>
<td>EC</td>
</tr>
<tr>
<td>21 When there is no further gas or vapor danger, remove exclusion zones and advise facility personnel.</td>
<td>EC via SC</td>
</tr>
<tr>
<td>22 Identify onshore impact and clean up where appropriate.</td>
<td></td>
</tr>
<tr>
<td>23 Implement waste management strategies</td>
<td>EC</td>
</tr>
<tr>
<td>24 Response termination</td>
<td></td>
</tr>
<tr>
<td>25 Post spill report</td>
<td></td>
</tr>
<tr>
<td>26 Post spill monitoring</td>
<td>Sakhalin Energy</td>
</tr>
</tbody>
</table>

* For times of procedures and further information see Onshore Calendar Plans in Appendix 4

**Deployment**

Upon authorization, the OSR Team Leader must:

- Mobilize facility resources and personnel.
- Deploy most appropriate boom and skimmer system as required.
- Commence containment and recovery operations.
- Advise the Site Controller of:
  - Commencement of operations
  - Containment and recovery rates.
  - Estimated time for oil to be recovered or time until storage capacity is reached.
  - Need for additional OSR resources.
Personnel Safety Guidelines

Personnel involved in response must observe the following safety guidelines:

- Do not walk through or come close to a crude oil spill unless certain that there is no risk from vapor or gas.
- Monitor the direction of wind and air concentration of volatile hydrocarbons.
- Monitor also for gas and vapor when approaching the source of a crude oil or condensate spill.
- Maintain full readiness for fire-fighting and gas hazards.
- Maintain radio communications with the Site Controller regularly to keep him aware of the situation.
- Maintain radio communications with other emergency response teams involved in the response.

### Table 2.4 Maximum Permitted Concentration (MPC) of Selected Noxious Substances in the Working Zone Air

<table>
<thead>
<tr>
<th>Substances</th>
<th>MPC (mg/m$^3$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benzine (carbon equivalent)</td>
<td>300</td>
</tr>
<tr>
<td>Kerosene (carbon equivalent)</td>
<td>300</td>
</tr>
<tr>
<td>Hydrogen sulphide blended with hydrocarbons C$_1$-C$_5$</td>
<td>3</td>
</tr>
<tr>
<td>Hydrocarbons C$<em>1$-C$</em>{10}$</td>
<td>300</td>
</tr>
<tr>
<td>Including benzene</td>
<td>1.6/8*</td>
</tr>
</tbody>
</table>

**Note**: If working in an enclosed space or in any situation where gas or hydrocarbon vapours may be present, air must be tested using a gas analyser. Content of oil vapours and gases must not exceed the MPC as per the sanitary standards. Work is permitted only when the hazardous conditions no longer exist. According to the Shell HSE&SP Control Framework, the following benzene impact standards are used: the average time-weighted MPC (TWA) should be the average air concentration for 8 hours / The short term exposure limit (STEL) should be the average air concentration for 15 minutes. The TWA/ STEL standard according to the Russian legislation is higher (5/15 mg/m$^3$), but guidance should be taken from Sakhalin Energy’s internal regulations.

#### 2.2.1.2 Surveillance and Monitoring

Surveillance (assessment of location and tracking of spilled oil spreading) can be done through:

- visual observation.
- visual sensing using infrared, UV or other optical enhancement.

#### 2.2.2 OIL SPILL RESPONSE TACTICS. PROTECTION OF AFFECTED POPULATIONS AND SOCIOECONOMIC RESOURCES

The primary objective of any spill response is the protection of human life and health.

Prigorodnoye facilities process LNG gas, condensate and crude and export LNG and crude-condensate blends. When spilled these represent a fire and explosion hazard in close proximity to the spill source. The volatile nature of these substances, together with winds and sea states, result in a rapid dissipation of vapors and a very low persistence of liquids on the land surface. Calculations show that the spill will remain within the facility site area. However, explosion and ignition/fire prevention measures will be taken in case of any spill.
It is possible that spills could impact adjacent areas, including shorelines. In such cases, the militia will be notified via EMERCOM. Sakhalin Energy security officers and Site Control (Emergency Response) Team personnel will be dispatched from the Prigorodnoye Onshore Facility and the Sakhalin Energy office in Yuzhno to secure the impacted area.

For large-tiered or prolonged response, an incident-specific Health and Safety Sub-Plan may be required (see Section 2.2.7.). This plan will encompass all of the procedures relating to removing or minimising hazards and dealing with health and safety issues or accidents that may occur during the conduct of the response operations.

2.2.3 PROTECTION OF HIGH RISK AREAS, PROTECTED NATURAL TERRITORIES AND RESOURCES

Response Priorities for Onshore Operations

Response priorities are set by the EC, in consultation with the Crisis Manager, Government Agencies, ECT Section Leaders and expert Advisers. Response priorities will address safety first, then containment and recovery of the spill.

Priorities for response efforts will be selected based on the following criteria:

- Response should result in the highest possible net environmental benefit.
- Response strategies should aim for the highest possible level of cleanup and should result in the lowest possible environmental damage or disturbance.
- The response should target areas and resources that have the slowest, or least likely, rate of self-cleanup or recovery from damage.
- The response should be the most efficient use of materials and human resources.
- Response should result in the minimum possible generation of waste materials.

Environmental Protection Priorities

Priorities for protection of the natural environment include:

- Natural monuments.
- Candidate Ramsar sites (from Ramsar Convention “Shadow List”).
- Land habitats of all rare and protected mammal and bird species, as listed in the International Red Book and the Red Books of the Russian Federation and the Sakhalin Oblast.

No nesting grounds of Red-Book species were observed near Prigorodnoye onshore facilities. However, they may be present there during seasonal migration. Considerable concentrations of migrating birds near the industrial site is very unlikely for reasons of industrial noise generated by the onshore facilities. The same applies to habitats of rare and protected mammals and plants.

The nearest nature monument is Korsalovski Spruce Grove. It is situated 2 km to the north from the Prigorodnoye Onshore Facility, upstream the Mereya River, therefore no risks of oil spill impact exist.
Priority Protection Areas

The Mereya River of the highest fishing category flows on the western side of the Prigorodnoye Onshore Facility. Creek Goluboi flows directly across the site.

Safety

Onshore cleanup activities pose a number of hazards:

- Response equipment, particularly heavy vehicles.
- Weather.

Safety procedures in Section 2.2.7 and Appendix 20 must be followed at all times.

All personnel in the area of OSR operations will be equipped with suitable cold weather personal protective equipment. OSR Contractor personnel must follow the safety procedures at all times.

Waste Minimization

Waste minimization will include:

- Reuse of oiled materials such as sorbents.
- Preventing oil from impacting debris.
- Use of cleanup strategies that produce the minimum amount of waste.
- In situ treatments such as incineration and bioremediation.

Refer to Section 3.1.3 for general information regarding waste management.

Location Specific Sub-Plans

This section describes the response strategies for priority protection areas, such as the Mereya River and Creek Goluboi.

Design of all oil containing facilities (containment bund, discharge tanks, remotely controlled level in emergency reservoirs, heated drain channels) excludes any oil releases beyond the Plan coverage zone or soil penetration of oil. No impact on the Mereya River and Goluboi Creek protection zones is therefore possible.

2.2.4 OSR RESPONSE TECHNOLOGIES

Onshore cleanup methods include:

- Use of sorbent materials (with manual cleanup).
- Mechanical cleanup (recovery of oil and removal of oiled debris).
- Vacuum recovery of oil.
- Sediment reworking and natural flushing.
- Low pressure or high pressure washing methods.
- Sand blasting or steam cleaning.
- Bioremediation.
2.2.5 LOGISTICS, ENGINEERING, FINANCE AND OTHER SUPPORT FUNCTIONS

Procurement of Equipment and Services

The Operations Section Leader and other Section Leaders are responsible for determining current and future equipment and personnel needs, and for supplying a list of these to the Logistics Section Leader in a timely manner.

The Logistics Section Leader will determine transport and support service needs in consultation with the relevant Section Leader. A Checklist of possible logistics needs is provided in Table 2.5.

For all but small scale responses, the Logistics Section Leader will appoint a Procurement and Services Officer (or both a Procurement Officer and a Services Officer). Procurement and Services is responsible for:

- Identifying sources of equipment, personnel, services and supplies.
- Obtaining these in the quantities and at the time required.
- Ensuring that these are delivered in good condition to the person who requested them and to the place that they are required.
- Tracking the distribution, consumption and general status of materials, personnel and services.
- Maintaining records of costs.
- Ensuring that materials are maintained in good repair.
- Ensuring that materials are returned to their owners or suppliers in good condition.

Available OSR Equipment

Sakhalin Energy OSR Equipment

Sakhalin Energy OSR equipment is stored at the ERD sites (see Section 1.4.2.1). These are located at the Onshore Pipeline Maintenance Depots, Sakhalin Energy facilities at Prigorodnoye and Kholmsk. Sakhalin Energy equipment is also stored at the ENL site at Chaivo (see Appendix 8).

<table>
<thead>
<tr>
<th>OSR Function</th>
<th>Potential Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incident Control</td>
<td>ECT</td>
</tr>
<tr>
<td></td>
<td>Equipment See ECT Set up Procedure</td>
</tr>
<tr>
<td></td>
<td>Personnel Food, drink</td>
</tr>
<tr>
<td></td>
<td>Personnel Accommodation</td>
</tr>
<tr>
<td>Planning</td>
<td>Monitoring</td>
</tr>
<tr>
<td></td>
<td>Aircraft Suitable for purpose</td>
</tr>
<tr>
<td></td>
<td>Personnel Pilot, observer (trained)</td>
</tr>
<tr>
<td>Site Protection</td>
<td>General</td>
</tr>
<tr>
<td></td>
<td>Equipment Sorbent boom, pumps, entrenching tool</td>
</tr>
<tr>
<td></td>
<td>Personnel Trained responders</td>
</tr>
<tr>
<td></td>
<td>Small boat crews</td>
</tr>
<tr>
<td></td>
<td>Medical support</td>
</tr>
<tr>
<td></td>
<td>Food, drink, shelter, ablutions, toilets</td>
</tr>
<tr>
<td></td>
<td>Decontamination, transport</td>
</tr>
<tr>
<td>Site Cleanup</td>
<td>General</td>
</tr>
<tr>
<td></td>
<td>Equipment Bulldozers, shovels, rakes, sorbents and other small items</td>
</tr>
</tbody>
</table>
Table 2.5 Checklist of Main Equipment, Services

<table>
<thead>
<tr>
<th>OSR Function</th>
<th>Potential Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waste Management</td>
<td>Temporary waste storage (solid, liquid), Fast-tanks, plastic bags</td>
</tr>
<tr>
<td>OSR Function</td>
<td>Personnel</td>
</tr>
<tr>
<td>Trained Supervisors</td>
<td>Team members (inducted)</td>
</tr>
<tr>
<td>See Site Protection (above)</td>
<td></td>
</tr>
<tr>
<td>Waste Management</td>
<td>Storage containers: liquid/ solid waste</td>
</tr>
<tr>
<td>Central Collection/ Storage</td>
<td>Loose sorbents (ground cover or to mop up spills)</td>
</tr>
<tr>
<td>Area</td>
<td>Plastic sheeting (&gt;1000 m²)</td>
</tr>
<tr>
<td>Equipment</td>
<td>Security fence, gates</td>
</tr>
<tr>
<td>Site</td>
<td>Suitable area with road access</td>
</tr>
<tr>
<td>Logistics</td>
<td>Transport for waste</td>
</tr>
<tr>
<td>Personnel</td>
<td>Small team for site</td>
</tr>
<tr>
<td>Permanent temporary storage</td>
<td></td>
</tr>
<tr>
<td>Equipment</td>
<td>As above</td>
</tr>
<tr>
<td>Personnels</td>
<td>Transport for teams/personnel</td>
</tr>
<tr>
<td>Personnel</td>
<td>Trained personnel as required</td>
</tr>
<tr>
<td>Wildlife Response</td>
<td>Equipment</td>
</tr>
<tr>
<td>General</td>
<td>Hazing equipment, bags for carcass collection, dip-nets for birds</td>
</tr>
<tr>
<td>Personality</td>
<td>Trained handlers/cleaners/ supervisors</td>
</tr>
<tr>
<td>Wildlife Response</td>
<td>Goggles, thick leather gloves if handling birds or other animals</td>
</tr>
<tr>
<td>General</td>
<td>PPE</td>
</tr>
<tr>
<td>Overalls, gloves, boots</td>
<td></td>
</tr>
<tr>
<td>(1) Shorelines or jetties</td>
<td>(non slip), wet/cold weather gear, respirators</td>
</tr>
</tbody>
</table>

Regional and National Sources

Additional government resources at the regional and national level can be deployed through the relevant KChS&FS. The list of such resources is provided in Appendix 8.

International Sources

If necessary, resources can be provided by Oil Spill Response Limited (OSRL). For the access to the OSRL equipment, refer to Appendix 8.

The request for engagement of international resources may be sent by the Crisis Manager or his nominee (EC or other person) directly via duty telephones of OSRL only after approval of these actions with the Chief Executive Director.

EMERCOM may assist in the expedition of OSR equipment and personnel through customs and immigration.

2.2.5.3 Personnel and Personnel Support

Trained Response Personnel

Response personnel will be trained staff from the Prigorodnoye facilities. Additional personnel can be obtained from other Sakhalin Energy facilities and specialist contract companies as required. This personnel has all necessary response equipment and is adequately trained in safe methods of response operations.

These personnel received training in operation of the OSR equipment and response...
tactics, and specific OSR safety requirements. OSR and safety training records as well as the medical fitness certificates must be maintained for the core response personnel.

Additional response personnel can be obtained from the following labour pools (refer to Appendix 8):

- Service companies.
- Oil industry.
- Government sources.
- OSR Contractors.
- Other Sakhalin Energy sites.

Untrained personnel will be required to undergo pre-operations safety and operational training specific to their duties and all temporary personnel must undergo medical assessment in Sakhalin Energy-organized clinics and receive permit to work for hazardous conditions.

All response teams will be led by Emergency Response personnel with mandatory ER training required by the legislation of the Russian Federation.

**Support for Response Personnel**

It is the responsibility of each Section Leader to ensure that the Logistics Section Leader is informed of the numbers and location of deployed personnel, the duration of that deployment and an estimate of their on-site response support needs.

**Personal Protection Equipment (PPE)**

The Logistics Section coordinates distribution of protective coveralls and other safety and cleanup equipment from the Sakhalin Energy ERD stockpile at the Prigorodnoye facilities. This stockpile contains PPE in a range of styles and sizes.

**Food and Drink**

The Logistics Section Leader must also ensure that food, drink and the other services provided are suitable for the personnel deployed. In particular, special dietary or cultural requirements of personnel must be identified and catered for.

A schedule of water supply transfer and testing, if necessary, must be maintained. The potable water supply requires approved storage and transfer methods for onshore facilities. Depending on the potable water sources, a large-scale water purification system, imported water, or bottled water may be necessary.

**Medical Services**

It is important that all field personnel have rapid access to medical support. The Logistics Section Leader should consult with the Medical Adviser to ensure that:

- The closest doctors, hospitals and ambulance services to all Sakhalin Energy facilities are identified.
- Medivac procedures are available and current.
Communications

The Logistics Section Leader or EC may appoint a Communications Officer (CO) to ensure that effective communications are maintained between the ECC, AOCs, vessels and other field deployments.

For large scale or long-term responses, or those involving teams deployed over a large area, the CO will prepare a Communications Sub-Plan.

Guidelines for Preparation of a Communications Sub-Plan.

The Communications Sub-Plan for each incident response should include:

- List of communications systems assigned for communications between ECC, AOCs, Staging Areas and teams deployed in the field.
- Current Contact Directory for CMT, ECT, Site Teams, field teams and other key personnel and agencies. This should include radio frequencies or channels, telephone and mobile telephone numbers.
- Role of Sakhalin Emercom (Unified Alert Dispatcher Service (UADS)) in coordinating communications.

Safety Considerations: Volatile Atmospheres

If used in the presence of volatile substances, radio equipment shall be intrinsically safe. Concentration of volatile substances in the air shall be measured on-site (both in offshore and onshore conditions). The Communications Officer must confirm with the EC, Health and Safety Coordinator that explosion-prone concentrations of hydrocarbons are not present. If the concentration exceeds the LEL, only safe radio equipment shall be used, under the control of the Communications Officer.

Communications Security

Unless specifically encrypted, radio transmissions are not secure and can be subject to electronic surveillance and monitoring by members of the public or by media. Response personnel should be briefed on the need for security before transmitting information by radio. This briefing should specify the type of information that may be considered media sensitive or confidential.

Resource Tracking

Documentation

The Logistics Section Leader must keep an accurate record of all equipment, personnel, services and materials obtained. Records must include:

- Request for procurement/activation of resources, including;
  - Date requested.
  - Person requesting and authorizing procurement of the resource.
- Date materials were ordered and received.
- Record of person supplied with resources, date of dispatch and confirmation of delivery.
- Date of return of non-consumable items.
- Record of loss or damage of equipment.
• Record of demobilization (cleaning and repair) and return of resources.

Tracking

Allocation and location of materials and personnel should be tracked and this information can be displayed in the ECC, AOCs or Staging Areas using Status Boards or Maps.

Customs and Immigration

Following the State Customs Committee Directive # 01-14/354 dated 05.04.1996, OSR-imported equipment/resources shall receive priority treatment and follow a facilitated procedure during the declaration process, i.e. upon Company’s application. This application is regarded as a temporary customs declaration at the moment of customs release. Thereafter, an official state customs declaration shall be submitted within 30 days. Customs services are provided by the following contractors of Sakhalin Energy:

- Rostek
- Kuehne-Nagel
- Nek

The Emercom Main Department for the Sakhalin Oblast should be advised immediately of any intention to bring equipment or personnel into Sakhalin island and provide a Confirmation of Emergency Situation for submission to Customs.

Decontamination Facilities

It is the responsibility of the Person in Charge of any work site to ensure that adequate on-site decontamination facilities are constructed and that suitable decontamination procedures are implemented. Guidelines for Site Control and decontamination are provided in Appendix 20.1

The Logistics Section Leader is responsible for providing central decontamination facilities. These are designed primarily for the cleaning of OSR equipment ready for return to suppliers or storage or cleaning of personal equipment (overalls etc.) for re-supply to field teams or for return to storage.

Decontamination facilities should be established at or near equipment maintenance facilities. Decontamination facilities should provide:

- Adequate volumes of water for cleaning.
- Sealed and bunded area suitable for the washing of equipment and drainage for oily runoff.
- Containment tanks for waste water.
- Oil-water separators, or transport to take oily water to a treatment facility.
- Power supply.
- Security (fence, locked gate, check-point).

Materials required for the establishment of a decontamination facility will depend on the location and purpose of the facility. The Logistics Section Leader must liaise with the relevant Site Controller regarding this.
The Waste Coordinator should also be consulted for information on waste generation, handling and storage. Strategies for on-site minimization of waste should be developed.

**Personal Protection Equipment**

Non-disposable clothing will be returned for cleaning and repair. In some cases the returned items will be beyond cleaning and repair and will be disposed of. For large scale or prolonged response, the Logistics Section Leader may appoint an officer to oversee the cleaning of these materials. This person will usually report to the Procurement and Services Officer.

**Personnel**

Field decontamination facilities should be of a standard that OSR personnel leave any work site comfortable and clean enough to avoid contaminating vehicles or clean areas. Additional cleaning facilities may be required. These should be established at the accommodation sites.

**Demobilization**

Upon notification that a response has ended, the Logistics Section Leader shall:

- Inform all Logistics Section personnel of termination.
- Ensure that all equipment is decontaminated on-site and returned to a central area for cleaning and maintenance.
- Check inventory of returned materials against supplied equipment and materials and identify missing or consumed items.
- Compile list of consumed/lost/damaged equipment.
- Ensure that all equipment is cleaned/repairs/returned to supplier.
- Attend EC debriefings as required.
- Ensure that all records are collated and given to the EC.

**Support Functions**

**Administration and IT**

Special administrative and IT support will be provided during a Tier 2 or higher-tier oil spill response, particularly to support the flow communications between the ECT and SCT, and to assist in storing, retrieving and presenting information. Additional staff will be needed to provide secretarial and general office support, and to organise the supply and installation of computers, phones, faxes and office equipment.

**Finance**

Finance support to the ECT will include the provision of staff and systems to manage purchasing, accounting, contracting, payroll, claims and insurance. Typical tasks include:

- Maintenance of daily financial records of all expenses.
- Provision of simple and adaptable financial systems to deal with the need for increased financial authorities and greater flexibility during the emergency.
• Liaison with the Purchasing Department and Logistics Team Leader to manage contracts with specialist suppliers.
• Processing of purchase orders, invoices and payments.
• Provision of cash for onshore cleanup teams’ daily expenses.
• Organizing payments and wages for contract staff.
• Delegations of authority and payment approvals
• Maintenance of financial documentation, a record of cumulative costs and provision of daily cost summaries of expenditures and obligations.
• Provision of special financial reports for various aspects of the spill response.

Security

Security support will be required for the response personnel working in remote locations, to secure valuable equipment, and to control access to hazardous areas. In Tier 2 or higher-tier spills there will also be a high requirement to manage the security of official visitors to the ECC and response areas.

2.2.6 FIRE FIGHTING OPERATIONS CONTINGENCY PLANNING (FIRE FIGHTING OPERATIONS PLANNING)

Fire fighting procedures are detailed in the Prigorodnoye Asset Fire Fighting Plan (Document Number: 7000-S-90-04-P-7012-00-P1).

The prime consideration in conducting any emergency procedures at sea and at marine facilities is the preservation of life and the safety of personnel. If any emergency affects the integrity of the Installation, actions will be initiated for the evacuation of non-essential personnel.

Facility personnel will not place themselves in a position of danger in order to effect fire fighting and emergency response activities.

The person discovering the fire or hydrocarbon leak shall also notify the central control room using a manual alarm call point, or radio or telephone.

Fires at facilities that cannot be quickly controlled using fire extinguishers are controlled via the fixed fire protection systems.

Fire fighting operations

Fire fighting operations begin upon the receipt of a fire alarm message and include the following:
• Mustering of the fire team and their arrival to the fire location;
• Reconnaissance;
• Rescue of people and property;
• Deployment;
• Fire containment and extinguishment;
• Recovery operations.

Fire fighting operations will be performed in accordance with the safety requirements set out in the Prigorodnoye Asset Fire Fighting Plan.
Mustering of the fire team and their arrival to the fire location

Mustering of the fire team takes place upon the receipt of a fire alarm message (signal). Members of the fire team will put on protective clothing, receive the required equipment (respiratory protection equipment, communication devices, rescue aids, fire-extinguishing equipment, etc.).

Upon the receipt of a fire alarm message one, two or three fire engines will proceed to the fire location (depending on the ignition and fire development scenario).

Reconnaissance

Reconnaissance is a scope of measures implemented in order to collect information about the fire, assess the situation and make decisions about the required response activities.

Reconnaissance will be performed continuously from the moment of departure to the fire location until the final suppression of the fire.

Reconnaissance is to deliver the following information:

- Existence and nature of the hazard to the people, location of the people, rescue (protection) methods and equipment, necessity to protect (evacuate) the property;
- Existence and potential for the secondary effects of the fire hazards, including such effects associated with the peculiarities of the production process and work organisation;
- Fire location and burning area, what is burning, ways of fire escalation;
- Potential for the use of fire protection means;
- Alive electrical equipment, possibility and appropriateness of their isolation;
- State and behavior of the structural units in the fire zone, places of their disclosure and dismantling;
- Possible routes of introduction of the fire response resources and other information required for the selection of the decisive direction.

Composition of the reconnaissance team will be determined based on the operational environment. Reconnaissance personnel will:

- Carry the required personal protection equipment, rescue aids, communication devices, fire fighting appliances, illumination devices as well as tools for disclosure and dismantling of the structural units;
- Rescue the people of they are imminently threatened;
- Render first aid if required;
- If possible, extinguish fire and protect the assets by all available means simultaneously with the performance of reconnaissance operations;
- Abide by the safety requirements and operating instructions when using respiratory protection equipment;
- Use the shortest ways for the reconnaissance operations, if possible;
- Timely report the information collected during the reconnaissance in accordance with the applicable procedure.

Rescue of people and property

Rescue of people is an essential activity, which is performed as a scope of measures aimed at the relocation of the people from the areas impacted by the fire or the secondary effects of the fire hazards and at the protection of the people from the exposure to the fire or the secondary effects of the fire hazards.
Rescue of the people is to be performed with the use of such methods and equipment, which ensure maximum safety. Measures for the prevention of panic are to be implemented, if necessary.

Rescue of the property is to be performed as the second priority after the rescue of the people and fire extinguishing operations.

Rescue of the people is to be arranged and performed in the event if:
- People are threatened by the fire, high temperature, explosion hazard or collapse of the structural unit of when the premises are filled with smoke (toxic combustion gases and decomposition products) or other hazardous gasses;
- People are unable to abandon hazardous areas;
- There is a threat of fire or smoke ingress into the escape routes;
- Hazardous fire extinguishing agents are to be used.

Primary methods used for the rescue of people and property are:
- Escape without assistance;
- Escape accompanied by the members of the paramilitary fire team;
- Relocation of the people, including their ascent, descent and delivery to a safe place with the use of special technical means;
- Protection of the people from the impact of the secondary effects of the fire hazards.

Condition of the escape routes is to be taken into account during performance of the rescue operations. Safest methods and escape routes are to be selected for the rescue of the people. Relocation of the people to a safe location is to be performed taking into account the operational environment and the condition of the injured persons.

Protection of the people from the impact of the secondary effects of the fire hazards is to be performed during the relocation of the people to a safe place. This protection is to be performed with the use of the most effective respiratory protection equipment and methods, including the application of the fire extinguishing agents for cooling (protection) of the structural units, plant and machinery, assets, reduction of the temperature in the premises, smoke removal, ignition and explosion prevention.

In case fire response resources are sufficient, rescue of the people and property will be performed simultaneously with other activities. Nevertheless, in the event such resources are insufficient, they will be used only for the rescue of the people, the other activities being halted or suspended.

Rescue operations are to be stopped only after all the places of the possible presence of the people are checked and there are no people to be rescued.

**Deployment**

Preparation for the deployment will be performed upon the arrival to the fire location, whereby the following actions will be taken:
- Parking of the fire engine near the source of water and activation of the fire pump;
- Preparation of the required fire fighting equipment;

Other preparation activities will be performed under instruction of the marshal (on-scene commander). The following activities will be performed in the event of full deployment if it is necessary to supply fire extinguishing agents:
- Locations of extinguishing agents supply men will be determined with
subsequent laying of working hose lines to such locations;
• Trunk and working hose lines will be filled with fire extinguishing agents.

Response procedure to be followed by the members of the fire teams for the standard emergency scenarios is described in the Appendix to the Prigorodnoye Asset Fire Fighting Plan.

2.2.7. SAFETY MEASURES DURING OSR OPERATIONS

Oil spill response operations must always be conducted in accordance with Sakhalin Energy’s existing health and safety and emergency procedures. However during an incident there will be a variety of additional hazards. Response personnel will be required to meet additional incident-specific safety requirements.

Support Documentation

Standard Sakhalin Energy H&S procedures for OSR operations are detailed in supporting documents:

• Prigorodnoye Assets Medical Emergency Response Plan (Sakhalin Energy document number 7000-S-90-04-P-7017-01)
• Material Safety Data Sheets (MSDS).
• Health and Safety Handbook for Oil Spill Response

MSDSs are contained in a folder in the ECC and also in the HSE Department Library.

Natural Environmental Hazards

OSR operators may encounter a variety of environmental hazards including:

• Ice conditions.
• Adverse Weather (storm wind, downpour or snowstorm, low temperatures).
• Land character.
• Wildlife hazards.

Measures to remove, isolate or minimise environmental hazards should be addressed in the preparation of site-specific health and safety plans. Guidance is provided in Appendix 20.5.

Fire and Explosion Hazards

Immediate commencement of response should not be attempted as fire hazards may be present close to the source of freshly spilled crude oil or condensates.

There is no simple method of calculating a ‘safe’ distance from the source of a significant condensate spill, since the danger is down wind and down current, and there may be sudden shifts in wind direction and wind speed.

Worker Health and Safety Requirements

Workers will not be allowed to respond to oil spills unless they have received appropriate safety training and have been given safety briefings relating to the site in which they will be working. In some areas where oil spill response is carried out,
workers must hold valid safety certificates and have attended specific health and safety training. The Health and Safety Coordinator will ensure that adequate procedures are in place to monitor these requirements.

Specific PPE will be provided and must be worn according to the task in hand, and workers must be familiar with the procedures and guidelines set out in the Sakhalin Energy Oil Spill Response Health and Safety Handbook.

Inclement weather patterns, limiting safe performance of works on site should be considered. It refers to: gale of wind 7 points and more (more than 30 m/second), showers, blizzard, thick fog, glazed frost and low temperatures (up to –40 degrees Celsius). Such conditions are required additional safety measures or the works for gathering of spilled oil and cleaning of territory should be temporarily stopped.

**Personal protection equipment**

In order to ensure safety all personnel will use personal protection equipment (PPE) during performance of specific operations as well as movement between the work areas or when proceeding to the incident scene. Some PPE items are mandatory. Specific requirements to PPE are listed below:

- Protective goggles are to be worn at all work sites;
- Helmets are mandatory in case of the falling objects/objects overhead hazard;
- In order to avoid contact with oil protective clothing and PPE are to be worn, which would include oil-resistant boots, gloves, impermeable coveralls, protective goggles or face shield depending on the type of performed activity;
- Wearing of oil-resistant boots, impermeable coveralls and gloves is mandatory

All the above listed PPE items are part of the standard PPE set at the disposal of the OSR Contractor and are available at Prigorodnoye Assets.

Disposable half masks are used for the protection from dust, aerosols, odours and vapours. Protection from toxic gasses is ensured through the use of gas masks or isolating gas masks.

**Standard PPE set**

In order to ensure safety all Sakhalin Energy personnel, volunteers and representatives of the local community taking part in the OSR operations shall use PPE during performance of specific operations as well as movement between the work areas or when proceeding to the incident scene.

Participants of OSR operations will be provided with PPE only after the general safety induction and induction into the use of PPE in specific weather conditions.

The following standard PPE set is established for one responder in order to be able to participate in OSR operations (see Table 2.6).

---

**Table 2.6. Standard PPE set**
### PPE items

<table>
<thead>
<tr>
<th>Item</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chino coveralls</td>
<td>2 pairs</td>
</tr>
<tr>
<td>Impermeable suite (trousers and jacket)</td>
<td>1 set</td>
</tr>
<tr>
<td>Boots with rubber sole</td>
<td>1 pair</td>
</tr>
<tr>
<td>Oil-resistant boots</td>
<td>1 pair</td>
</tr>
<tr>
<td>Oil-resistant gloves</td>
<td>5 pairs</td>
</tr>
<tr>
<td>Chino gloves</td>
<td>5 pairs</td>
</tr>
<tr>
<td>Helmet</td>
<td>1 piece</td>
</tr>
<tr>
<td>Series 93001 aerosol-proof respirator</td>
<td>1 piece</td>
</tr>
</tbody>
</table>

**Notes:**

These respirators ensure protection of respiratory system to the level of up to 100 MAC in accordance with State Standards GOST 12.4.041-2001 and GOST R 12.4.191–99.

### Decontamination

Decontamination sites for personnel will be established at major work sites and waste management centres. The Health and Safety Function should monitor the effectiveness of personal decontamination (e.g. washing hands, removal of oiled PPE), but the responsibility for setting up the decontamination facilities is with the Logistics Function (Section 2.2.5.1).

### Public Warning and Safety Alerts

Tier 2 or higher-tier response can be associated with health and safety hazards for the public (for instance, unpleasant odour).

The Health & Safety Coordinator will immediately communicate details of possible affects or impacts on public safety to the Sakhalin Energy Emergency Coordination Team (ECT) and respective Government Authorities.

### Monitoring Health and Safety

The Health and Safety Coordinator (HSC) will monitor the implementation of the Health and Safety Sub-Plan and Site Specific Health and Safety Plans.

All health and safety incidents will be reported to the Health and Safety Coordinator, who will ensure that corrective actions are undertaken.

For large-tiered, prolonged or hazardous responses the Health and Safety Coordinator may implement Health and Safety Audit Procedure.

### Site Specific Health and Safety Plan

Specific instructions may be required for safe operations within a particular work site, such as near hazardous installations. These may form part of a Work Order or be issued as a Site Health and Safety Plan.

In either case, Site Procedures must be issued to the Person in Charge of each site and to all personnel entering the work site. As a minimum, all personnel must receive a health and safety induction based on the Site Health and Safety Plan.

Guidelines and templates for preparing Onshore Site Health and Safety Plan are provided in Appendix 20.
All personnel involved in a spill response and all visitors to a work site must receive Health and Safety training. This should be both general training and site-specific training. Guidelines for this training are provided in Appendix 20. The Health and Safety Coordinator is responsible for developing the training programs and for ensuring that it is undertaken to a satisfactory level.

### 2.2.8 SURVEILLANCE AND MONITORING

Surveillance and monitoring encompasses a wide range of activities (see Table 2.7) and these must be coordinated.

#### Table 2.7 Responsibilities for Surveillance and Monitoring During OSR

<table>
<thead>
<tr>
<th>Surveillance and Monitoring Activity</th>
<th>Responsibility/Action Party</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oil Volume</td>
<td>PIC, Site Controller</td>
</tr>
<tr>
<td></td>
<td>Calculated from incident</td>
</tr>
<tr>
<td></td>
<td>Calculated from observation</td>
</tr>
<tr>
<td>Soil samples from different depths</td>
<td>Site Controller (checked by HSE Rep.)</td>
</tr>
<tr>
<td></td>
<td>Manual calculations</td>
</tr>
<tr>
<td>Oil behaviour</td>
<td>As delegated</td>
</tr>
<tr>
<td>Site Contamination Assessment</td>
<td>Operations Section Leader through Site Controller.</td>
</tr>
<tr>
<td>Oil distribution and character</td>
<td></td>
</tr>
<tr>
<td>Logistics/ access</td>
<td></td>
</tr>
</tbody>
</table>

Generally, field activities are coordinated through the Operations Section Leader, although the information is primarily used by the Planning Section.

#### Modeling

**Methods for Calculating Spill Spreading Trajectory**

Manual calculations of spill spreading trajectory on land surface are made based on:
- Oil viscosity.
- Local topography / topology.
- Weather conditions.
- Volume of spilled oil.

#### Site Condition Assessment

Assessment of the extent, distribution and character of oil on land is undertaken by Site Assessment Team personnel. Data will be supplied to the Planning Section via the Operations Section Leader. OSR-10 form should be used for compatibility of data (see Appendix 13).

The Planning Section (Situation Unit) will compile this data and provide the EC with regular updates on the extent of oil remaining on land surface.

#### Shoreline/Land Assessments

The purpose of a pre-cleanup survey is to obtain information that will be used to plan the cleanup. This includes determining the cleanup methods to be used and the type
of equipment needed, the scale of the cleanup and the priority of cleaning the various oiled areas.

If large areas at the Prigorodnoye Onshore Facilities are oiled, the information will also be used to divide shorelines into Sectors and Segments.

Sectors are large portions of shoreline / land and are generally determined on logistics or other response management considerations. Segments are smaller sections of shoreline / land of a similar type. These will generally be considered as an individual work site.

Information that will be recorded is shown in Table 2.8.

A comparison of the pre-cleanup and post-cleanup conditions can then be used to document actual achievements made by the shoreline/land treatment programs.

Damage that may be caused by operations include:
- Access routes - Construction/formation of pathways and roads.
- Damages to plants and mixing of oil with the substrate.
- Erosion of topsoil and damages to plant root systems.
- Physical disturbance of biological and cultural components.
- Interference with nearby biological components.
- Physical damages resulting from heavy equipment.

**During Cleanup Site Assessments**

These surveys will concentrate on the extent of oiling. This will include both surface oil and subsurface oil.

<table>
<thead>
<tr>
<th>Table 2.7 Required Information on Oiled Shoreline/Land</th>
</tr>
</thead>
<tbody>
<tr>
<td>Logistics</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Support areas</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Surface Character</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Oiling</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Hazards</td>
</tr>
<tr>
<td>Cultural or other sensitivities</td>
</tr>
</tbody>
</table>

**Post Cleanup Site Assessments**

These also concentrate on the extent of oiling, but may also assess other site impacts such as contamination of vegetation or roads. A comparison of the pre-cleanup and post-cleanup conditions can then be used to document actual
achievements made by the shoreline treatment programs.

Damage that may be caused by operations include:

- Access routes - Construction/formation of pathways and roads.
- Damages to plants and mixing of oil with the substrate.
- Erosion of topsoil and damages to plant root systems.
- Physical disturbance of biological and cultural components.
- Interference with nearby biological components.
- Physical damage resulting from heavy equipment.

**Site Contamination Assessment Teams**

These should consist of:

- A person familiar with oil spills and shoreline/land contamination assessment methods.
- A person familiar with the area (access, location).
- A person or persons familiar with site sensitivities (biological, cultural).

### 2.2.9 FINANCIAL CONTROL AND OSR COST ACCOUNTING

**Objectives**

The finance procedures detailed in this Section are designed to ensure that:

- Oil spill response resources are acquired in an efficient and timely manner.
- Payments to OSR contractors are made quickly.
- Costs are tracked accurately.
- Compensation, where applicable, is paid quickly.

In order to do this it is important that accurate records are kept of all planned and actual expenditure throughout the response. This is required so that:

- Sufficient funds are available for the response.
- Costs can be accurately tracked to enable insurance claims to be quantified and justified.
- Expenditure can be monitored and controlled.
- Duplication of goods and services does not occur.
- The Post Spill Report sent to Government agencies (see Section 3.1.6) has accurate costs data.

**Responsibility**

**Crisis Management Team**

The Crisis Management Team (CMT) is responsible for:

- Approving expenditures as defined in the Sakhalin Energy Manual of Authorities (0000-S-90-01-P0084-00-E).
- Providing, as accurately as possible, estimates to Finance/Insurance teams.
- Ensuring preparation of a Finance Report to be filed along with any claim to the
Insurance Company. This Report is to be prepared by the Finance Department.

- Approve transport of any cash to take to the field locations and ensure that adequate security provisions have been initiated.

**Emergency Coordination Team**

The Emergency Coordinator (EC) will monitor ongoing expenditure during the response and submit costs to the Crisis Manager.

The EC must also prepare a Post Spill Report for submission by Sakhalin Energy to governmental authorities (Section 3.1.5). This must include a financial statement showing all of the expenses incurred during the response. The Post Spill Financial Report must show expenditure under the following categories:

- Field Operations:
  - Containment and recovery of spilled oil.
  - Wildlife response.
  - Waste storage and disposal.
- Security and safety.
- Environmental rehabilitation (land and water bodies), restoration of facilities (including environmental monitoring).
- Compensation (reimbursement for damage to the environment and aquatic resources, public utilities and other third party impacts within limits of liability).

**Finance Department**

The role of the Finance Department during a crisis or emergency is to:

- Track and collate all expenditures in order to control funds and coordinate insurance claims.
- Provide additional finance personnel and resources to support emergency and crisis functions.
- Ensure provision of sufficient funds to support emergency and crisis functions.

**Legislative Requirements**

**Russian Legislation**

Requirements for insurance and compensation are also set out in Federal Law No 116, "On Industrial Safety of Dangerous Industrial Facilities 21st July 1997 as amended on 7th August 2000 (see Articles 9, 10 and 15).

Sakhalin Oblast Administration Decree of 10.11.2005 No 203-pa (as amended by Sakhalin Oblast Administration Decree of 16.02.2007 No 31-pa) (Clause 9.3) states that the party that causes a spill shall be charged with all expenses for oil spill response and cleanup activities regardless of the pattern of ownership and home country. If the guilty party cannot be determined, reimbursement of all expenses shall be done from Contingency Funds based on EMERCOM (KChS) decision.

Sakhalin Energy carries, and ensures that all Contractors carry, sufficient insurance to comply with liabilities as set out by RF legislation. For more details, see Section 2.2.9.
Financial Authorities

The CM, the EC, the members of the CMT and the ECT are to be drawn out of executive and senior management. In case of emergencies, they shall use their authorities levels for emergency related expenditure as stated in Sakhalin Energy Manual of Authority (MoA) (0000-S-90-01-P-0084-00).

In accordance with Section 1.6.3 of the Contracting and Procurement Procedure (0000-S-90-01-P-0029-00) Contract Holders are at all times authorised to make commitments for materials and services sufficient to reduce or stop a potential health, safety or environmental disaster or a potential economic disaster. After this, within 24 hours, all required approvals must be obtained.

Standard Contracts, Terms and Conditions must be used for all contracting and procurement activities where possible.

If urgent approval is required by Tender Board, Board of Directors or Committee of Executive Directors, extraordinary meetings may be called or electronic approval obtained as anticipated in the scope and Terms of Reference of those bodies.

Financial Process

Finance control is exercised by the central coordination of finance processes by the ECT Finance Representative under supervision of the CMT Finance Advisor.

Cost Tracking Process

In cases of emergency the CMT Finance Advisor informs the relevant individuals within Finance Directorate of this occurrence. The CMT Finance Advisor also ensures that all relevant parties are aware of authority limits for emergency cases.

For cost tracking purposes the Budget & Reporting Manager (provided with Insurance Advisor’s advice) after approval from the Finance Advisor or Finance representative creates the specific budget code(s) for all emergency related expenditures and advises these codes to relevant Sakhalin Energy Staff in order to ensure correct charging and tracking of emergency expenditure.

Invoices must be authorised by CM, CMT or EC, ECT members in accordance with the Sakhalin Energy Manual of Authorities (0000-S-90-01-P-0084-00-E).

Total costs of the response will take into account all payments made plus all commitments to expenditure, which may include:

- Payroll for all personnel involved in the response.
- Payments to lenders.
- Value of purchase orders issued by Sakhalin Energy but not yet invoiced by suppliers.
- Daily costs of contractors who may not issue invoices until the end of the month.
- Cash floats which may not have been reconciled with the General Ledger.
- Claims for compensation awaiting approval.
Contracts with Suppliers

In most cases where a contract for services is required, the third party providing the service will have pre-established contracts or memoranda of understanding that will be used to finalise the agreement.

Contractor/Supplier Credit limits and down-payments are also authorised in accordance with Sakhalin Energy MoA and Contracting and Procurement Credit Procedure (0000-S-90-01-P-0015-00-E).

Additional Response Personnel

Agencies may be used to engage temporary response personnel. Suitable applicants would be channelled through such agencies, which will provide the contract and payroll facilities required. Sakhalin Energy would be invoiced for services provided and payment would be made in the normal manner.

Cash Payments

The EC may request permission for cash payments to be made. This request must be addressed to the CM.

If approved by the CM, the CMT Finance Advisor will direct the ECT Finance Representative to arrange cash payments.

Such transactions will be arranged as per the requirements of RF regulations and Sakhalin Energy Treasury Procedures (Document Number 0000-S-90-01-P-0049-00-E), and if necessary with support from the Security Manager.

In the event of cash being required at site locations, detailed security, transport and distribution plans must be developed by the ECT Finance Representative in consultation with the CMT Finance Advisor, Treasurer and Security Manager and approved by the CM including the.

The transport of cash should be kept to a minimum.

Insurance

The emergency response expenses will be covered through attraction of the short-term credit (the credit line for 150 mln. USD with the possibility of an overdraft in the amount of 100 million dollars), insurance agreements and through the funds set up in line with the international agreements.

An account with a permanent limit of 5 mln USD as a minimum has been opened with the Singapore Branch of the Company-serving bank, which can be applied for response purposes in an emergency.

The Insurance Advisor advises the CM, EC, ECT and CMT members if this emergency case is covered by the Company’s insurance and informs the company’s insurers of the incident. The Insurance Advisor will coordinate the substantiation of costs to the insurers loss adjuster.
The Insurance Advisor informs the Budget & Reporting Manager which costs should be posted to the specific budget code(s) and which costs will and will not be covered by insurance.

The Insurance Advisor coordinates preparation and submission of an insurance claim to the Company’s Insurers for reimbursement. The claim is prepared based on estimates made by the Insurance Advisor, Finance Advisor, Finance Representative and the CMT, ECT and Site Control Team (SCT) members. Interim Spill Financial Reports may be produced by the Budget & Reporting Manager.

Copies of paid invoices must be sent with the insurance claim to the Insurers.

**Sakhalin Energy Insurance Cover**

According to Russian legislation, Sakhalin Energy Company has signed public liability insurance contracts for operation of hazardous industrial facilities (HIF’s) for life, health and property of third persons and the environment resulting from an accident occurred at the HIF. Copy of the insurance policy is listed below. The insurance indemnity according to the policies will be used for payments to the injured or aggrieved in emergency situations.

The Company maintains valid the international insurance policies which can be used to reimburse for clean-up of the affected natural areas, restoration of sites.

**Claims for Compensation and Cost Recovery**

**Guidelines for Recovery of Spill Response Costs**

Insurers will pay costs provided that they are:

- Documented and
- Reasonable.

The requirement for adequate documentation means that effective record keeping during the response is essential. Contracts, timesheets and lists of consumables will be required. It is also important that this need is conveyed to Contractors.

The meaning of “reasonable cost” is not clearly defined. Insurers will not pay the costs of wasteful or ill-founded strategies. For Tier 1 responses, the authorisation of an activity by a trained Emergency Coordinator, or field Coordinator is usually sufficient. For large-scale responses the Insurers may send a representative to the site, ECC or CMT to advise response personnel.

The insurer will pay for all cleanup costs and not just those undertaken by the designated oil spill response teams under the direction of the Emergency Coordinator. However, the same requirements for documentation and possible justification of a response (i.e. as “reasonable”) apply.

It is recommended that all cleanup actions are coordinated and documented by the nominated Sakhalin Energy or Government Emergency Coordinator.
Guidelines for Obtaining Compensation for Economic Loss

Insurers and the Compensation Funds will also pay for any economic losses that result from the spill or from consequent cleanup activities.

As with claims for response costs, claims for compensation for economic losses should be supported by available documentation. The nature of this will depend on the nature of the claim but some guidelines for this are provided on the back of the “Claim for Oil Spill Damage Compensation Form (Appendix 13)”.

Some Insurers may require Claims to be completed on a different Form.

In cases where a large number of claims are likely, the Insurance Company may choose to establish a temporary Claims Office on site or in Yuzhno.

Under certain circumstances the insurers representatives may request the ECT, CMT and SCT to change response strategies and/or halt a response if actions are not considered by them to be reasonable.

In such cases the Finance Advisor should consider this advice and decide if Sakhalin Energy is willing to accept costs beyond those considered reasonable or act accordingly. The Finance Adviser should advise the EC and CM.

General criteria for the assessment of claims include:

- Any expense/loss must actually have been incurred.
- Any expense must relate to measures that are deemed reasonable and justifiable.
- A claimant’s expense/loss or damage is admissible only if and to the extent that it can be considered as caused by contamination.
- There must be a link of causation between the expense/loss or damage covered by the claim and the contamination caused by the spill.
- A claimant is entitled to compensation only if he has suffered a quantifiable economic loss.
- A claimant has to prove the amount of his loss or damage by producing appropriate documents or other evidence.

Compensation for Environmental Damage

Sakhalin Oblast Administration Decree of 10.11.2005 No 203-pa (as amended by Sakhalin Oblast Administration Decree of 16.02.2007 No 31-pa) (Clause 9.2) states that Environmental / economic damage caused by oil pollution can include:

- Air pollution caused by evaporation of volatile fractions.
- Soil cover pollution.
- Surface water pollution.
- Groundwater pollution;
- Damage to water biologic resources.
- Damage to vegetation.
- Damage to wildlife.
The procedure for assessment of and compensation for the environmental violation related to oil spills and determination of the damage to wildlife shall be in accordance with the procedure established by the effective RF Law.

The oil spill caused damage to the environment will be assessed by the specially authorized governmental bodies: the Sakhalin Oblast Department of Rosprirodnadzor, the Sakhalin Oblast Department of Rostechnadzor (RTN), the Primorsky Territory and Sakhalin Oblast Departments of Rosselkhoznadzor. Sakhalin Energy will supply any and all data available to facilitate these agencies in this assessment.
3.1.1 LOGISTICAL SUPPORT

This Section summarises information regarding the transport infrastructure on Sakhalin Island (Figure 3.1). Additional information is available from the Sakhalin Energy Geographic Information System (GIS), which can be accessed via the HSE Representative on the ECT. Shoreline access data and maps are provided in Prigorodnoye Offshore OSRP. Predicted zone of potential impact lies within the site area of Prigorodnoye onshore facilities.

Accuracy of Information

Data has been obtained from field surveys and is considered to be reliable.

*It is advised that all road routes are ground surveyed and assessed before any deployment of response teams and equipment.*

Updating of Information

Information should be sent to the EC (during a response), OSRP Custodian or HSES Oil Spill Response Project Manager.

Road and Rail

The Logistics Section Leader or nominated Transport Officer is responsible for tracking transport resources and for ensuring that appropriate transport is obtained from Sakhalin Energy, Contractors or other sources (see Appendix 8).

Private vehicles are not to be used.

Road Conditions

Road conditions are variable (see Table 3.1) and must be monitored throughout any response in which shore-based deployments are initiated or planned. If OSR requires extensive use of access roads, to improve road passability 1-2 graders, 1-2 bulldozers, 1 excavator could be hired for road repair and maintenance, and 3-4 dump trucks could be hired for gravel and aggregate transportation to restore road pavement.

Shore-based vehicles and equipment refuel at local community fuel stations, as available, or are fuelled by tanker trucks.

Rail Transport

The city of Yuzhno-Sakhalinsk contains the main railway station for the railway service on the island. It takes approximately 60 minutes to get from Yuzhno to Korsakov by passenger train, with numerous stops along the transit. Reservations must be made at the train station or via the Travel Coordinator.
3.1. CONTAMINATED SOILS AND WATER BODIES CLEANUP OPERATIONS

Figure 3.1 Sakhalin Island Transport Infrastructure
### 3.1. CONTAMINATED SOILS AND WATER BODIES CLEANUP OPERATIONS

#### 3.1.1 Road Link and Condition Details

<table>
<thead>
<tr>
<th>Road Link</th>
<th>Condition/Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prigorodnoye to Korsakov</td>
<td>The current road is sealed and maintained all year round.</td>
</tr>
<tr>
<td>Korsakov - Yuzhno-Sakhalinsk</td>
<td>A two-lane asphalt road extends the 42 km from Korsakov to the city of Yuzhno-Sakhalinsk.</td>
</tr>
<tr>
<td>Korsakov - Kholmsk</td>
<td>Sealed and maintained 2 lane road via Yuzhno.</td>
</tr>
<tr>
<td>Yuzhno-Sakhalinsk to Kholmsk</td>
<td>A two-lane asphalt road extends 81 km from Yuzhno-Sakhalinsk to Kholmsk. Vehicle transportation takes approximately 2 hours.</td>
</tr>
</tbody>
</table>

#### Air Transport

**Equipment**

Transportation of response equipment to Sakhalin Island from other areas of Russia and from non-Russian sources will require cargo aircraft services.

The closest airstrip to Prigorodnoye is Yuzhno-Sakhalinsk International Airport which can take a C-130 Hercules and large commercial aircraft such as Boeing 767 and IL 96. Road transport can be arranged from there.

**Personnel**

Sakhalin Energy charter flights leave from Hakodate every Tuesday, Wednesday and Friday. The timing of these flights can be delayed slightly to enable the pick-up of OSR personnel. There is no requirement for a 2 hour check in, 30 minutes is ample.

Sakhalin Energy also charter an Antonov 24 and Dash-8 planes which can carry additional OSR personnel to Nogliki (Ecoshelf) from Yuzhno. A limited amount of light equipment could also be carried but the planes have small doors so would be limited to carrying pallets.

#### 3.1.2 SPILLED OIL RECOVERY TECHNOLOGIES AND TECHNIQUES

This Section sets out guidelines for onshore response technologies and operations, including application procedures. Each spill scenario, and the effectiveness of methods and available equipment, must be assessed and monitored throughout the response.

Selection of methods and procedures for recovery and collection of spilled oil and other oily waste will be based on net environmental benefit assessment of proposed cleanup activities.

Generally, equipment constraints are within the constraints for safe operations. The site safety assessment outlined in Appendix 20.5 should be implemented before any deployment or personnel or equipment to a site.

---

**Spills of light oils should be considered as hazardous.** The presence of volatile hydrocarbons may pose a fire/explosion risk or a risk to health. Atmospheres should be tested before commencing a response at any spill site. The Sakhalin Energy “Health and Safety Handbook for Oil Spill Response” (Document No.0000-S-90-04-P-0175-00-R) should be consulted for testing procedures and other information.
Containment and recovery of spilled oil and site cleanup operations will be carried out by trained responders (emergency response team). Mechanical recovery or manual cleanup with all available equipment will be used depending on the scale, location, amount of oily sediment and season. Land surface cleanup methods must ensure that:

- Spilled oil is basically recovered and removed offsite;
- Oiled sediment is mostly removed using all available methods.
- Response resources and equipment are used most efficiently and in a safe and effective manner.
- Environmental and economic damage caused by response operations is minimised or completely excluded.
- Waste generation is minimised.

Application of particular oil spill containment methods will depend on substrate type (asphalt, concrete, unpaved soil surface), weather and other specific conditions. These may include:

- Sorbent booms or sorbent sweeps.
- Snow berms and barriers.
- Earth banks.

**Oil Sorbent Booms or Sweeps**

Sorbent booms or belts can be deployed along the spill perimeter to stop surface spreading of oil. This spill containment method requires relatively frequent replacement of sorbent materials (booms), therefore calculation of sorbent material quantities required for effective containment should allow for extra 10% consumption of resources.

**Snow Barriers**

Solid ice and snow along with surface irregularities may act as natural barriers that prevent oil from spreading. They can effectively contain sufficient volumes of oil to begin mechanical recovery. In case of additional containment requirements snow may be use as a ready-made and easy-to-use construction material and a good oil sorbent.

Snow used for construction of barriers should be well compacted. Snow berm/ barrier may be splashed with water to form solid ice crust on top and side walls preventing oil from penetrating the barrier. In case of diesel or light oil spills the faces of the snow barrier should be clad in plastic or plywood to prevent oil from penetrating though the capillary of snow structure (diesel can rise upward by capillary action of snow). Snow barriers may be used in combination with trenches to stop spreading and collect oil.

**Earth Barriers**

Earth berms / trenches should be compacted and, if time permits, be clad with plastic sheeting to ensure impenetrability. Berm / trench should be constructed to block predicted trajectory of oil spreading.

**Natural Recovery and Monitoring**
Oiled surface areas at Prigorodnuye Onshore Facility may be left to naturally recover if (see also Table 3.2):

- They cannot be cleaned due to lack of access or other factors.
- Cleaning will not result in any net environmental benefit.
- Weathering or natural removal of the oil is expected to be rapid.
- Recovery of natural resources is likely to be rapid.

**Table 3.2 Use of Natural Recovery Method**

<table>
<thead>
<tr>
<th>Substrate Type</th>
<th>Can be used at Prigorodnuye Onshore Facility subject to the following constraints.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constraints</td>
<td>• Consent of landowners is required.</td>
</tr>
<tr>
<td>Application</td>
<td>• Monitoring is required by the RF legislation.</td>
</tr>
<tr>
<td></td>
<td>• Safety warnings and signs should be used to prohibit access.</td>
</tr>
<tr>
<td>Resource</td>
<td>• Signs and barriers.</td>
</tr>
<tr>
<td>Requirements</td>
<td>• Security.</td>
</tr>
<tr>
<td></td>
<td>• Monitoring program and teams.</td>
</tr>
</tbody>
</table>

**Manual Removal of Oil and Oily Debris**

Removal of oil and oily debris using manual labour is an effective but slow method applicable to most shoreline types. This method also tends to result in better selection of oiled substrate and consequently less waste than mechanical methods (see Table 3.3).

**Table 3.3 Use of Manual Cleanup Methods**

<table>
<thead>
<tr>
<th>Substrate Type</th>
<th>Can be used at Prigorodnuye Onshore Asset subject to the following constraints.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constraints</td>
<td>• Area should be assessed for safety before deploying cleanup teams.</td>
</tr>
<tr>
<td></td>
<td>• A slow method and is not preferred for use if the extent of oiling is great.</td>
</tr>
<tr>
<td>Application</td>
<td>• Close supervision of cleanup teams is essential.</td>
</tr>
<tr>
<td></td>
<td>• Work-site control should be established (see Section 3.2.1).</td>
</tr>
<tr>
<td>Resource</td>
<td>• Approx. 20 persons/10,000 m² worked/day (2 teams 10 persons each).</td>
</tr>
<tr>
<td>Requirements</td>
<td>• 2 Cleanup Team Leaders</td>
</tr>
<tr>
<td></td>
<td>• 22 sets overalls, gloves, hats, boots.</td>
</tr>
<tr>
<td></td>
<td>• Shovels/wheelbarrows/rakes etc as required.</td>
</tr>
<tr>
<td></td>
<td>• Suitable waste storage and transport (e.g. up to 500 plastic bags/10,000m²/day).</td>
</tr>
<tr>
<td></td>
<td>• Transport as required.</td>
</tr>
<tr>
<td></td>
<td>• Site support equipment.</td>
</tr>
</tbody>
</table>

**Use of Sorbents to Collect Liquid Oil**

Loose sorbents or sorbent mats can be used to facilitate the manual or mechanical removal of liquid oil from the site of Prigorodnuye Onshore Facility. They may also be applied to oiled areas to reduce slippery conditions. The approvals Procedure in Appendix 20.4 should be consulted before use (see also Table 3.4).

Different types of sorbent materials are available at Sakhalin Energy OSR stockpiles. A list is included in Appendix 8.
Table 3.4 Use of Sorbents

<table>
<thead>
<tr>
<th>Substrate Type</th>
<th>Can be used at Prigorodnoye Onshore Facility.</th>
</tr>
</thead>
</table>
| Constraints    | • Oily sorbent materials should not be allowed to wash into areas where recovery is difficult or dangerous.  
                   • See App. 20.4 Guidelines for the Use of Chemical Agents, Including Sorbents. |
| Application    | • Close supervision of cleanup teams is essential in order to prevent over-application.  
                   • Some sorbents can be wrung out and re-used. |
| Resource       | Sorbent material.  
                   Personal protective equipment. |

Mechanical Removal of Oil and Oily Debris

Mechanical cleanup is the preferred response strategy for extensively oiled land areas.

This method tends to result in the removal of clean substrate also and close supervision is required to minimise this. Generally, if > 2cm of sediment is to be removed it is best to seek expert advice. See also Table 3.5.

Table 3.5 Use of Mechanical Removal Methods

<table>
<thead>
<tr>
<th>Substrate Type</th>
<th>Not suitable for use in areas dominated by sensitive fauna (bird nesting) or flora (saltmarsh).</th>
</tr>
</thead>
</table>
| Constraints    | In addition to the above:  
                   • Access and sediment load bearing capacity.  
                   • Fluid oils may not be amenable to recovery.  
                   • Recovery of buried oil may be difficult or result in the removal of too much sediment. |
| Application    | • Ensure vehicles do not pass over oily sediments. |
| Resource       | • Grader, front-end loader and truck (for waste transport).  
                   • Fuel (allow 20-25 litres/hr/vehicle).  
                   • Manual cleanup support team; 3-4 people, Team Leader and personal protective equipment. Numbers of these teams will depend on the size of the affected area. |

The area exposed to oil contamination should be reworked so that the profile after cleaning approximates what it was prior to cleanup.

This cleanup method is unlikely to be used for response to spills at Prigorodnoye Onshore Facilities.

Vacuum Recovery

Vacuum recovery (see Table 3.6) is suitable for the recovery of liquid oils and wet debris from most types of shoreline provided that safe access is available.

Vacuum recovery system or portable vacuum pump unit is deployed near pooled oil or oil collection area and oil is recovered with suction hose.
Table 3.6 Use of Vacuum Recovery of Liquid Oil

<table>
<thead>
<tr>
<th>Substrate Type</th>
<th>Not recommended for:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• steep inclines and cliffs;</td>
</tr>
<tr>
<td></td>
<td>• loose sediment unless oil is associated with loose debris (i.e. sediment will be removed with the oil unless the method is used with care).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Constraints</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Not to be used if the oil is volatile e.g. fresh diesel. Not to be used on very light volatile oils (e.g. motor spirit) at any time.</td>
</tr>
<tr>
<td></td>
<td>• On some substrates this method may result in the removal of large volumes of water along with the oil. This may pose waste problems.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Application</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Liquid oil may be scraped into pits for ease of collection. These must be cleaned before backfilling.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Resource Requirements</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Vacuum truck or portable vacuum system.</td>
</tr>
<tr>
<td></td>
<td>• Adequate storage.</td>
</tr>
</tbody>
</table>

Low Pressure Washing/Flushing

Washing methods (see Table 3.7) can be used at Prigorodnoye Onshore Facility for all oil types. Low pressure washing can also be applied to saltmarsh and mudflats provided that:

- Run-off can be prevented from entering clean areas.
- Cleanup teams do not damage the area.

Table 3.7 Use of Low Pressure Washing Methods

<table>
<thead>
<tr>
<th>Substrate Type</th>
<th>Used for washing oil from hard surface cover, artificial structures and vegetation.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constraints</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Oily run-off must be collected using inshore booms and skimmers.</td>
</tr>
<tr>
<td></td>
<td>• Care must be taken not to wash surface oils into clean underlying sediments.</td>
</tr>
<tr>
<td></td>
<td>• Oily runoff must not pass over clean shoreline unless enough water is applied to prevent adhesion of oil to clean sediments (flushing).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Application</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Natural barriers or artificial structures containing oily runoff.</td>
</tr>
<tr>
<td></td>
<td>• Deploy booms and skimmers to collect oily run-off.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Resource Requirements</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Pump: 30-50psi @ 200-500 litres/min (12-30m³/hr.).</td>
</tr>
<tr>
<td></td>
<td>• Hoses: Flexible hose (e.g. fire hose) for spot washing and irrigation.</td>
</tr>
<tr>
<td></td>
<td>• Skimmer.</td>
</tr>
<tr>
<td></td>
<td>• PPE including eye protection.</td>
</tr>
</tbody>
</table>

High Pressure Washing

Hot or cold water supplied under high pressure washes oil off substrate o a collection site. High pressure washing can be used for all oil types. This method can be used at the Prigorodnoye Onshore Facilities (see Table 3.8).

Table 3.8 Use of High Pressure Washing Methods

<table>
<thead>
<tr>
<th>Substrate Type</th>
<th>Used for washing oil from hard surface cover and artificial structures.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constraints</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Do not use on shorelines with substrates smaller than pebbles. Pebble shorelines should be cleaned with care.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Application</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Natural barriers or artificial structures containing oily runoff.</td>
</tr>
<tr>
<td></td>
<td>• Deploy booms and skimmers to collect oily run-off.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Resource Requirements</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Pump: 100-1000psi @ 20-100 litres/min (1-6 cubic m/hr).</td>
</tr>
<tr>
<td></td>
<td>• Hoses: Flexible hose (e.g. fire hose).</td>
</tr>
</tbody>
</table>
3.1. CONTAMINATED SOILS AND WATER BODIES CLEANUP OPERATIONS

Use of Chemical Cleaning Agents

Chemical cleaning agents can increase effectiveness of washing methods used to clean oiled sediments/substrates. Use of chemical cleaning agents (see Table 3.9) is generally not recommended unless it is necessary to rapidly remove oil from otherwise difficult to clean areas.

Chemical agents available are dispersants. Degreasers and untested products should not be used. Government permission must be requested and received before chemical cleaning agents are used (see Appendix 20.4).

Table 3.9 Use of Chemical Cleaning Agents

| Substrate Type | • Most applicable to bedrock and artificial structures.  
|                | • May be used on other substrate types with extreme care, and with environmental advice. |
| Constraints    | • Oily run-off cannot be contained and recovered. Do not use near sensitive inshore communities.  
|                | • Health and safety procedures to be followed.  
|                | • Government authority’s permission is required (see below). |
| Application    | • May be sprayed neat or diluted. |
| Resource       | • Dispersant.  
| Requirements   | • Backpack spray packs. |

Sand Blasting and Steam Cleaning

These methods can be damaging to structures and substrates being cleaned and will remove all plants and animals that are living on the substrate. Consequently they are recommended only for artificial substrates where slippery oil could pose a safety risk (see Table 3.10).

Steam cleaning: oil is separated from substrate by hot steam action and directed into collection facilities for subsequent recovery. Sand blasting: high speed sand jet removes oil from substrate
### Table 3.10 Use of Sand Blasting and Steam Cleaning

<table>
<thead>
<tr>
<th>Substrate Type</th>
<th>• Artificial structures.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constraints</td>
<td>• Not to be used on natural substrates, particularly if vegetation or animals present.</td>
</tr>
<tr>
<td></td>
<td>• Steam cleaning is not suitable for use on fresh volatile oils (motor spirit). Fresh diesel should be left to weather.</td>
</tr>
<tr>
<td>Application</td>
<td>• Used by skilled operator under close supervision.</td>
</tr>
<tr>
<td>Resource Requirements</td>
<td>• Cleaning unit</td>
</tr>
<tr>
<td></td>
<td>• Sorbent boom, snares or other means of collecting runoff.</td>
</tr>
<tr>
<td></td>
<td>• See Appendix 20.2</td>
</tr>
</tbody>
</table>

**Bioremediation**

Bioremediation is the artificial stimulation of the natural breakdown of oil by bacteria. The most commonly applied method involves the addition of high nitrogen/phosphate fertilizers to oiled soil. Degradation is a slow process and should not be regarded as a short-term cleanup method.

Light oils are not amenable to this method as light fractions are non-persistent and toxic to the microorganisms.

Generally, this method would only be considered for the longer-term rehabilitation of environmentally sensitive areas where conventional cleanup methods cannot be applied. Government permission must be requested and received before Bioremediation is used.

**Trenching**

This involves the digging of a trench through oiled sediment across the entire area of oil impact so that fluid, subsurface oil can leak into the trench. It may be collected from here or allowed to wash out naturally. This method may alter the drainage pattern of sediments and should not be used in vegetated areas (e.g. saltmarsh).

### 3.1.3. WASTE MANAGEMENT

**Waste Management Function**

The Waste Management function includes strategies to minimise waste and the storage, transport, treatment and disposal of all types of waste materials generated during the spill response.

The storage, transport, treatment and disposal of waste material must be managed if it is to not inhibit cleanup activities or pose any threat to the environment.

**Recovered oil is not a waste and shall be recycled as a reusable product.**

**Responsibility**

If oil spill waste volumes are likely to be significant, the EC or Operations Section Leader may appoint a Waste Management Coordinator (WMC) to undertake this task within the Operations Section.
The Waste Management Coordinator’s responsibilities include:

- Overall guiding of waste management process during response operations.
- Establishing and managing Waste Management Teams in case of major spills.
- Identifying long-term waste storage and disposal sites.
- Interacting with local authorities regarding waste disposal.
- Control over conditions of waste transportation and on-site storage.
- Managing tracking of generation and movement of wastes using appropriate registration forms.

Waste Management is managed through the Operations Section, which directly manages response operations and controls the Operations Units that are producing the waste materials. Later in the response, the Waste Management Function may be transferred to the Logistics Section when the emphasis shifts to longer-term storage, treatment and disposal.

**Organization of Waste Management**

The organisation of the Waste Management Unit depends on the requirements of each particular incident but may include:

- Waste Management Field Teams, tasked with assisting Response Teams to establish and manage on-site waste storage areas.
- AOC-based management personnel.
- Administrative support, including waste tracking, records etc.

Depending on the scope of waste management works, the above teams may be merged and their functions combined.

The waste collection, transportation and disposal services additional to the routine/operational volumes can be performed upon the Company's additional requests. The additional request fulfilment time differs from Contract to Contract from 3 to 5 working days. According to the contractual obligations, the volumes to be removed by the Contractor within 3 to 5 working days are the volumes included into the existing Contracts. Thus the technical capabilities of the existing Contractors are limited (the machinery and personnel are tailored for the planned operational volumes).

The current oily waste can be transported by the Contractors to the storage sites only if they hold waste certificates. The Company will timely endeavour to obtain and renew the oily waste certificates and find additional waste storage sites (Contractors) and conclude one-time contracts for disposal of limit-exceeding volumes of oil waste generated during response operations.

**Waste Management Priorities**

The overall principle of oil spill waste management is that all steps should be taken to minimise waste and that waste should be managed as close to the source as possible. Priorities are:

- Waste minimisation.
- Recycling and reuse.
- Treatment.
• Temporary storage (short term and long term).
• Neutralization.

Oil Spill Waste Management Plan

When significant volumes of wastes are anticipated or generated, the Waste Management Coordinator will prepare an Oil Spill Waste Management Plan. This should be a brief document detailing:

• Organisation of the Waste Management Unit.
• Prediction of volumes and types of waste.
• Waste minimisation strategies.
• On site storage.
• Approvals.
• Transport of waste offsite.
• Management of waste sites.
• Waste segregation (sorting).
• Waste treatment and neutralization.

Prediction of Volumes and Types of Waste

The following types of waste could be produced during response operations:

• Liquid waste:
  – Oily waste (water recovered with crude oil, water contaminated during cleanup operations and waste treatment).
  – Non-oily discharges (including domestic wastewater).
  – Used oils/hydraulic liquids.
• Solid waste:
  – Organic materials (wood and vegetation).
  – Oiled inorganic materials (sediments).
  – Oily sorbents.
  – Oiled personal protective gear.
  – Contaminated response materials (rags, tissues, and sorbents).

It is difficult to predict the volumes and types of waste that may result from a spill, and so it is important that accurate information is obtained from Marine Operations and Shoreline Operations Units.

During response operations cleanup teams must assess and record volumes of each type of waste as it is generated on site. This information shall be periodically communicated to the Operations and Planning Section Leaders.

Waste Minimization Guidelines

Waste minimization can include:

• Reuse of oiled materials such as sorbents.
• Preventing oil from impacting debris.
• Use of cleanup strategies that produce the minimum amount of waste.
• In situ treatments such as incineration and bioremediation.

Table 3.11 provides Guidelines for waste minimization.
### Table 3.11 Waste Minimisation Guidelines

<table>
<thead>
<tr>
<th>Waste Type</th>
<th>Strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solid Waste</td>
<td>Do not mix oily waste with non-oily waste such as garbage.</td>
</tr>
<tr>
<td></td>
<td>Prevent oil or oily waste contaminating soil or vegetation. Use liners beneath storage containers, decontamination areas or other work sites.</td>
</tr>
<tr>
<td></td>
<td>Use sorbent pads and booms to full capacity.</td>
</tr>
<tr>
<td></td>
<td>Remove oil from sorbents and reuse.</td>
</tr>
<tr>
<td></td>
<td>Minimise sediment recovered with oil. Use manual cleanup rather than mechanical methods whenever possible.</td>
</tr>
<tr>
<td>Solid Waste (continued)</td>
<td>Ensure that all waste brought to waste sites is from the spill. Check waste manifests and labels.</td>
</tr>
<tr>
<td>Liquid Waste</td>
<td>Cover waste storage areas to prevent entry of rainwater.</td>
</tr>
<tr>
<td></td>
<td>Use the minimum amount of detergents or other cleaning agents (e.g. in decontamination areas).</td>
</tr>
<tr>
<td></td>
<td>Recycle water in decontamination centers.</td>
</tr>
<tr>
<td></td>
<td>Ensure that all liquid waste brought to waste sites is from the spill. Check waste manifests and labels.</td>
</tr>
</tbody>
</table>

### On-Site Transport

Waste must be transported from the cleanup site to temporary storage. Table 3.12 lists some of the equipment available for transporting waste along shorelines and provides some handling guidelines.

### On-Site Storage of Waste

All types of generated waste shall be collected and removed from the site to designated storage areas for subsequent disposal or recycling. In doing so, it is necessary to segregate oily and non-oiled wastes, as well as liquid and solid wastes.
### Table 3.12  On-Site Waste Transport

<table>
<thead>
<tr>
<th>Transport Method (1)</th>
<th>Suitable Container (1)</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>● Buckets</td>
<td>● Take care to allow adequate time for task.</td>
</tr>
</tbody>
</table>
| ATVs and trailer     | ● Plastic bags         | ● Unstable. Requires close supervision of activity and safety.  
|                      |                        | ● Refueling and secure storage needed for prolonged use in isolated areas. |
| Front-end loader     | ● Plastic bags         | ● Check load-bearing capacity of shorelines.  
| Trucks               | ● Plastic bags         | ● Ensure vehicles do not travel over oiled sediments.  
|                      | ● Drums                | ● Refueling and secure storage needed for prolonged use in isolated areas.  
|                      | ● Skips                | ● Suitable for loose material. |
|                      | ● Flexible bags        |         |
| Fork lift            | ● Skips                | ● Drums must be secured on a pallet and should be only part-filled if no lid is used.  
|                      | ● Drums                | ● Not suitable for rough terrain. |
| Vacuum trucks        | N/A                    | ● For liquid only.  
|                      |                        | ● Not suitable for volatile products. |

(1) This is available from the Onshore Emergency Response Depots (Section 1.4.2.1a and Appendix 8).

### On-Site Collection and Storage

Recovery of oil from site surface will be accomplished using vacuum pumps of varying capacity or sorbents. Recovered oil will be pumped to fast tanks or to liquid storage tanks, which will be set up onshore near recovery areas.

Oiled vegetation and wood on the beach will be collected into plastic geo-bags.

Oiled sorbents (booms, tissues, pads, roll fabric) will be collected into plastic bags or stored in suitably lined temporary storage areas on site. Reusable sorbents will be squeezed to remove oil and reused. Expended sorbents will be forwarded to temporary storage sites.

### Waste Collection and Temporary Storage

Solid domestic wastes produced by field camps (domestic garbage, packaging etc.) will be also collected into plastic bags in dedicated areas near camps for subsequent disposal at organized solid domestic waste landfills.

Collection of contaminated sand will be carried out by hand or, in the case of large oil spills, by heavy equipment.

### Location of Temporary Waste Management Sites

The selection of temporary storage sites shall consider the need for rapid transportation of wastes generated during response, safety of response personnel and protection of the environment.
Wastes will be stored at these temporary sites during response operations, prior to onward transportation for disposal or reprocessing. At completion of the response, all waste management sites will be dismantled. Table 3.13 provides guidelines for selecting the location of a waste storage site.

Table 3.13 Guidelines for Selection of On-Site Temporary Waste Storage Site

<table>
<thead>
<tr>
<th>Action</th>
<th>Liaison and Approvals</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Site shall be selected based on the terrain relief. The following types of terrain shall be avoided: Marshes. Fractures. River water protection zones, even if they are contaminated with spilt oil. Dense forest.</td>
<td>Waste Management Coordinator</td>
</tr>
<tr>
<td>2 The elevation of the bottom of the site is above the highest seasonal water table elevation.</td>
<td>Waste Management Coordinator</td>
</tr>
<tr>
<td>3 Underlying soils shall support the estimated weight of wastes, personnel and equipment.</td>
<td>Waste Management Coordinator</td>
</tr>
<tr>
<td>4 Site shall be free of stones, trees, shrubs and other protrusions.</td>
<td>Waste Management Coordinator</td>
</tr>
<tr>
<td>5 Site shall be easily reached from the waste generation points.</td>
<td>Waste Management Coordinator</td>
</tr>
<tr>
<td>6 Temporary waste storage sites must be surrounded by perimeter ditches to remove atmospheric precipitation runoff.</td>
<td>Waste Management Coordinator</td>
</tr>
<tr>
<td>7 No impact to sensitive areas such as marshes, nests of rare birds.</td>
<td>Environment Adviser (1)</td>
</tr>
<tr>
<td>8 Impact to human habitation shall be minimal.</td>
<td>Environment Adviser (1)</td>
</tr>
</tbody>
</table>

(1) Nominated by the ECT HSE Representative

The design of each site will depend on its location and terrain. However, these general guidelines shall be followed:

1. The site should be flattened and cleared of rocks and other debris.
2. A raised bund should be constructed around the site to prevent runoff.
3. An impermeable base must be constructed. This can be:
   - Plastic sheet liner. This must be compatible and resistant to petroleum products and be strong enough to withstand equipment, vehicle and foot traffic or a compacted clay layer.
4. Sand or light-coloured sorbent should be placed on top of the liner to:
   - Provide protection from sediment contamination.
   - Adsorb any oily runoff.
   - Show the presence of oily seepage.
5. A perimeter fence and/or site security should be established if needed.
6. Warning signs and fire extinguishers must be placed at suitable locations.

There is no legal requirement to obtain any permits, as these sites will be used only during clean up operations and no structures are supposed to be built, although the Unified Command should consider this issue. Upon completion of clean up operations all wastes from the temporary sites will be removed and the sites will be rehabilitated if necessary.
Temporary Storage Containers

Waste can be stored in containers or in improvised waste pits. Suitable types of containers are listed in Table 3.14. Waste pits should be lined with plastic and sealed with a suitable adhesive tape. The depth of pits should be such that no groundwater seepage into the pit occurs. Oily wastes should be removed as soon as possible.

Containers and pits used for storage must be covered if rain is possible, to avoid overflow.

Transport of Waste Offsite

Provision of vehicles and containers used for the transport of oily wastes is the responsibility of the Logistics Section Leader. The Waste Management Coordinator (WMC) must exercise control over adequate preparation of all vehicles, their suitability and ability for preservation of waste.

The WMC is responsible for ensuring that the waste-tracking procedure is followed. Each waste container is to be marked in accordance with the Company’s Waste Management Standard (0000-S-90-04-O-0258-00-R) and the procedure concerning the type and volume of waste (000-S-90-04-P-0082-00-R), and accompanied by a Onshore and Offshore Waste Manifest of the Sakhalin Energy-set format (Procedures 1000-S-90-04-P-7014-00-R and 1000-S-90-04-P-7092-00-R).

Table 3.14 Guidelines for the Use of Temporary Onshore Storage Containers

<table>
<thead>
<tr>
<th>Container Type</th>
<th>Suitability</th>
<th>Volume (m$^3$)</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Solid</td>
<td>Liquid</td>
<td></td>
</tr>
<tr>
<td>Plastic bags</td>
<td>R</td>
<td>C</td>
<td>• Half fill only.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Should be moved using Bobcat or front-end loader.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Not suitable for light oils, sharps or long-term storage.</td>
</tr>
<tr>
<td>Drums</td>
<td>R</td>
<td>C</td>
<td>• Half fill only. Difficult to handle.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Cover required.</td>
</tr>
<tr>
<td>Skips</td>
<td>R</td>
<td></td>
<td>• Bottom drainage hole to be plugged.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>15-20</td>
<td>• Cover required (tarpaulin). Should be lined.</td>
</tr>
<tr>
<td>Fast tanks(1)</td>
<td>C</td>
<td>R</td>
<td>• Cover available.</td>
</tr>
<tr>
<td>Flexi-dams(1)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pillow tanks(1)</td>
<td>C</td>
<td>1-10</td>
<td>• Load onto trucks prior to filling.</td>
</tr>
<tr>
<td>Rigid tanks(1)</td>
<td>R</td>
<td>Variable</td>
<td>• Security required (public areas).</td>
</tr>
<tr>
<td>Plastic-lined pits</td>
<td></td>
<td></td>
<td>• Needs to be well lined.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>C</td>
<td>• Cover needed.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Variable</td>
<td>• Security required (public areas).</td>
</tr>
</tbody>
</table>

(1) See Appendix 8 for availability.
R = Recommended/preferred.
C = Conditional. May be used or adapted if preferred options are not available.
Shaded: Not recommended under most circumstances or not applicable.

Management of Waste Management Sites
Small waste management sites established at response areas such as oiled shorelines can be operated by the teams working there. The Waste Management Coordinator (WMC) will provide assistance in the design, construction and management of these sites and in safe handling of waste. The WMC is responsible for ensuring that all centres are managed appropriately.

For prolonged responses, the WMC shall ensure control over conditions of storage.

**Waste Segregation**

All wastes should be segregated in the field in accordance with the following guidelines:

- Liquid wastes shall not be mixed with solid waste.
- Oily wastes shall not be mixed with non-oiled waste.
- Solid domestic wastes shall not be mixed with food wastes and wastes generated during response operations.
- Non-oiled plastics and packaging shall be collected separately from other solid wastes.

Wherever possible wastes should be segregated in accordance with the preferred segregation indicated in the second column of Table 3.15.
### 3.1. CONTAMINATED SOILS AND WATER BODIES CLEANUP OPERATIONS

#### Table 3.15 On Site Segregation of Wastes

<table>
<thead>
<tr>
<th>Field Segregation</th>
<th>Preferred Segregation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liquid Oils</td>
<td>Non-emulsified oils.</td>
</tr>
<tr>
<td></td>
<td>Emulsified oils.</td>
</tr>
<tr>
<td>Wastewater</td>
<td>Water from temporary storage.</td>
</tr>
<tr>
<td></td>
<td>Water from heat or gravity separation of emulsions.</td>
</tr>
<tr>
<td></td>
<td>Water from chemically demulsified oil.</td>
</tr>
<tr>
<td>Solid Oils</td>
<td>High pour point oils.</td>
</tr>
<tr>
<td></td>
<td>High viscosity emulsions.</td>
</tr>
<tr>
<td></td>
<td>Tar balls.</td>
</tr>
<tr>
<td>Oily debris and accumulated sediment</td>
<td>Oiled sediment.</td>
</tr>
<tr>
<td></td>
<td>Oil mixed with wood, vegetation, plastics or sorbents.</td>
</tr>
</tbody>
</table>

For large spills, or those where it is not possible to fully segregate wastes in the field, the 'field' (preliminary) segregations can be used.

The waste management standard and procedures are to be communicated to the Onshore Operations Coordinators for implementation. All wastes will be segregated at the source and labeled.

**Waste Treatment and Neutralization**

Waste treatment facilities shall meet the following requirements:

- Have a valid license to manage waste;
- Manage waste according to the Russian Federation regulations;
- Have an emergency response plan;
- Comply with occupational health and safety requirements.

Sakhalin enterprises having sufficient capacities to use or neutralize some types of wastes are listed in Appendix 8.

Options for further utilization or neutralization and treatment of wastes will be considered for each specific case by the Emergency Coordination Team or, in case of major oil spills, by the Unified Command.

Solid domestic wastes collected during response operations will be disposed of at the existing facilities of Sakhalin Oblast.

Non oily (least hazardous) waste (Class V) will be disposed of at licensed solid domestic waste landfills of the Sakhalin Oblast.

Temporary holding sites for small amounts of oily waste are located within operational areas of Sakhalin Energy facilities (OPF, LNG/OET, and BS-2).

**Recycling and Reprocessing**

**Recovered Liquid**

Larger volumes of recovered oil will be transported by vessels or road tankers to
the Port of Korsakov’s tank farm for storage. Alternatively, recovered oil can be handed over to local boilers to be used as an additive to solid fuel. The residual water will be transferred for further management to a licensed contractor. The current contractor has an operating Finland made unit for treatment of oily water at a rated capacity of 120m$^3$/day.

**Solid Waste**

Non-oiled plastic wastes are planned to be transferred to a licensed contractor.

Metal scrap is planned to be transferred for further management to a licensed contractor.

**Incineration**

Sakhalin Energy has portable incinerators at its disposal (see Appendix 8). Incinerators can handle the following materials:
- Wood and vegetation,
- Absorbing materials made from cellulose, cotton, polypropylene/cotton and peat,
- Used oils and hydraulic liquids,
- Contaminated clothing,
- Rags.

Solid domestic wastes (except plastics) from field camps will also be incinerated. Incinerators can be used for burning low-liquid food wastes and burn out small volumes of oiled sediment.

These incinerators can also be used for burnout of small volumes of oiled sediment.

The incinerators will be used only after it is approved by the Sakhalin Oblast KChS & FS.

Ash generated during incineration of wastes will be collected and handed over to contractor handling with hard wastes for disposal at the solid domestic waste landfills.

**Treatment of Contaminated Soils**

Volumes of contaminated soil will depend on the area of impact and sediment properties.

There are several methods for treating oiled soils:
- Bioremediation.
- Land farming.
- Washing.
- Sieving.

The methods used will depend on the specific situation.

Washing methods are suitable for light oils and condensates but result in
production of contaminated water. Given that the exported oil-condensate blends are very light, landfarming methods (evaporation) are preferable. Sieving is suitable for heavy, viscous oils (such as HFO) but only for small volumes of sediment.

Therefore, landfarming in association with bioremediation, is the preferred treatment method for contaminated sands.

Bioremediation agents are manufactured in the RF by Companies such as ZAO Biochimprom, which produces “DEVOROIL”, and Salyut Technologist-Vest, which produces “DISOIL”. Both products have been successfully tested in West Siberia and have all required permits and certificates to be used in Russia.

It is possible to enhance bioremediation by adding peat-mineral compositions and humus to the soil.

The alternative is to transport oiled soil to the existing SMNG sludge and waste facilities with which Sakhalin Energy has an agreement (a letter of guarantee) for the disposal and treatment of up to 5,000 m$^3$ of soil and 2,000 m$^3$ of liquid waste.

**Waste Tracking: Documentation**

Each container of waste is to be accompanied by a Waste Manifest (WM). A blank copy of the WM is in Appendix 13 (OSR 11A & 11B).

The Waste Management Coordinator will monitor the dispatch and arrival of waste throughout the response.

At completion of the response, the WMC will compile a record of all waste generated and disposed of.

**Rehabilitation of Temporary Waste Management Sites**

At completion of the response, all Waste Management Sites will be dismantled, cleaned and rehabilitated. The Waste Management Coordinator is responsible for ensuring that this is carried out to the satisfaction of relevant Authorities.

**Health and Safety Issues of Waste Management**

Care must taken by personnel to avoid contact with oily wastes.

All personnel handling or coming into contact with oily wastes shall wear protective clothing such as rain suits, rubber boots and gloves.

Safety goggles shall be worn by personnel involved in any waste handling activities where splashing might occur.

Any portion of skin exposed to oily waste shall be washed with soap and water.

### 3.1.4 REHABILITATION OF OIL IMPACTED AREAS

Oil spill response and rehabilitation of oil impacted soil and water bodies will be performed in accordance with the projects (programs) having a positive conclusion of the State Environmental Review (pursuant to the RF Government Decree No.
Rehabilitation methods and techniques to be used for oil impacted areas will be developed by Sakhalin Energy jointly with the environmental protection authorities after the assessment of the oil contaminated areas and the areas impacted by OSR operations.

**Land Inspection Committee**

Impacted areas will be identified by a “Land Inspection Committee” to be established by the Sakhalin Energy KChS Chairman, in consultation with the SO KChS, on completion of OSR operations. In addition to Sakhalin Energy representatives members of the Committee may include representatives of land owner(s) and other parties nominated by the SO KChS.

The Committee will determine:

- Geographical location and size of the impacted area, cause, source and type of soil impact, recommended soil/land rehabilitation methods.
- Required soil remediation activities, based on land inspection results

**Assessment of Rehabilitation Needs**

Selection of rehabilitation methods for oil impacted areas are based on:

- Physical and chemical composition of spilled oil; environmental behaviour of spilled oil or oil product.
- Surface profile of the oil spill area; structure of soil underlying layer, and composition of soil.
- Weather conditions and season.
- Quality/efficiency of oil recovery from underlying surface.
- Presence of residual vegetation, dead wood, debris.
- Depth of oil penetration into the ground.
- Soil moisture position of groundwater-level.

**Planning Site Rehabilitation**

Oil-impacted land rehabilitation activities are to be undertaken in accordance with time-schedules to be prepared based on specifics of the oil spill incident and associated oil impact. Indicative reclamation/rehabilitation time-schedule is shown in the Table 3.1.

Proposals for rehabilitation of oil impacted areas and other resources should be included in the Post Spill Report.

After approval by the State Environmental Expert Review (SEER) the Land Rehabilitation Project is to be approved by the local departments of the RF Ministry of Natural Resources and Federal Agency of Immovable Property Cadastre.
### 3.1. CONTAMINATED SOILS AND WATER BODIES CLEANUP OPERATIONS

#### Table 3.17 Example Time Schedule for Oil Impacted Land Remediation

<table>
<thead>
<tr>
<th>No.</th>
<th>Activity Description</th>
<th>Start &amp; Duration</th>
<th>Responsibility</th>
<th>Equipment Personnel</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Soil sampling to determine oil content and pH</td>
<td>1 month (May)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Soil sampling to determine activity of indigenous soil-oxidising microflora</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Preparation of site services location plan (oil pipelines, water supply lines, gas mains/supply lines, power transmission lines, communication lines) with assistance of respective services personnel.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Installation of signs to indicate location of existing service/utility lines; determination of site access / entry ways for plant and equipment; coordination with relevant services of locations and facilities for crossing existing pipelines, if necessary;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Examination of oil-impacted area on location to determine: type of pollution/contamination; depth of soil penetration; littering with felling debris, metal scrap, household rubbish; presence of wood growth, dry wood stand, stumps, water areas with free oil (ditches, pools, ponds/lakes); conditions of live soil cover; vehicular practicability of the site.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Preparation of site plan and site description based on location survey findings; approximate area estimation.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Based on survey findings:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Determine the need, standard quantity and technology for application of mineral fertilisers and liming materials.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Determine the need, standard quantity and technology for application of oil biodestructor.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Determine scope of work for site preparation for remediation: recovery of oil from water surfaces; water-washing of heavily impacted site fragments; removal of litter/rubbish, etc.; construction of site entry roads, crossings over existing pipelines.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Calculation of material quantities required for comprehensive remediation: mineral fertilisers, deoxidisers, biological destructor, peat, grass seeds.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Assessment of special soil treatment/cultivating equipment requirements: swamp-going machines, soil-cultivating tools, etc.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Development of traffic pattern for swamp-going vehicles.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Preparation and procurement of required permits for work execution. H&amp;S induction for personnel of the work teams mobilised for soil remediation; familiarisation of mechanics and team leaders with existing site services/utility lines.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 3.17 Continued Example Time Schedule for Oil Impacted Land Remediation

<table>
<thead>
<tr>
<th>No.</th>
<th>Activity Description</th>
<th>Start &amp; Duration</th>
<th>Responsibility</th>
<th>Equipment Personnel</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>II</td>
<td>Preparation of Site for Remediation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Rubbish removal</td>
<td>1 month (June)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Site clearance: removal of dead wood stand, shrubs and other undergrowth, fallen trees/twigs and branches, stumps and felling debris. Construction of site access/entry roads.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>III</td>
<td>Site Remediation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Water-cleaning of heavily impacted site fragments to remove free oil for collection. Equipment: motor pump.</td>
<td>2-3 months (June/ August)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Rotary cultivation according to preliminarily worked-out movement pattern with simultaneous application of mineral fertilisers, lime and biodegrading compounds.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Treatment of heavily impacted site fragments with aqueous suspension of indigenous biodegrading compounds. with simultaneous application of water-solution of mineral fertilisers. Equipment: motor pumps, mobile storage tanks.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sowing of perennial herbs and oat seeds mixture</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Manual treatment of remaining soil pollution inaccessible for power equipment (site margins, protection/buffer zones of existing pipelines, banks/shores of ditches, water bodies, inter-piping space/ casing-tubing annulus); soil loosening, application of fertilisers and deoxidiser, peat mulching, interplanting of grass seeds, planting of indigenous vegetation.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IV</td>
<td>Commissioning of the Site</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Soil sampling to determine oil content after remediation</td>
<td>1-2 months (August/ Sept.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Preparation and commissioning of rehabilitated/remediated site to supervisory authorities.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The organisation of remediation works will be phased in accordance with the extent of oil contamination and specific parameters such as weather conditions, soil character and other conditions of the environment at that location. Remediation activities may include:

- Removal of oil from the soil structure (excavation).
- Remediation of land (mechanical and biological remediation).

In general, the extent of remediation activities can be categorised into moderate and heavy land contamination. These are respectively identified as:

- Moderate land contamination is defined as contamination that can be remediated through enhancement of natural process and may rehabilitate without active interference.
3.1. CONTAMINATED SOILS AND WATER BODIES CLEANUP OPERATIONS

- Heavy land contamination is defined as contamination that requires special remediation techniques such as land farming, bio-venting etc. to create aerobic conditions to assist the remediation process. In other words conditions where contamination is such that soil reach an anaerobic condition prior to completion of necessary natural remediation.

Heavy land remediation may be undertaken using both mechanical and biological methods. These techniques are outlined in the following sub-sections and should be tailored to meet the specific needs at a given spill location.

Note: The preferred rehabilitation methods for oil impacted areas comprises the following technology (to be implemented in sequential phases):

- Flushing / washing of residual oil pools in warm conditions (summer) and subsequent pumping (removal) of water-oil emulsion.
- Stimulation of microbiological degradation of oil (rotary soil cultivation, liming, application of mineral fertilisers, etc.).
- Revegetation.

1. Flushing/ Washing of Sediments

Washing-off (flooding) is used on ground with well pronounced surface profile (on slopes) and on shores of rivers/streams and water bodies. This method may be used for spills on soils and swamps of any type where reliable containment can be achieved. Flooded areas must be surrounded with impenetrable walls constructed of shore-seal booms and diversion booms. Controlled water-oil flow is directed through filtering skimmers (collectors). Oil sumps and trenches may be also constructed subject to volumes of spills and oil impact area.

This method may also be used to lift oil from wetland sediments but must be used with care and close supervision. Excessive flooding can result in increased penetration of oil into sediments

2. In-Situ Bioremediation of Sediments

Stimulation of microbiological degradation of residual oil is achieved through consecutive implementation of the following activities / works / operations:

3. Rotary Cultivation (Tilling)

This helps to achieve a number of objectives: very considerable reduction of oil concentration in surface soil layers through “dilution” with cleaner soil from deeper sediment layers; increased area of residual oil contact with biologically active environment; improved soil water-air conditions; even distribution of applied mineral fertilisers and lime in topsoil

4. Liming

This is used to improve properties of acid soils with pH < 5.5, the objective being to keep near neutral or faintly alkaline reaction of soil (pH from 6 to 8).
Liming improves physical soil properties, facilitates nitrogen and phosphorus consumption by microorganisms, reduces mobility of toxic oil substances, neutralises accumulated organic acids. Liming is a must-have condition for effective use of mineral fertilisers and helps achieve maximum activity of oil-oxidising micro-flora. Soil acidity is measured in two to three months after application of lime fertilisers and, if pH<5.4 soil liming is repeated.

5. Application of Mineral Fertilisers

This provides oil-oxidising microorganisms with accessible forms of nitrogen, phosphorus, and potassium. The required application rate is based on the quantity required for the microorganisms to decompose (“utilise”) the quantity of hydrocarbon present, subject to specific fractional content of residual oil products.

Since accessible forms of nitrogen/phosphorus/potassium are not readily available in forest and swamp soils a large application of mineral fertilisers is usually planned for the first soil treatment stage and timed to rotary cultivation. Placement of fertilisers during rotary cultivation provides for even distribution of nutrients within contaminated soil layers; it also facilitates adaptation of soil micro-flora to fertilisers.

Application of mineral fertilisers on humus-poor sands should be done in small doses due to the tendency of the nutrients to leach out of these sediments into surrounding areas. This is due to the low absorptive capacity, low soil buffering and regular drying-up of sand soils.

During first application preference is given to combination fertilisers, which contain nitrogen, phosphorus and potassium forms easily and quickly accessible for microorganisms, with minimum quantity of nitrogen as nitrate. If water-air and thermal conditions are favourable easily accessible nitrogen/phosphorus/potassium will be quickly consumed by microorganisms so that after 2 or 3 weeks lack of mineral nutrients may again start to limit oil biological degradation.

6. Irrigation and Aeration

Irrigation with aerated water will require construction of a drainage system to collect water and run-off.

At the collection points oil should be recovered with skimmers and the water aerated. Additional nutrients may be added before recycling water back to the contaminated soils.

7. Construction of Surface Contours

Construction of an artificial microrelief (microtopography) of alternating micro-elevations (ridges) and micro-depressions (furrows) is recommended for water-logged swamp soils in which the biological oil degradation process is slow because of poor aeration, low temperatures and high acidity of peat.

Increased surface area facilitates evaporation of light oil fractions; improved aeration and peat heat absorption and radiation properties create in micro-elevations optimum conditions for aerobic oil-oxidising bacteria and higher plants.

Free oil is washed into shallow furrows (grooves). Hydrocarbon degradation in water occurs much faster than in soil. Grasses seeded over micro-elevations are protected against damping-off in high water conditions.
8. Addition of Oil Degrading Microorganisms

Introduction of oil-oxidising microorganisms in soil may be justified if natural oil-oxidising micro-flora is characterised by poor species variety and it cannot be stimulated by the methods described above. Decision on introduction of microorganisms will be made after the soil has been investigated to assess activity of available oil-oxidising micro-flora.

However, introduced alien microorganisms not adapted to specific soil/water conditions may enter into competition with well-adapted species of local aboriginal microbe communities be quickly ousted by the latter. Use of bacteria preparations requires the following permits and documents:

- Health (hygienic) certificate.
- Technical specifications.
- Application instructions.

Technical specifications for microbiological and biochemical preparations must include the following sections:

- Technical requirements (preparation characteristics, packing and marking requirements).
- Acceptance/commissioning rules.
- Test methods (sampling, determination/assessment of organoleptic properties, assessment of oxidising activity).
- Transportation and storage conditions.
- Safety requirements.
- Environmental protection requirements.
- Manufacturer’s warranty.
- Best conditions for effective action of the preparation.

Application instructions (manual) for microbiological and biochemical preparations must provide thoroughly detailed information on

- Preparation of the working preparation form for use/application.
- Description of agrochemical measures facilitating cleaning process.
- Description of application procedures/process, standard application quantities for different purposes and different application conditions.
- List of required application equipment with reference to compliance with legal and engineering norms and regulations.
- List of health and safety measures to be taken during preparation of the working preparation form for use/application.
- Recommendations for control over hydrocarbon destruction process.

Mechanical Remediation

Mechanical remediation of contaminated soil is undertaken through excavation, tillage and soil disturbance in order to facilitate:

- Natural weathering of oil.
- Evaporation.
- Partial destruction of light oil fractions.
- Photochemical oxidisation.
- Development of oil oxidising microorganisms.
- Recovery of flora and fauna populations.
- Recovery of microbiological communities.
In general, this is achieved through ensuring soil is well aerated and humidified by undertaking regular tillage using ploughs and similar equipment to ensure recirculation of soil.

RD 39-00147105-006-97 recommends that soil tillage activities should be undertaken to a depth of 20 cm in areas with limited soil erosion potential and in areas of greater erosion this should be reduced with appropriate erosion mitigations measures in place during mechanical remediation activities.

These mitigations may include leaving undisturbed strips of land between strips undergoing mechanical disturbance or other techniques as identified for the specific location of remediation activities.

Completion of mechanical remediation will be dependant on the climatic zone and soil parameters but estimates for the time to complete the mechanical phase of remediation are provided in Table 3.17.

<table>
<thead>
<tr>
<th>Time of Contamination</th>
<th>Completion of Mechanical Remediation Phase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Winter</td>
<td>First spring in following year</td>
</tr>
<tr>
<td>Spring</td>
<td>Following Spring</td>
</tr>
<tr>
<td>Summer</td>
<td>Following spring</td>
</tr>
<tr>
<td>Autumn</td>
<td>First spring in following year</td>
</tr>
</tbody>
</table>

1. taken from RD 39-00147105-006-97

Biological Remediation

Biological soil remediation consist of two stages according to RD 39-00147105-006-97:

- Test planting and
- Phytoremediation measures.

1. Test Planting

Test grass planting is undertaken to make an assessment of the residual phytotoxicity of the soil to determine requirements and timeframe for longer term remediation. The test planting will normally involve the use of leguminous species common to the region of the spill and be undertaken using typical agricultural techniques.

Once test seeding has successfully germinated over 75% of the total area of contamination, the second stage of biological remediation can commence. This is normally 1.5 to 2.5 years after the initial contamination incident.

The second stage of remediation involves the planting of local perennial grass species following application of fertiliser and associated tilling activities to encourage natural regeneration of soil. The growing of grass species will continue until such time as vegetation production over the contaminated area is 75% of vegetation growth in an area of uncontaminated soil.
In order to measure this, a test plot of uncontaminated soil should be planted in proximity to the contaminated area to enable comparison of vegetation rates between contaminated and uncontaminated areas. Remediation will be considered complete once this 75% target has been reached.

2. **Phytoremediation**

Phytomelioration (vegetative reclamation) as the final phase of oil-impacted land rehabilitation is an indicator of relative land reclamation quality. Phytomelioration helps reduce soil hydrocarbon concentration to permissible levels, provides for creation of sustainable grass cover of both aboriginal and introduced (seeded) perennial herbs (permanent grass) adapted to specific soil/hydrological conditions and capable of long-term growth in the rehabilitated area. Herbaceous (grassy) plants: improve soil structure; increase air permeability of soil; absorb mutagenic, carcinogenic and other biologically dangerous products; prevent wash-out of mineral nutrients from the soil layer being remediated.

**Vegetation grown over contaminated land areas should not be used for food or foraging purposes. It is recommended that it is used as compost in the area of contamination and milled into the soil in this area**

**Alternate Techniques**

There are several additional techniques that can be used in areas of soil contamination to further encourage the remediation process that are additional to the land farming techniques described within this section.

1. **Artificial Aeration of Soils**

This includes "bio-venting" in which air is pumped into lower soil strata areas to maintain aerobic conditions and/or the addition of specialised microbiological agents to encourage the degradation of oil.

2. **Application of Peat**

Application of peat as potentially fertile soil is a fairly simple and effective soil rehabilitation method if oil-impacted area is small. Advantages of peat when used as a soil remediation means are:

- High oil adsorption capacity of peat.
- Natural properties of peat as a carrier of oil-oxidising microorganisms allow exclusion of peat utilisation/disposal after application.
- Potential of peat to develop growth of higher plants facilitates quick degradation of oil products and prevents washing of peat over application surfaces

Peat application technology consists of the following operations:

- Application of peat over oil-impacted area (after completion of oil recovery operations).
- Regular cultivation of peat to improve aeration.
Peat cultivation (loosening) serves to intensify stimulation of physical and chemical processes of evaporation of phytotoxic light hydrocarbons from deeper soil layers; peat cultivation helps improve aeration and reduce concentration of oil products in contaminated soil layer, which, as it were, is “diluted” with cleaner underlying or introduced/added sediment.

**Completion of Rehabilitation Works**

Rehabilitation works may be considered complete when residual oil (or oil transformation products) content in soil bottom sediments has been reduced to permissible level, i.e.:

- No hazard of oil (or oil transformation products) migration in surrounding environments and areas no longer exists
- Land may be used for its main original land management purpose (with reasonable limitations), or a land conservation period is formally defined and implemented to allow natural recovery (without implementation of any special resource intensive activities) and eventual compliance with sanitary requirements for oil content in soil in accordance with the RF legislation
- Water bodies may be used for their original economic purpose without any limitations.

**RESPONSE TERMINATION**

Response will be considered complete after the following objectives have been met:

- Oil leak/flow has been stopped.
- Spilled oil has been recovered to the maximum achievable extent determined by capacity and performance of available OSR equipment and resources.
- Recovered oil and oil products has been removed offsite or otherwise disposed of for subsequent utilization to exclude secondary contamination of production facilities and environment.

Further cleanup and rehabilitation of land and water bodies affected by oil spills will be undertaken in line with respective projects (programs) for rehabilitation and remediation of land and water bodies approved by the State Environmental Review authority.

**Responsibility**

**Tiers 1 and 2**

The decision to terminate a response is taken by the highest level of response involved.

For a response under the control of a Facility (Tier 1, Category A) the decision to terminate the response will be made by the Site Controller in consultation with the Sakhalin Energy Duty EC.

For any response that has required the activation of the Sakhalin Energy ECT (Tier 2, Category B and above) and is not operating under unified command, the Sakhalin Energy Emergency Coordinator (EC) will make the decision to terminate the response in consultation with Crisis Manager and Government authorities.
Tiers 3 and Higher

The decision to terminate a Tier 3 and above response will be made by the Government Coordinating Agency in consultation with the nominated Emergency Coordinator. These spills will be normally managed under the RF Unified Command.

Conditions for Response Termination

CMT

The CMT will demobilise when the Crisis Manager determines that the crisis is over or when it can be managed by individual Sakhalin Energy staff members.

ECT Stand–Down

The ECT will stand-down when the response objectives are met or when it has been determined that the incident requires a longer-term programme of remedial work. In the latter case, stand-down of the ECT will be concurrent with activation of a remediation Project Team.

Planning and Operations

The size of the Planning Section and Operations Section are interdependent and Planning requirements will tend to decline as the Operations Section Units cease activity.

Operations will terminate when all Objectives of the Incident Action Plan have been reached or have been determined to be no longer valid by the EC, in consultation with the Crisis Manager and relevant Government Agencies.

Onshore Operations

Onshore response teams may be deactivated when:

- All accessible areas are clean (i.e. free of oil).
- Cleanup is having no further net environmental benefit.
- Cleanup is not resulting in any further removal of oil.
- Cleanup is having a net deleterious effect on the land or associated plants and/or animals.
- The extent and degree of remaining oil is judged to be acceptable or as having little or no actual or potential adverse effects.

Logistics

Logistics function will continue until all equipment is recovered, cleaned and returned to its source or a facility team has taken over responsibility for these assets and ongoing activities.

Support

Administrative support personnel and most Support Teams will demobilise at the same time as Logistics, Operations and Planning.
Financial and legal services personnel will continue, at a reduced level, until:

- Response costs are determined, assessed, tallied and paid.
- All claims for costs and damages are processed.

**Waste Management**

In a major spill the management of wastes may continue for a considerable time beyond the demobilisation of field operations. Procedures for the extended management of waste will be detailed in a final Waste Management Sub-Plan.

The Territorial Department of Rospotrebnadzor for Sakhalin Oblast, Department of Rosprirodnadzor for Sakhalin Oblast, and other relevant Government Agencies may need to issue an approval for the WM Sub-Plan prior to implementation. This plan will be given to a designated project team or contractor and the ECT waste function will be terminated.

**Stand-down Procedures**

**Return of Equipment**

Upon completion of the response, the Logistics Section Leader and Operations Section Leader will ensure:

- Recovery of all equipment and unused materials or transfer to project team (Sakhalin Energy or contractor).
- That all equipment is cleaned, to the extent that available facilities allow.
- That all equipment is returned to the relevant storage area.
- That all equipment is returned to the owner by the quickest possible means (having regard to costs).

After its return to the storage area the equipment shall be thoroughly serviced and rehabilitated or replaced as necessary.

**Emergency Coordinator’s Debrief**

The EC and/or Site Controller will hold a post-spill debriefing for any spill for which a response was activated. The debrief should address:

- Spill causes (if known).
- Speed of response activation.
- Effectiveness of tactics and strategies.
- Equipment suitability.
- Health and Safety issues (if any).
- Communications.
- Integration of OSRP and procedures with other agencies.

On completion of debrief and stand down a formalised post spill report will be completed in line with requirements outlined in Section 3.1.5.

**Demobilisation**
After stand down is complete all emergency staff will either be demobilised from site or transferred to project team to continue remedial works once the situation is no longer regarded as a emergency situation and final remedial programme (if required) has been agreed with relevant authorities in line with post spill reporting.

**POST SPILL REPORTING**

**Regulatory Requirements**

The requirement for post spill reporting is detailed in three pieces of legislation:


These documents stipulate the contents of this Report and the agencies to which the Report must be sent.

**Responsibility**

Responsibility for ensuring that the Post Spill Report (PSR) is prepared rests with the Crisis Manager; usually the Crisis Manager on duty at the time of the incident or the person who fulfilled that role throughout the incident response.

The PSR is prepared by the EC who coordinated the response. The EC is supported by the staff that comprised the ECT.

**Contents of the Post Spill Report**

The content of the post spill report will encompass the requirements of the Decrees and Orders:
• The source, causes, reasons and circumstances for oil or oil products spill.
• Condition of the process equipment of the organisation engaged in production, processing, transportation and storage of oil, availability of directions from supervisory agencies with regard to the technical deficiencies of the facility, violations of the norms and rules of the facility or construction operation.
• A description and assessment of the management bodies’ actions taken for elimination of leakage source, containment and response of the oil or oil products spill consequences, including manpower and resources used.
• An assessment of effectiveness for resources; manpower, special technical aids and technologies used in the course of oil or oil product spill response operations.
• Information on the oil spill impact on the health of the population, life support facilities and environment.
• A summary of expenses incurred for performance monitoring of oil or oil product spill response operations, including expenses for containment, recovery, disposal of the oil or oil products, and further rehabilitation of the territory, water area and facilities.
• A summary of expenses for indemnification (reimbursement) of damage caused to the water or biological resources.
• An assessment of the extent of the remaining contamination (residual pollution) of the territories (water areas) after completion of the oil or oil products spill response operations.
• Suggestions for additional equipment (re-equipment) of the contractor and site emergency response teams, training or other improvements in response capability.

Submission of Post Spill Report

As required by the current procedures Post Spill Reports should be submitted within 30 days from response termination to the appropriate Government agencies:

• The municipal body on the territory of which the oil spill operations have been conducted.
• Main Department of MChS of Russia for the Sakhalin Oblast.
• Sakhalin Oblast Natural Resources and Environment Ministry.
• Department of Rosprirodnadzor for the Sakhalin Oblast.
• Department of Rosselkhoznadzor for the Primorsky Territory and Sakhalin Oblast - for response operations at water objects and within water protection buffer zones.
• Territorial Department of Rospotrebnadzor for the Sakhalin Oblast.
• Department of Rostekhnadzor for the Sakhalin Oblast.
• Sakhalin UGMS.
### 3.1. CONTAMINATED SOILS AND WATER BODIES CLEANUP OPERATIONS

**Figure 3.7 Response Termination and Stand-Down Procedure**

- **Emergency Coordinator**
  1. Determine whether all response objectives have been met. This should be done in consultation with Planning Section Leader, KChS & FS Chairman and Govt. Agencies. If so:
  2. Advise MChS & FS of Sakhalin Region and other involved agencies (via Sakhalin Energy KChS Chairman).
  3. Inform of Field Teams, Site Control Team and ECT.
  4. Monitor stand-down of Field Teams, SCT and ECT.
  5. Organise response debrief.
  6. Ensure that all records are collated and secured.

- **Planning Section Leader**
  1. Verify achievement of OSR objectives.
  2. Inform Planning Section personnel.
  3. Attend ECT debrief, if required.
  4. Ensure that all records are retrieved/collated/stored.
  5. Provide costs and supporting documentation to EC.

- **Operations Section Leader**
  1. Advise Site Controllers, ECC operations personnel and field response personnel.
  2. Ensure that all Field Teams return safely.
  3. Check returned materials against supplied equipment and materials and identify missing or consumed items.
  4. Ensure that all equipment is cleaned, repaired and returned to stores.
  5. Attend ECT debrief, if required.

- **Site Controllers**
  1. Inform Site Control Team personnel.
  2. Check returned materials against supplied materials. Identify missing/consumed items.
  3. Arrange cleaning or repair of equipment on site.
  4. Attend EC debrief.
  5. Ensure that all records are collated for the EC.

- **Waste Management Coordinator**
  1. Advise field teams and ensure that all return safely.
  2. Ensure that all equipment is cleaned, repaired and returned to stores.
  3. Compile a waste inventory.
  4. Prepare a long term waste management strategy if required.
  5. Attend ECT debrief, if required.

- **Logistics Section Leader**
  1. Inform Logistics personnel of termination.
  2. Ensure all equipment is accounted for/returned.
  3. Assist OSL to ensure that all equipment is cleaned, repaired and returned to owner or supplier.
  4. Compile list of consumed/lost/damaged equipment.
  5. Attend ECT debrief.
  6. Ensure that all records are collated and given the EC.

- **HSC**
  1. Compile any Incident Reports for debriefing.
  2. Determine current status of any injured personnel
  3. Attend ECT debrief, if required.
3.2.1 SITE CONTROL AND ACCESS INTO ES AREAS

Security access to operation platforms

Site control procedures are aimed at:
- Protecting members of the public from health risks associated with oil contaminated areas and OSR equipment (see Appendix 20.5).
- Monitoring and tracking movement of oil spill response personnel.
- Providing security for personnel, equipment and other materials on the site.

Site Control should be established for every emergency-affected site. This includes:
- Emergency Coordination Centre (ECC) and Site Control Room,
- Sites of marine, inland or shoreline cleanup activities.
- Wildlife cleanup and rehabilitation sites.
- Waste storage areas.
- Any site containing equipment or cleaning materials.
- Support services and facilities (canteen, accommodation, ablutions).

Site Control Management Access Zones

Security access is achieved by dividing work sites into three management zones (See Figure 3.8):

- **Hot Zone.** This is the site of activity (either cleanup or management area). The hot zone is a controlled area and access is open only to those people with a legitimate reason to be there. In the case of cleanup sites and waste storage areas, the Hot zone should be considered hazardous.

- **Warm Zone.** This is the area where support services are provided. The area is designated as “clean” and personnel entering from the hot zone must be decontaminated before entry.

- **Cold Zone.** This is the uncontrolled public area. People entering the Warm Zone from here should pass through site security.

Authority

Excluding the public from contaminated areas and oil spill response support areas must be done by EC or Site Controller in consultation with the relevant authorities (local or territory Emercom officers). The authority to introduce special control regimes during an emergency lies upon the Emergency Commission of the Sakhalin Oblast that can be approached by Unified Command to be established for Tier 2 and Tier 3 response. Guidelines for establishing Site Control are provided in Appendix 20.1.

Access to Emergency works area

Oil spills may impact shorelines a considerable distance from the Piltun-Astokh site. Nevertheless a rapid response is required and this can be achieved through planning of routes so that the shortest route, and the route with the best quality roads, is identified quickly.
The Company has surveyed access to the northeast shorelines and this is summarised in Appendix 17.

Gaining access will involve crossing of rivers, private land or government land. For large spills, it may be necessary to construct temporary roads, bridges, and storage facilities for equipment or other infrastructure.

These issues should be resolved through the Emergency Commission of the Sakhalin Oblast (see Section 1.5). In case of emergency the Emergency Commission would coordinate activities of all governmental authorities and organisations as well as all the response activities and is entitled to make decisions mandatory for all governmental bodies, as well as for private and any other entities on the territory of Sakhalin Oblast

Commission decisions require no other permits, licences or approvals.

### 3.2.2 MODEL PATTERN TIME SCHEDULE (SITUATIONAL CALENDAR PLAN) FOR RECUPERATION OF OPERABILITY OF DAMAGED ELEMENTS

On completion of E/O response operations a situation time schedule will be prepared to restore damaged components. This activity includes inspection of damaged equipment conditions, assessment of material resources expended during response operations.

This schedule will be prepared both by Sakhalin Energy and Contractors that were involved in OSR operations. Standard time schedule of repair and restoration activities is shown in Table 3.28.

Restoration will cover not only areas impacted by oil but also areas affected by cleanup teams or support teams. This will include all work sites, rest area, supply and refueling areas, roads, and waste holding areas.

Sensitive areas or areas of conservation importance that are impacted by oil will also be restored. Strategies for restoration must be developed during the cleanup activities and care must be taken to ensure that cleanup does not compromise restoration plans.

### 3.2.3 MANAGEMENT OF OSR EQUIPMENT PREPAREDINESS TO IMPLEMENTATION OF SPECIAL TECHNICAL MEANS AND REPLENISHMENT OF FINANCIAL AND MATERIAL RESOURCES

**Management OSR Equipment and Resources Readiness**

On completion of E/O response operations a time schedule will be prepared for the restoration of OSR equipment and resources readiness. This activity includes inspection of OSR equipment conditions, assessment of material resources (food, medical supplies, auxiliary items, various consumables) that are indispensable for effective oil spill response.

This schedule will be prepared both by Sakhalin Energy and Contractors that were involved in OSR operations. Standard time schedule is shown in Table 3.29.

The Logistic Section Manager will be responsible for the preparation of this schedule. The schedule will be subject to approval by the Emergency Coordinator who will also control its implementation.

**Replenishment of Financial and Material Resources**

Replenishment of OSR resources should be implemented in accordance with a time schedule (see Table 3.29) approved by the “Sakhalin Energy” KChS & FS Chairman.

Replenishment of OSR financial resources for the OSR costs that had not been covered by insurance should be implemented immediately after response operation completion through allocation/ increase of relevant items in OSR budget.
Logistic Section Leader is responsible for replenishment of OSR resources. Financial representative in CMT/ECT is responsible for replenishment of OSR financial resources.

Financial and Material Resources Replenishment activities are coordinated by the Sakhalin Energy KChS Chairman or nominee from the Sakhalin Energy KChS.

Table 3.28 Sample Restoration Time Schedule

<table>
<thead>
<tr>
<th>No</th>
<th>Action Description</th>
<th>Time Action Started</th>
<th>Action Taken By</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Inspection of technological equipment</td>
<td>00:30</td>
<td>Platform operating personnel</td>
</tr>
<tr>
<td>2</td>
<td>Identification of damage, inventory of required spares</td>
<td>01:00</td>
<td>Platform operating personnel</td>
</tr>
<tr>
<td>3</td>
<td>Delivery of required spares to the platform / incident location (by helicopter of vessel)</td>
<td>01:00</td>
<td>Logistic Section</td>
</tr>
<tr>
<td>4</td>
<td>Monitoring of gas contamination</td>
<td>Ongoing</td>
<td>Platform operating personnel</td>
</tr>
<tr>
<td>5</td>
<td>Removal of residual oil from damaged parts; blow cleaning</td>
<td>01:00</td>
<td>Platform operating personnel</td>
</tr>
<tr>
<td>6</td>
<td>Repair and restoration works</td>
<td>04:00</td>
<td>Platform operating personnel</td>
</tr>
<tr>
<td>7</td>
<td>Inspection of operability of technological equipment</td>
<td>01:00</td>
<td>Platform operating personnel</td>
</tr>
<tr>
<td>8</td>
<td>Equipment start-up</td>
<td>00.20</td>
<td>Platform operating personnel</td>
</tr>
</tbody>
</table>

Table 3.29 Sample Time Schedule for Restoration of OSR Equipment and Resources Readiness

<table>
<thead>
<tr>
<th>No</th>
<th>Material Resources</th>
<th>Unit</th>
<th>Available</th>
<th>Expended (Damaged)</th>
<th>Person in Charge</th>
<th>Replenished / Restored</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Scheduled Time and Progress %</td>
</tr>
<tr>
<td>1</td>
<td>Food supplies</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Auxiliary items, PPE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Medical supplies</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Oil fuel supplies</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Booms</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Skimmers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Sorbents</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Other material resources</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>