

ง. การจำแนกประเด็นสิ่งแวดล้อมและการจัดการของบริษัทยูโนแคลไทยแลนด์ จำกัด



## ภาคผนวก ง

# การจำแนกประเด็นสิ่งแวดล้อมและการจัดการของบริษัท ยูโนแคลไทยแลนด์ จำกัด

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### Aspect No. 1 – Seismic Surveys

<b>Activity/Event</b>	Exploration for oil & gas reserves using near-surface acoustic energy sources. Debris surveys at installation and drilling sites.
<b>Impact</b>	Seismic survey operations use sound waves that may disturb marine ecosystems. Survey vessels conducting seismic surveys may interfere with fishing operations.
<b>Objective</b>	Identify potential impacts and assess their significance in the planning process for seismic exploration operations. Mitigate identified impacts where necessary. Avoid interference with marine mammals.
<b>Target</b>	100% assessment of all future seismic surveys. No significant impacts to fish and marine mammals
<b>Management Programs</b>	Environmental Impact Assessment for new production areas, if required. Code of Practice for onshore & Offshore Seismic Surveys
<b>Responsibilities</b>	Manager, Environmental Programs & Manager of Exploration Activities
<b>Procedures</b>	Seismic Operations Procedures
<b>Monitoring</b>	Observation of fish and marine mammals during the seismic survey.
<b>ECS References</b>	ECS: MG, GO-HES ECS: MG ref: s 4.6

### Aspect No. 2 – Exploration Drilling

<b>Activity/Event</b>	Exploration Drilling
<b>Impact</b>	Drilling operations can interfere with fishing and shipping and may disturb marine ecosystems.
<b>Objective</b>	Identify potential impacts and assess their significance in the planning of Exploration drilling operations process. Mitigate, where appropriate, identified impacts.
<b>Target</b>	100% assessment of all new drilling exploration projects.
<b>Management Programs</b>	Environmental Impact Assessment
<b>Responsibilities</b>	Manager, Environmental Programs
<b>Procedures</b>	Drilling Operations Procedures
<b>Monitoring</b>	Baseline Environmental Monitoring
<b>ECS References</b>	ECS: MG, GO-HES ECS: MG ref: s 4.6

### Aspect No. 3 – Improper Disposal of Drilling Wastes

<b>Activity/Event</b>	Drilling Waste Disposal
<b>Impact</b>	Drill cuttings may smother marine organisms and constituents of drilling muds May contaminate the local ecosystem. Drill cuttings often contain heavy metals, chemicals and hydrocarbons which may impact the local environment.
<b>Objective</b>	Minimize cuttings waste and mud discharges and use non-toxic, water based muds whenever possible.
<b>Target</b>	100% use of slim bore holes in all new development projects.
<b>Management Programs</b>	<ul style="list-style-type: none"> <li>Use of special chemicals and advanced technology</li> <li>Drilling Operations Manuals</li> <li>Continued development of less toxic / hazardous chemical alternatives</li> </ul>
<b>Responsibilities</b>	<ul style="list-style-type: none"> <li>Drill Site Manager</li> </ul>
<b>Procedures</b>	<ul style="list-style-type: none"> <li>Drilling Operations Procedures</li> <li>SPCC Plan</li> </ul>
<b>Monitoring</b>	<ul style="list-style-type: none"> <li>Baseline Environmental Monitoring</li> <li>Oil on Cuttings (OOC) data collected by Drilling Department</li> <li>Procedures for Drill Stem Testing: Management Safety and Loss Prevention Guide, Vol. IIA</li> </ul>
<b>ECS References</b>	ECS: MG, GO-HES ECS: MG ref: s 4.6

**Aspect No. 4 – Gas/Oil Blowout**

<b>Activity/Event</b>	Gas/Oil Blow-out
<b>Aspect - No. 4</b>	Hydrocarbon contamination of marine organisms and water quality
<b>Impact</b>	Depending on its size, an oil spill may cause a high mortality and sub-lethal effects among a wide range of marine organisms. The effects on marine organisms are due to exposure to oil, ingestion, coating of benthic organisms etc. A blowout during drilling or testing of an exploration or production well, in connection with failure of all blowout preventer valves, may cause a continuous spill for an extended period while the well is being plugged. Short- to medium-term impacts include the chemical toxicity of oils primarily due to the volatile and water soluble aromatic hydrocarbons. A gas blowout alone is generally of short-term duration.
<b>Objective</b>	To prevent gas/oil blow-outs.
<b>Target</b>	Zero Gas Oil Blow-Outs
<b>Management Programs</b>	<ul style="list-style-type: none"> <li>• Ensure that operational practices are in place and up-to-date.</li> <li>• Effective mitigation should a blow-out occur.</li> <li>• Well control training</li> </ul>
<b>Responsibilities</b>	<ul style="list-style-type: none"> <li>• Drill Site Manager</li> </ul>
<b>Procedures</b>	<ul style="list-style-type: none"> <li>• Emergency Procedures Manual (26/09/95)</li> <li>• SPCC Plan (02/96)</li> <li>• Incident Investigation Program Manual</li> <li>• Dispersant Application Standard SLP No. 07-22 (01/06/93)</li> </ul>
<b>Monitoring</b>	<ul style="list-style-type: none"> <li>• Environmental Accident and Incident - Spill Reports</li> <li>• Monthly planned inspections</li> </ul>
<b>ECS References</b>	SPCC; Spill Reports; GO-HES ECS: MG Ref: s 4.11

**Aspect No. 5 – Platform Installation**

<b>Activity/Event</b>	<b>Platform Installation</b>
<b>Impact</b>	Platform location may disturb ecosystem and, if located in a fishing ground, impede fishing activities. Underwater noise produced during platform construction, although not expected to reach the same levels as the during seismic survey, could effect marine species as pile driving will generate medium to loud intermittent noise.
<b>Objective</b>	To avoid ecologically sensitive area.
<b>Target</b>	100% avoidance.
<b>Management Programs</b>	Operational procedures for platform installation.
<b>Responsibilities</b>	Facility Manager
<b>Monitoring</b>	<ol style="list-style-type: none"> <li>1. Baseline environmental monitoring <ul style="list-style-type: none"> <li>• Annual</li> </ul> </li> <li>2. Facility Inspection <ul style="list-style-type: none"> <li>• Annual</li> </ul> </li> </ol>
<b>Procedures</b>	<ul style="list-style-type: none"> <li>• EIA reports and mitigation requirements.</li> </ul>
<b>ECS References</b>	ECS: MG, Environmental Monitoring reports

### Aspect No. 6 – Pipeline Construction

<b>Activity/Event</b>	<b>Pipeline construction</b>
<b>Impact</b>	Transient increase in turbidity of water caused by disturbance of the sea-bed; disruption of the seabed (by dredging for pipeline construction); sedimentation along the pipeline route; leaks from fracturing or breaking of pipes caused by metal fatigue or corrosion, fishing trawlers and dredgers, or seabed failures; and physical impact to seabed and accumulation of construction wastes. Pipeline landfalls may affect nearby sensitive ecosystems such as estuaries and coastal wetlands.
<b>Objective</b>	To minimize impacts and avoid ecologically sensitive area.
<b>Target</b>	Zero impact on marine and coastal ecosystems.
<b>Management Programs</b>	<ul style="list-style-type: none"> <li>Operational procedures for pipeline installation.</li> </ul>
<b>Responsibilities</b>	<ul style="list-style-type: none"> <li>Facility Manager</li> <li>Production Superintendent</li> </ul>
<b>Monitoring</b>	<p>1. Baseline environmental monitoring</p> <ul style="list-style-type: none"> <li>Annual monitoring of sediment building around pipelines.</li> </ul> <p>Responsibility:</p> <ul style="list-style-type: none"> <li>Manager, Environmental Programs</li> </ul> <p>2. Facility Inspection</p> <ul style="list-style-type: none"> <li>Annual</li> </ul> <p>Responsibility:</p> <ul style="list-style-type: none"> <li>Production Superintendent</li> </ul>
<b>Procedures</b>	<ul style="list-style-type: none"> <li>EIA reports and mitigation requirements.</li> </ul>
<b>ECS References</b>	ECS: MG, Environmental Monitoring reports

### Aspect No. 7 – Marine Fouling

<b>Activity/Event</b>	<b>Marine Fouling</b>
<b>Impact</b>	Biocides and scale prevention may be toxic to marine organisms, may become deposited in sediments. Activities include use of anti-fouling substances and biocides. Activities such as sand blasting to remove marine growth results in deposit of metals from the platforms and metals in the sand.
<b>Objective</b>	To reduce impacts to the marine environment by minimizing the use of biocides and other anti-fouling agents, and eliminating heavy metals in sand blast materials.
<b>Target</b>	Eliminate the use of heavy metals in sand blasting materials.
<b>Management Programs</b>	<ul style="list-style-type: none"> <li>Evaluate the Anti-Marine fouling program</li> <li>Elimination of discharge of biocides and anti-fouling substances, use of low-toxic substances.</li> </ul>
<b>Responsibilities</b>	<ul style="list-style-type: none"> <li>Facility Manager / HES</li> <li>SLP Inspection Supervisor</li> </ul>
<b>Procedures</b>	<ul style="list-style-type: none"> <li>Investigation Program Manual</li> <li>Anti-fouling Standards</li> <li>Procedure for Planned Monthly Safety Inspections, SLID No. 05-10 (01/11/91).</li> </ul>
<b>Monitoring</b>	<p>1. Base Line Study</p> <ul style="list-style-type: none"> <li>Environmental Baseline Study around platform conducted every three years.</li> </ul> <p>Responsibility:</p> <ul style="list-style-type: none"> <li>Manager Environmental Programs</li> </ul> <p>2. Facility Monitoring</p> <ul style="list-style-type: none"> <li>Procedure for Planned Monthly Safety Inspections, SLP No. 05-10 (01/11/91).</li> </ul> <p>Responsibility:</p> <ul style="list-style-type: none"> <li>SLP Inspection Supervisor</li> </ul> <p>3. Regular visual inspection.</p> <ul style="list-style-type: none"> <li>SLP Inspection Supervisor</li> </ul>
<b>ECS References</b>	ECS: MG,MSDS

**Aspect No. 8 – Fuel Spills**

<b>Activity/Event</b>	Fuel Storage & Handling
<b>Impact</b>	Spills of fuel in: storage, handling, and transport represent safety hazards to human health, life and property, and contribute to air pollution load. A fuel spill into the ocean may result in exposure by ingestion, coating of benthic organisms, direct toxicity, bio-accumulation, and tainting of seafood. An incident near a tourist resort may impact on tourism. A fire or explosion could be a significant disaster.
<b>Objective</b>	To prevent hydrocarbon spills.
<b>Target</b>	Zero spills, accidents or incidents.
<b>Management Programs</b>	<ul style="list-style-type: none"> <li>• Spill prevention control and counter-measure (SPCC) Plan.</li> <li>• Aviation Safety and Procedure Manual</li> <li>• MSDS Procedure: Management Safety and Loss Prevention Guide: Vol. IIA</li> <li>• Operational Procedures</li> </ul>
<b>Responsibilities</b>	Drill Site Manager
<b>Monitoring</b>	<ol style="list-style-type: none"> <li>1. Discharge monitoring <ul style="list-style-type: none"> <li>• Accident and Incident reports</li> <li>• Regular visual inspection</li> <li>• Responsibility: Facility Manager</li> </ul> </li> <li>2. Facility Inspection <ul style="list-style-type: none"> <li>• Monthly inspection</li> <li>• Procedure for Carrying Out Monthly Safety Inspections, SLP No. 06-02 (Oct, 1995)</li> <li>• Responsibility: SLP Supervisor</li> </ul> </li> <li>3. Environmental monitoring program currently in development for facilities on-shore.</li> </ol>
<b>Procedures</b>	<ul style="list-style-type: none"> <li>• Fuel handling procedures for helicopter / platforms Aviation Safety and Procedure Manual - Logistics procedure 2.3.10</li> <li>• Transportation Procedures, SLP No. 07-04</li> <li>• SPCC Procedures</li> <li>• Operational Procedures for Fuel Handling and Storage</li> </ul>
<b>ECS References</b>	ECS: MG, Spill Reports; GO-HES ECS: MG ref: s 4.10, s 4.11

**Aspect No. 9 – Crew & Material Transport**

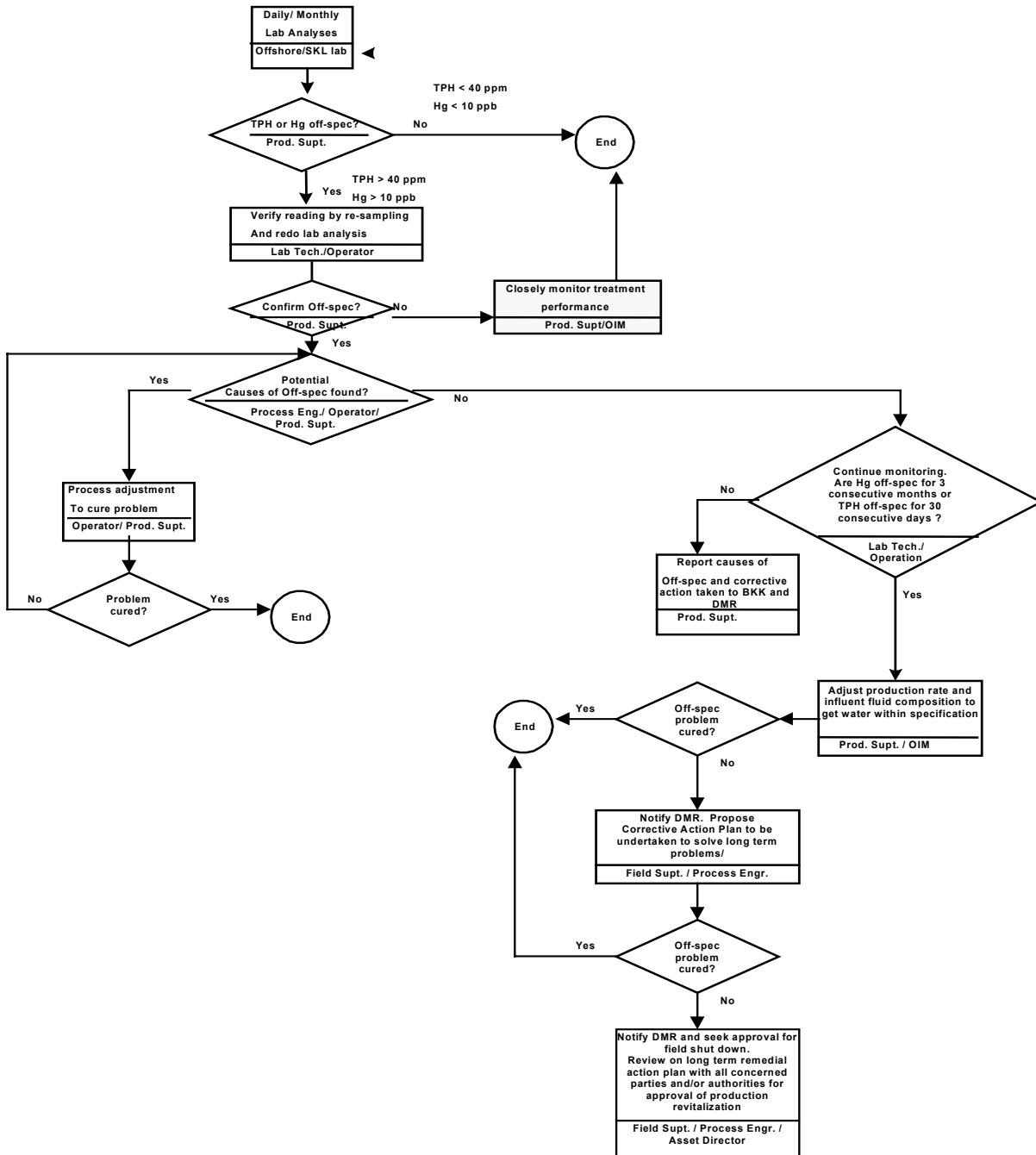
<b>Activity/Event</b>	Crew & Material Transport
<b>Impact</b>	Transporting crew and materials is often a positive contribution to the local economy. However, depending on the scale and type (land, air or sea) of transportation, potential environmental concerns include noise; air pollution; hydrocarbon and chemical spills; disturbance of freshwater and/or marine environment; negative impact on tourism; and social disturbance.
<b>Objective</b>	To minimize negative impact.
<b>Target</b>	100% accident avoidance
<b>Management Programs</b>	<ul style="list-style-type: none"> <li>• &amp; MHESC/HES Annual Review</li> <li>• Evaluation and revision of General Safety Rules. Safety &amp; Loss Prevention No. 07 - 31</li> </ul>
<b>Responsibilities</b>	<ul style="list-style-type: none"> <li>• Production Supervisor</li> <li>• Facility Manager I Production Superintendent</li> </ul>
<b>Monitoring</b>	<ul style="list-style-type: none"> <li>• Frequent visual inspection</li> </ul>
<b>Procedures</b>	<ul style="list-style-type: none"> <li>• Transportation Procedures. Safety &amp; Loss Prevention No. 07 - 04</li> </ul>
<b>ECS References</b>	ECS: MG, Environmental Monitoring Reports; Environmental Audit Reports



**Aspect No. 10 – Produced Water Disposal**

<b>Activity/Event</b>	<b>Produced Water Disposal</b>
<b>Aspect - 10</b>	Hydrocarbon or heavy metal (e.g., mercury) contamination of marine organisms and/or sediments.
<b>Impact</b>	The various components of produced water can cause significant harm to marine organisms, water quality and, via the food chain, may affect human health when large quantities of contaminated fish are consumed. Produced water often contains: oil and other petroleum hydrocarbons, suspended solids, heavy metals, and naturally-occurring radioactive materials. Also, it may be very saline, of high temperature and be low in oxygen content. A particular issue in the Gulf of Thailand is the presence of mercury in produced water.
<b>Objective</b>	To reduce produced water TPH and heavy metal loadings to the marine ecosystem.
<b>Target</b>	Reduce produced water TPH and heavy metal loading to BATNEC by the end of 1997.
<b>Management Programs</b>	<b>Technology Innovation - Deep-well injection</b> This process involves re-injecting the produced water from the production operations into suitable abandoned gas wells. Technology Innovation - Deep-well injection, treating produced water to remove TPH and heavy metals prior to disposal to the sea.
<b>Responsibilities</b>	<ul style="list-style-type: none"> <li>• Production Supervisor</li> <li>• Facility SLP / Lab Techs</li> </ul>
<b>Procedures</b>	<ul style="list-style-type: none"> <li>• Equipment operational procedures which minimize discharge</li> <li>• Waste Management Handbook</li> <li>• Produced Water Treatment Program</li> <li>• Internal Memorandum: Monthly Progress Reports</li> </ul>
<b>Monitoring</b>	<p>1. Produced water discharge monitoring</p> <ul style="list-style-type: none"> <li>• Parameters: flow rate, Arsenic, TPH, chlorides, Hg, salinity (see Appendix A)</li> <li>• Schedule for Testing: conducted every 15 days except TPH: 2 times a day for each CPP</li> </ul> <p>Responsibility:</p> <ul style="list-style-type: none"> <li>• HES</li> <li>• Facility / Lab Technicians</li> </ul> <p>2. Baseline Environmental Monitoring</p> <ul style="list-style-type: none"> <li>• Monitoring of TPH and heavy metals in sediment &amp; seawater around platforms every 3 years.</li> </ul> <p>Responsibility:</p> <ul style="list-style-type: none"> <li>• Environmental Programs Manager</li> </ul> <p>3. Facility Inspection</p> <ul style="list-style-type: none"> <li>• Once a month to ensure optimal process control</li> </ul> <p>Responsibility:</p> <ul style="list-style-type: none"> <li>• Process Engineer</li> </ul>
<b>ECS References</b>	ECS: MG, Environmental Monitoring Reports/Fish Tissue; Analysis Study; Environmental Audit Reports; ECS Annual Work Plan; GO-HES ECS: MG ref. s 4.5, s 4.7, Section 4.5, 4.7

Notification Procedures and Corrective Actions for Produced Water Discharge Quality Deficiency



**Aspect No. 11 – Improper Discharge / Disposal of Non-Produced Water**

<b>Activity/Event</b>	Non-Produced Water Discharge
<b>Impact</b>	Non-produced water, including sewage, may reduce sediment and water quality, smother benthic communities and contribute to long-term effects due to bio-accumulation of heavy metals.
<b>Objective</b>	To minimize the environmental impact of non-produced water discharge to the marine environment.
<b>Target</b>	100% compliance to applicable legislation.
<b>Management Programs</b>	<ul style="list-style-type: none"> <li>• Facility Inspections</li> <li>• Operational Control Equipment</li> </ul>
<b>Responsibilities</b>	<ul style="list-style-type: none"> <li>• Barge Captain</li> </ul>
<b>Procedures</b>	<ul style="list-style-type: none"> <li>• Operational Control Procedures (in development)</li> </ul>
<b>Monitoring</b>	<ol style="list-style-type: none"> <li>1. Planned Monthly Inspection</li> <li>2. Baseline Environmental Monitoring</li> <li>3. Incident Monitoring</li> </ol>
<b>ECS References</b>	ECS: MG, Environmental Monitoring Reports, Environmental Audit Reports; GO-HES ECS: MG ref: s 4.20

**Aspect No. 12 – Sewage Disposal**

<b>Activity/Event</b>	Sewage disposal
<b>Aspect - No. 11</b>	Improper discharge and/or disposal of wastewater.
<b>Impact</b>	Improper sewage disposal soil and surface water contamination. Human activities on offshore and onshore facilities produce sewage from toilets, kitchens, showers, etc. The main pollutants of concern are pathogens, oxygen-depleting organics, nutrients (nitrogen and phosphorus), turbidity, color, and heavy metals (leached from plumbing apparatuses).
<b>Objective</b>	To minimize the environmental impact of wastewater discharge.
<b>Target</b>	Compliance to applicable Thai regulations.
<b>Management Programs</b>	Facility inspections Operational control equipment, e.g., septic tanks, ERTC fire water re-circulation. Sewage Treatment Unit
<b>Responsibilities</b>	Maintenance Sup't/SLP Supervisor
<b>Procedures</b>	Operational Control Procedures
<b>Monitoring</b>	Facility Inspection Monitoring <ul style="list-style-type: none"> <li>• Physical inspection of storage, handling and discharge operations. Schedule: weekly.</li> </ul> Responsibility <ul style="list-style-type: none"> <li>• Facility Manager, SLP</li> </ul>
<b>ECS References</b>	ECS: MG, Environmental Monitoring Reports, Environmental Audit Reports; GO-HES ECS: MG ref: s 4.5, s 4.20

**Aspect No. 13 – Gaseous Emissions**

<b>Activity/Event</b>	Gaseous Emissions
<b>Aspect - No. 13</b>	Degradation of air quality, global warming and ozone depletion,
<b>Impact</b>	Gaseous emissions may contribute to global warming greenhouse and ozone depletion. The primary gaseous emissions of concern are: hydrocarbons, nitrogen oxides, hydrogen sulfide, sulfur oxides and carbon monoxide, and the contribution they make to onshore levels of those gases and to existing problems, e.g., photochemical smog. Sources of gaseous emission include: fuel combustion, gas and oil processing, evaporation, flaring, waste incineration, fire suppression, (e.g., with halon based extinguishing agents), vapor from drilling muds, etc. Mercury vapor, hydrogen sulfide, sulfur dioxide and carbon monoxide in confined space represents serious health threats, while combustible gases may constitute fire hazards.
<b>Objective</b>	To reduce significant gaseous emissions.
<b>Target</b>	To monitor and design emission control strategies by the end of 1997
<b>Management Programs</b>	<ul style="list-style-type: none"> <li>• CPP Recovery Of Hydrocarbon Vapors</li> <li>• Assessment of hydrocarbon vapor emissions, particularly the evaluation of VOC (BTEX) equipment installed at Erawan.</li> <li>• Investigate Hg Compound Emissions from flare and condensate burners</li> <li>• Identification of emission sources, rates, and predictive modeling at Erawan.</li> <li>• Air Emissions Monitoring Project</li> <li>• Characterization, modeling and impact analysis of offshore emission sources</li> <li>• Halon Replacement Program</li> <li>• Replacement of all halon sources with a non-ozone depleting substitute</li> <li>• PM Program</li> </ul>
<b>Responsibilities</b>	<ul style="list-style-type: none"> <li>• Manager, Metering &amp; Measurement / HES</li> <li>• Facility Manager</li> <li>• Facility OIM, SLPs, Lab Techs</li> </ul>
<b>Procedures</b>	<ul style="list-style-type: none"> <li>• Flaring procedures</li> <li>• Safe Work Procedures</li> <li>• Industrial Gases: Use and Control of High Pressure Gas Cylinders and Associated Equipment</li> <li>• Directive: Halon Replacement</li> <li>• PM Program</li> </ul>
<b>Monitoring</b>	<p>Emissions monitoring</p> <ul style="list-style-type: none"> <li>• Project to Characterize, model and analysis impact of offshore emission sources,</li> <li>• Parameters: Emission Rate, VOC (BTEX), NOX, Co, C02, and Hg for various point emission sources, e.g. Hg for flare and condensate burners.</li> <li>• Schedule: On-going</li> </ul> <p>Responsibility</p> <ul style="list-style-type: none"> <li>• Facility Manager, SLC Supervisor</li> <li>• Meteorological Monitoring, Wind Speed and Direction, Pressure, Rainfall</li> </ul> <p>Responsibility</p> <ul style="list-style-type: none"> <li>• Met station operator</li> </ul>
<b>ECS References</b>	ECS: MG, Emissions Assessment Report, Environmental Audit Report; GO-HES ECS: MG ref: s 3.1, s 4.6; Platform Emissions Monitoring Study

**Aspect No. 14 – Leaked Oily Waste (Offshore)**

<b>Activity/Event</b>	Oily Waste Leakage
<b>Impact</b>	Leaked oil may degrade the receiving environment: seawater, surface and ground water, and soil. Leaked oil may indicate that processes and equipment are not operating efficiently.
<b>Objective</b>	To prevent oily waste leakage
<b>Target</b>	Zero oily waste leakage.
<b>Management Responses</b>	<ul style="list-style-type: none"> <li>• Environmental Spill Incident Reports.</li> <li>• SPCC</li> <li>• Facility Inspections</li> <li>• Waste Management Plan (i.e. Oily waste handling)</li> </ul>
<b>Responsibilities</b>	<ul style="list-style-type: none"> <li>• Barge Captain; Production Sup't/SLP</li> </ul>
<b>Procedures</b>	<ul style="list-style-type: none"> <li>• Waste Management Plan: Offshore Operations</li> <li>• SPCC</li> <li>• Pollution Standard: Marine Safety and Procedure Manual 8.1.2</li> </ul>
<b>Monitoring</b>	<ul style="list-style-type: none"> <li>• Environmental Incident Spill Reports</li> <li>• Procedures for Planned Monthly Safety Inspections. Safety and Loss Prevention No.05-10.</li> </ul>
<b>ECS References</b>	Environmental Monitoring Reports; GO-HES ECS: MG ref: s 4.7

**Aspect No. 15 – Improper Handling and Disposal of Non-Hazardous Waste**

<b>Activity/Event</b>	Non-Hazardous Solid Waste Handling & Disposal
<b>Impact</b>	Solid waste (e.g., municipal waste) when not handled or disposed of properly can attract vectors (rats, mosquitoes, flies, cockroaches, etc.), threatening health and reduce aesthetic values. Burning of some types of innocuous-looking wastes may release or create toxic substances.
<b>Objective</b>	Follow established procedures for the handling, storage and disposal of non-hazardous solid waste.
<b>Target</b>	All non-hazardous solid waste are collected, stored and disposed of according to government regulations, Unocal guidelines and codes of practice.
<b>Management Programs</b>	<ul style="list-style-type: none"> <li>• Waste Management Plan: Onshore Operations</li> <li>• Minimization of the generation of non-hazardous solid wastes by reducing, reusing and recycling waste materials.</li> </ul>
<b>Responsibilities</b>	<ul style="list-style-type: none"> <li>• Barge Captain; Maintenance Sup't/Crane Operator</li> </ul>
<b>Procedures</b>	<ul style="list-style-type: none"> <li>• Waste Management Plan: Offshore Operations.</li> <li>• Waste Management Standards.</li> <li>• Handling of Cargoes: Marine Safety and Procedure Manual Section IV</li> <li>• Pollution Standard: Marine Safety and Procedure Manual 8.1.3</li> </ul>
<b>Monitoring</b>	<ul style="list-style-type: none"> <li>• Environmental Base Line</li> <li>• Environmental Impact Assessment</li> </ul>
<b>ECS References</b>	ECS: MG, Environmental Audit Report; GO-HES ECS: MG ref: s 4.7, 4.11

**Aspect No. 16 – Hazardous Materials Handling, Storage and Disposal**

<b>Activity/Event</b>	Hazardous Materials Handling, Storage and Disposal
<b>Aspect - No. 16</b>	Hazardous materials may impact the health of marine ecosystem.
<b>Impact</b>	<p>Mortality of marine life and contamination of water &amp; sediment.</p> <p>A material is categorized to be hazardous when it has one or more of the following characteristics; it is:</p> <ul style="list-style-type: none"> <li>• Ignitable (burning into a flame);</li> <li>• Corrosive (corroding metals, plastics or other materials);</li> <li>• Reactive (reacting with another chemical);</li> <li>• Toxic (causing bodily damage, sickness, or death).</li> </ul> <p>Examples of hazardous substances include: benzene, biocides, mercury, sulfuric acid. Some hazardous materials are globally significant (because of their impact on global warming or ozone depletion) or of long-term concern due to bio-accumulation in the food chain. Others can cause cancer or birth defects in contaminated organisms (e.g., humans, birds, fish, other animals).</p>
<b>Objective</b>	Minimize use of hazardous materials and ensure their safe handling and disposal by adherence to established protocols.
<b>Target</b>	All hazardous materials are identified, handled, stored and disposed of according to government regulations, Unocal guidelines and codes of practice
<b>Management Programs</b>	<ul style="list-style-type: none"> <li>• Substitute or reduce the use of hazardous materials wherever possible and practical.</li> <li>• Minimize the probability of accidents and incidents involving hazardous materials by utilizing safe handling procedures (SPCC/MSDS) and apply contingency provisions should accidents or incidents occur.</li> </ul>
<b>Responsibilities</b>	<ul style="list-style-type: none"> <li>• Production Superintendent</li> <li>• SLP Supervisor</li> </ul>
<b>Procedures</b>	<ul style="list-style-type: none"> <li>• Waste Management Plan: Offshore Operations</li> <li>• HAZOP Procedures, SLP No. 07-35 (04/96)</li> <li>• Facility Waste Management Plan: Satun / Erawan Satun Funan FSU</li> <li>• Waste Management Handbook</li> <li>• Waste Management Standards</li> <li>• Waste Management Guidelines</li> <li>• MSDS Procedure</li> <li>• Directives: Hazardous chemical safety equipment</li> <li>• Hazards of Materials, Production. Safety &amp; Loss Prevention No. 06 - 03</li> </ul>
<b>Monitoring</b>	<ul style="list-style-type: none"> <li>• Spill reports; Injury reports</li> <li>• Hazardous chemical tracking and Environmental Approval</li> <li>• Volume of hazardous chemicals &amp; materials purchased</li> <li>• Volume of hazardous chemicals &amp; materials collected and disposed</li> </ul>
<b>ECS References</b>	ECS: MG; GO-HES ECS:*MG ref: s 4.7

**Aspect No. 17 – Platform Abandonment**

<b>Activity/Event</b>	Platform abandonment
<b>Aspect - No. 16</b>	Disturbance of marine ecosystem.
<b>Impact</b>	When part of a platform is left on the seabed after abandonment: trawling fishing in the area is impeded, and even sea shipping may face with dangerous obstacles. Dismantling operations may increase turbidity and disturb the seabed; waste or construction materials may be discharged or left behind, causing deleterious effects to marine organisms. Mortality of marine life and contamination of water & sediment.
<b>Objective</b>	Remove all structure, construction materials and wastes.
<b>Target</b>	100% removal
<b>Management Programs</b>	<ul style="list-style-type: none"> <li>Abandonment Plan.</li> <li>PTIT Task Force on Platform Abandonment chaired by UTL</li> </ul>
<b>Responsibilities</b>	<ul style="list-style-type: none"> <li>Production Superintendent</li> <li>Facility Manager</li> </ul>
<b>Procedures</b>	<ul style="list-style-type: none"> <li>Abandonment Plan.</li> </ul>
<b>Monitoring</b>	<ul style="list-style-type: none"> <li>Facility inspection (annual)</li> </ul>
<b>ECS References</b>	Abandonment Research Report

**Aspect No. 18 – On-Shore Operating Facilities**

<b>Activity/Event</b>	On-shore operating facilities
<b>Aspect - No. 18</b>	Improper planning, design and operation of land-based facilities.
<b>Impact</b>	Increased demand on community facilities and services; conflicts with cultures/life styles and alteration of local economy.
<b>Objective</b>	Identify, assess and mitigate potential significant environmental impacts resulting from proposed new facilities or changes to existing facilities.
<b>Target</b>	100% mitigation of all identified significant environmental impacts.
<b>Management Programs</b>	<ul style="list-style-type: none"> <li>HAZOP</li> <li>Initial environmental evaluation (IEE) and environmental impact assessment (EIA)</li> <li>Complaints Register (Bangkok)</li> </ul>
<b>Responsibilities</b>	<ul style="list-style-type: none"> <li>Manager, Environmental Programs</li> <li>Facility Manager</li> </ul>
<b>Procedures</b>	<ul style="list-style-type: none"> <li>HAZOP</li> <li>EIA procedures</li> </ul>
<b>Monitoring</b>	<ul style="list-style-type: none"> <li>Facility inspection (annual)</li> </ul>
<b>FECS References</b>	ECS: MG; GO-HES ECS: MG ref: s 4.3