Oil and Gas Development (Offshore)

Applicability of Guidelines

Facilities and activities that are covered under the guidelines include exploratory drilling, development and production activities, pipeline delivery of products, tanker loading and unloading, ancillary and support operations. The guidelines do not cover seismic activities, nor onshore facilities or operations (covered under, for example, the Petroleum Refining or the Oil and Gas Development (Onshore) guidelines in the World Bank Group's *Pollution Prevention and Abatement Handbook*).[1]

The guidelines are intended to be used as a standard in project conception and design. As well, project operations will be evaluated against these guidelines.

Environmental, Health and Safety Management System

An Environment, Health and Safety Management System (EHSMS) is required for Category A projects, and may be required for Category B projects that have sensitive or special issues—this will be determined by IFC project review staff. Project sponsor management will develop formal procedures, programs, plans, strategies, budgets and pollution reduction targets to identify potential hazards, assess risks and to eliminate or minimize the potential impacts of oil and gas activities on the environment and to humans.

The objectives of the Environment, Health and Safety Management System are to: demonstrate due diligence in complying with all laws, regulations and IFC requirements; control risks; minimize adverse environmental impacts; promote worker safety; and continuously improve environmental, health and safety performance.

An Action Plan (AP) is required, derived from the EHSMS). The AP consists of the set of mitigation, management, monitoring, and institutional measures to be taken during implementation and operation to eliminate adverse environmental, health, safety and social impacts, offset them, or reduce them to acceptable levels. The AP should clearly state what the risk or legal/monitoring requirement is, what action is needed to manage the requirement or risk, who is responsible for the action, the frequency of the action, and the budget.

Environmental Guidelines

Maximum emission levels for the design and operation of each project must be based on country legislation and these guidelines as applied to local conditions and which have been established through the Environmental Assessment (EA) process.[2] The emission levels selected must be justified in the EA and acceptable to IFC.

The following are emission levels normally acceptable to IFC in making decisions regarding provision of IFC assistance; any deviations from these levels must be described and justified. The emission and effluent values are expressed as concentrations to facilitate monitoring. Dilution of air emissions or effluents prior to discharge to meet these guidelines is unacceptable.

All of the maximum levels should be achieved for at least 95% of the time that the plant or unit is operating, to be calculated as a proportion of annual operating hours.

[1] These guidelines for Offshore Oil and Gas Development are intended to apply to new installations. For expansions and modernizations to existing facilities IFC agrees with the project sponsor on a program with requirements and an agenda/timetable.

[2] Environmental assessment processes are not part of these guidelines—IFC's environmental assessment requirements for projects are set forth in IFC's Operational Policy on Environmental Assessment (OP 4.01), and further described in its project review procedures. All IFC projects undergo an EA. It is important to note that, while these guidelines set forth minimum acceptable requirements for projects, the EA report for the project will describe requirements that are appropriate to the siting of the facilities.. IFC will decide with the project sponsor the project requirements based on the EA recommendations, these guidelines and other IFC documents such as its project review procedures.

Air Emissions

For offshore drilling and recovery operations the following air emission levels should be achieved:

Air Emissions from Offshore Oil and Gas Production

Parameter	Maximum concentration in milligrams per normal cubic meter (mg/Nm^3)
Sulfur oxides (oil production)	400
Nitrogen oxides	1000

For offshore drilling and recovery operations the following air emission practices must be implemented:

- Minimize low pressure flaring and eliminate high pressure flaring if possible (justify if not possible). Continuous venting is unacceptable. Emergency venting should be minimized;
- Minimize flaring from purges and pilots in facility design, without compromising safety (may include installation of purge gas reduction devices, where appropriate, and installation of conservation pilots.) Source gas reduction measures should be implemented;
- Use knock out drums on flares to prevent condensate emissions. Flaring to be smokeless under normal operations. Use efficient flare tips and meter flare gas;
- Assess green house gas (GHG) emissions from all equipment including fired equipment, vents, flares, compressor stations, boats, marine transfer facilities, etc. and fugitive emissions annually using IFC's 'IMAGE' model or an alternative model acceptable to IFC or provide an annual GHG emissions inventory; and
- Install monitors for hydrogen sulfide wherever this gas may accumulate. Monitors should be set to activate warning signals whenever detected concentration levels of H_2S exceed 7 mg/m^3 (5 ppm).

Liquid Effluents

For offshore drilling and recovery operations the following effluent levels should be achieved:

Effluents from Offshore Oil and Gas Production

Parameter	Requirement
Oil and grease: daily average	42 mg/L
monthly avg.	29 mg/L
Deck drainage	No visible sheen
Drilling fluids and cuttings:	
Non-water based	• No discharge allowed except in compliance with 96 hr. LC-50 of SPP-3% vol. toxicity test first for drilling fluids[1] or alternatively testing based upon site-specific species agreed with IFC. • Discharge via a caisson at least 15 m below sea surface.
Water based	• No discharge allowed except in compliance with 96 hr. LC-50 of SPP-3% vol. toxicity test first for drilling fluids or alternatively testing based upon site-specific species agreed with IFC. • Discharge via a caisson at least 15 m below the surface. • Maximum chloride concentration must be less than four time's ambient concentration of fresh or brackish receiving water.
Diesel oil	• No discharge allowed. Can only be used to free stuck pipe in an emergency.
Additives and chemicals	• No limitation except toxicity testing of chemicals for hazards. • Barite used will meet: Hg<1 mg/kg and Cd <3 mg/kg dry weight (Total). • Products known or suspected to cause taint, endocrine disruption or contain heavy metals will be avoided.[2]
Produced sand	• Discharge not permitted—reinject or take ashore.
Produced water	• If separated and disposed at locations other than the platform, it must at a minimum, meet these guidelines.
Sanitary effluents and sink drains (gray water)	Package treatment and chlorination to an average of 1 mg/L residual chlorine (because of concerns about chlorinated hydrocarbons alternative forms of disinfection should be evaluated).
Cooling water	The effluent should result in a temperature increase of no more than 3° C at the edge of the zone where initial mixing and dilution take place. Where the zone is not defined, use 100 meters from the point of discharge.

Notes: 1. Testing for oil and grease should be done according to the Oil and Grease Test Method 1664 Revision A employing normal hexane as the extracting solvent as approved by the US Environmental Protection Agency.

2 Products used in concentrations that could cause these effects should be avoided—a risk based approach is recommended. Equivalent screening procedures or risk evaluations may be acceptable to IFC.

Solid Wastes

Solid wastes such as packaging material, containers, discarded and/or damaged pipe and drill bits, and leftover construction materials are to be taken ashore and appropriately recycled, reused or disposed.

Hazardous Wastes

Hazardous wastes such as paint residues, solvents, batteries, mercury lamps, pig cleaning sludges, and contaminated chemicals from drilling and production operations are to be taken to onshore facilities for treatment and disposal. Efforts should always be made to eliminate, reduce, or recycle hazardous waste.

Naturally Occurring Radioactive Materials (NORMs)

The NORM accumulation process is very gradual and many times unpredictable. Radiation surveys of equipment and sites should be undertaken every five years or when equipment is to be taken out of service for maintenance. Facilities are considered impacted if surface levels are greater than 4.0 Bq/cm^2 for gamma/beta radiation and 0.4 Bq/cm^2 for alpha radiation. Where NORM bearing scale is anticipated or found, use scale inhibitors and personal protective equipment where necessary. Sludge, scale, or NORM impacted equipment with Radium-226 must be treated, processed or isolated so that the treated waste does not exceed the background radioactivity concentration of the disposal site by more than five pCi/g.

Alternatively, the waste may be disposed of at a facility that is licensed to receive such waste.

Other

- Prepare a platform and facilities removal plan for closure as part of the Environmental Assessment process; the plan and budgets/provisions for financing should be discussed and agreed with the sponsor as early as possible;[3]
- Implement leak prevention, inspection and maintenance, and repair programs to ensure that all equipment is performing up to commonly accepted industry standards; and
- Take all reasonable measures to prevent and promptly correct all leaks from all equipment, facilities, pipelines, and storage facilities.

Environmental Best Practices

The following are some important aspects that should be considered where appropriate:

Drilling Management

- Use directional drilling (horizontal and extended reach) techniques to avoid sensitive surface areas and to gain access to the reservoir from less sensitive surface areas. Where this is not possible, provide an explanation;
- Use closed loop systems;
- Reduce the hydrocarbon content of cuttings by mechanical, chemical, or thermal clean-up treatment where possible or transport them to shore for treatment or disposal or consider annulus or downhole injection;
- Use enhanced solids control systems to reduce the amount of wastes from circulation systems and the amount of dilution;
- Develop and use chemicals with the lowest toxicity and lowest levels of biologically available heavy metals and other hazardous substances, especially persistent organic chemicals and substances with a potential to bioaccumulate; and
- Minimize, and avoid where possible, the use of toxic additives in drilling fluids.

Produced Water Management

- Consider alternatives to surface discharge of produced water, such as re-injection, onshore treatment and disposal, and down-hole separation of oil and water;
- Minimize the quantity and reduce the toxicity of discharged produced water;
- Select the least hazardous chemicals in order to minimize produced water toxicity; and
- Reuse produced water and recover oil from process wastewater prior to disposal.

Chemical Management

- Use a chemical hazard assessment and risk management techniques to evaluate chemicals and their effects, and utilize the least toxic and hazardous chemicals, (considering persistence or bioaccumulation aspects); and
- Use low toxicity lubricant additives to reduce the overall toxicity of drilling fluids where possible.

Emergency Response

Preparedness

Management of operations must establish and maintain emergency preparedness so that incidents can be mitigated effectively and without delay. Appropriate emergency preparedness includes the following elements:

- Risk analyses to identify reasonable and worst case potential accidents followed by design of preparedness requirements;
- Identify gaps in information, such as mapping, currents, and weather, and obtain recent data sets from appropriate sources to increase usefulness of preparedness and response tools;
- Use of industry standard modeling systems;
- Inclusion of emergency preparedness in the design of operations and in the environmental, health and safety programs;
- Plans for the immediate securing of sources of oil pollution and effective containment and collection of spilled/leaked oil;
- Protection of emergency response personnel and affected populations;
- Effective communications systems and notification;
- Training of response personnel;
- Assessing the capability of the public sector in assisting in an emergency and coordinating

[3] IFC draws the attention of the project sponsor to OSPAR Decision 98/3 on the Disposal of Disused Offshore Installations and requires the sponsor to follow the requirements set forth in this document.

with other agencies and organizations that may be involved in responding to an emergency; and
- Exercise preparedness elements at a frequency commensurate with the project risk. At a minimum, the following should be implemented unless IFC agrees to a different schedule:
  - — the conduct of drills without equipment deployment on a quarterly basis,
  - — evacuation drills and training for egress from the platform under different weather conditions and time of day,
  - — the conduct of mock drills with equipment deployment once every 12 months, and
  - — update of all elements based on continuous evaluation.

Emergency Response Plan

Anticipated abnormal conditions and emergencies associated with the operations must be addressed in an emergency response plan. Examples include: injuries and loss of life, fires and explosions, collision, flooding and loss of ballast, release of flammables and toxic gases, and loss of support craft.

An effective Emergency Response Plan should contain at least the following:

- A description of the response organization (structure; roles; responsibilities; decision makers);
- Policies defining measures for limiting or stopping events in question and conditions for termination of action;
- Easy-to-follow procedures for responding (details of response equipment and location, procedures, training requirements, duties, etc.);
- Descriptions and procedures for alarm and communications systems;
- Precautionary measures for securing the well;
- Evacuation procedures;
- List of: on-site first aid supplies and available backup medical support, MEDEVAC facilities, and other emergency facilities such as emergency fueling sites. List to include survival equipment and gear, alternate accommodation facilities, and emergency power sources; and
- Relief well arrangements including description of equipment, consumables and support systems to be utilized.

Oil Spill Response Plan

An oil spill response plan is required.[4] It addresses potential spill volume, loss of a tanker or barge, and damage to a pipeline as appropriate. The plan is developed with the involvement of response parties and those communities/people who may be impacted by an incident. In addition to the requirements set forth in the Emergency Response Plan the Oil Spill Response Plan will include:

- A description of the operations, site conditions, water depth, weather patterns, and logistical support;
- Identification of those responsible for managing oil spill response efforts, their qualifications and training, and authority;
- Oil spill trajectory with oil fate and environmental impact prediction: model to be used and ability to input wind and current data, maps identifying sensitive ecological areas (seasonal/monthly);
- Clear demarcation of Tier I, Tier II, and Tier III. The project sponsor should define where it sets Tier I, II, and III levels and demonstrate that there are no gaps between tiers;
- Response time for deploying equipment;
- Identifying priorities in response with input from potentially affected or concerned parties, and developing procedures to address priorities;
- Strategies for managing small spills from the installation, shore base or loading operations and for cleanup and containment of onshore areas;
- A list, description and use of on-site and off-site response equipment; and
- A description of how recovered oil and oil contaminated materials will be transported, stored, and disposed.

Human Health and Safety Aspects

It is important that a safe working environment exists since this minimizes both the potential for injuries and death and the risk of accidents leading

[4] Project sponsors need to demonstrate they have the financial capability to implement the spill response plan, including equipment, budget and insurance.

to environmental pollution. All activities are to be conducted in a safe and skillful manner with staff appropriately trained and equipment maintained in safe condition. Safety cases should be developed for appropriate facilities. Potential health, safety or fire hazards are removed or managed, based on risk assessments, safe systems of work, EHSMS requirements, competency and skills of staff and workers, etc. Written procedures will cover:

- Personal protective equipment (PPE);
- Lockout/tagout of equipment;
- Entry into confined spaces;
- Compressed gas cylinder handling;
- Cable/hoist sling safety and scaffolding;
- Helicopter safety;
- Electrical safety;
- Personnel transfer to/from the rig;
- Temperature extremes, where appropriate;
- Welding and cutting, and chemical safety;
- Pressure and leak testing;
- Hydrogen sulfide;
- Radiological protection;
- Explosives;
- Cranes and lifting devices; and
- Incident reporting and investigation.

Where applicable, written procedures are prepared for biological and chemical hazards such as bloodborne pathogens, hydrogen sulfide, asbestos, silica, NORM, and benzene exposure. A system of written permits for hazardous work is required.

Health and safety requirements apply to contractors working on site as well as employees.

The following subsections describe in more detail health and safety issues of concern.

Workplace Air Quality

Protective respiratory equipment must be used by employees when exposure levels for welding fumes, solvents and other materials present in the workplace exceed local or internationally accepted standards, or threshold limit values (TLVs) as annually published, for example, by the American Conference of Governmental Industrial Hygienists (ACGIH) in "*Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices.*"

Workplace Noise

Feasible administrative and engineering controls, including sound-insulated equipment and control rooms should be employed to reduce the average noise level in normal work areas. Plant equipment should be well maintained to minimize noise levels. Personnel must use hearing protection when exposed to noise levels above 85 dB(A).

Work in Confined Spaces

Prior to entry and occupancy, all confined spaces (e.g., tanks, sumps, vessels, sewers, excavations) must be tested for the presence of toxic, flammable and explosive gases or vapors, and for the lack of oxygen. Adequate ventilation must be provided before entry and during occupancy of these spaces. Personnel must use air-supplied respirators when working in confined spaces, which may become contaminated or deficient in oxygen during the period of occupancy. Observers/assistants must be stationed outside of confined spaces to provide emergency assistance, if necessary, to personnel working inside these areas.

Health: General

Sanitary facilities should be well equipped with supplies (e.g., protective creams) and employees should be encouraged to wash frequently, particularly those exposed to dust, chemicals or pathogens. Ventilation systems should be provided to control work area temperatures and humidity. Personnel required to work in areas of high temperature and/or high humidity should be allowed to take frequent breaks away from these areas. Pre-employment and periodic medical examinations should be conducted for all personnel, and specific surveillance programs instituted for personnel potentially exposed to toxic or radioactive substances.

Safety: General

All installations shall be designed and operated to protect the health and safety of employees and the community. The following safety procedures and practices should be implemented in the workplace:

- Shield guards or guard railings should be installed at all belts, pulleys, gears and other moving parts;

- Elevated platforms and walkways, and stairways and ramps should be equipped with handrails, toeboards and non-slip surfaces;
- Electrical equipment should be grounded, well insulated and conform with applicable codes;
- Eye protection should be worn by personnel when in areas where there is a risk of flying chips or sparks, or where intense light is generated; and
- Protective clothing appropriate to conditions should be worn in all facility areas and when walking outside living quarters and meeting rooms on a platform.

Note: A complete list of hazardous substances and threshold quantities that require a hazard assessment is included in the World Bank publication "*Techniques for Assessing Industrial Hazards*" - World Bank Technical Paper Number 55, 1988. A major hazard assessment is also required for any process operating at a pressure greater than 50 bars, when the product of pressure (in bars) and pressurized volume (in m^3) exceeds 10,000).

Training

Training plans, programs, and practices are to be established and carried out for all personnel. They will include training on basic safety procedures and on environmental issues, and job specific safety procedures according to their duties and responsibilities. Training will include:

- Instruction on the operation of equipment;
- Emergency survival and fire fighting;
- How to read and understand Material Safety Data Sheets (MSDSs), and safe chemical handling;
- Emergency response procedures;
- Personal protective equipment;
- Evacuation, including alternative means of egress from the platform; and
- Applicable regulatory requirements.

Health and Safety Best Practices

Creation of an Environment, Health, and Safety (EHS) Committee is recommended. Employees and management have an opportunity in meetings of the EHS Committee to discuss and communicate safety and environmental issues and their control. Participation must include contractors as appropriate.

Monitoring, Reporting and Supervision

Monitoring[5]

Monitoring data should be analyzed and reviewed at regular intervals and compared with specified requirements so that any necessary corrective actions can be taken. Records of monitoring results should be reported to the responsible authorities and relevant parties, as required.

Frequent sampling, chemical analysis, and toxicity testing may be required during the start up and during upset conditions. Chemical testing should be done for oil and grease utilizing normal hexane or cyclohexane as the extracting solvent under EPA methods 413.1, 9070, 9071A, and 16644 Revision A.[6]

In the US, mysid shrimp are used as the sensitive species in the water column to assess the effects of discharges. However, surrogates for mysid shrimp should be identified for other areas of the world. Ecologically important amphipods should be used as the sensitive species to assess the sediment toxicity of drilling fluids and discharges. The amphipods selected should be indigenous to the region where drilling occurs.

Monitoring frequency for the parameters listed in these guidelines will be carried out as follows:

- At least once per month for effluents;
- Annually for air emissions, in addition to running a green house gas estimation model annually;
- As needed for noise;
- As needed for workplace air quality;
- Prior to entering all confined spaces; and
- Radiation survey annually for contaminated sites and every three years for clean sites.

Records and Reporting

The sponsor should maintain records of significant environmental, health and safety matters. This information should be reviewed and evaluated to improve the effectiveness of the environmental, health and safety program. Records will include:

[5] Note: Actual testing for effluent and air emission parameters is preferred however surrogate measuring may be acceptable.

[6] Test methods using ozone-depleting solvents must not be used. These chemicals are banned or restricted. Other methods or modifications to the cited method may be acceptable provided equivalency can be established.

- All incidents resulting in an incapacity to work for at least one full workday beyond the day on which the accident or illness occurred;
- The total number of days of absence from work as the result of an incident;
- Fatalities;
- Annual air emissions monitoring data;
- Annual green house gas emissions modeling or provide an update of the annual GHG emissions inventory;
- Monthly effluent monitoring data;
- Radiation survey annually for contaminated sites and every three years for clean sites;
- Environmental, health and safety training conducted including course topics and attendees;
- Spills, fires and other emergencies;
- Number of emergency response drills and spill response drills conducted without equipment deployment; and
- Number of emergency response drills and spill response drills conducted with equipment deployment.

An annual summary of the above information will be provided to IFC in the Annual Monitoring Report (AMR). In addition, an updated EAP should be submitted along with the AMR.

Supervision

IFC staff or a designate will visit the project from time-to-time to verify that IFC's environmental, social, health and safety requirements are being met. Verification will be against the EHSMS, the EAP, IFC's guidelines and policies,[7] applicable host country laws and regulations, and any project environmental, social, health and safety covenants. Generally speaking, supervisory visits will be annually if the project has been deemed to be a Category A project. Visits will be less frequent if the project has been determined to be a Category B project.

Further Information

The following are suggested as sources of additional information (these sources are provided for guidance and are not intended to be comprehensive):

40 CFR Part 435:Oil and Gas Extraction Point Source Category; Final Effluent Limitations Guidelines and Standards for the Coastal Subcategory; Final Rule; December 16, 1996.

40 CFR Part 435:Oil and Gas Extraction Point Source Category; Offshore Subcategory Effluent Guidelines and New Source performance Standards; Final Rule, March 4, 1993.

A User Guide (CHARM) for the Evaluation of Chemicals Used and Discharges Offshore, Version 1.0, By Thatcher Robinson, Henriquez, and Karman, 3 August 1999, Sponsored by Netherlands, E&P Forum, and EOSCA.

ASTM Standard Guide for Conducting 10-Day Static Sediment Toxicity Tests with Marine and Estuarine Amphipods, E-1367-92.

Development Document for Final Effluent Limitations Guidelines and Standards for Coastal Subcategory of the Oil and Gas Extraction Point Source Category, USEPA, October 1996.

Development Document for Final Effluent Limitations Guidelines and Standards for Offshore Subcategory of the Oil and Gas Extraction Point Source Category, USEPA, October 1996.

OSPAR Decision 2000/3 on Organic Phase Drilling Fluids (OPF) and the Annex OSPAR Decision on Organic-Phase Drilling Fluids (OBF) Presented by UK; OSPAR Convention for the Protection of the Marine Environment of North-East Atlantic; Working Group on Sea-Based Activities (SEBA); Hamburg 15-19 February 1999; SEBA 99/7/Info.I-E.

Draft OSPAR Report on Discharges, Waste Handling, and Air Emissions from Offshore Installations, 1996-1997, Presented by the Secretariat, OSPAR Convention for the Protection of the Marine Environment of the North-East Atlantic, Programmes and Measures Committee (PRAM), Luxembourg: 3-7 May 1999.

Export-Import Bank of the US Environmental Procedures and Guidelines, BNA, July 1995, Offshore Development (Oil and Gas).

[7] In reviewing projects for financing, IFC refers to its ten 'safeguard policies', and to its project review procedures.

Arctic Offshore Oil & Gas Guidelines, June 13, 1997.

Final Effluent Limitations Guidelines and Standards of the Coastal Subcategory of the Oil and Gas Extraction Point Source Category; Correction; January 13, 1997.

Guidelines Establishing Test Procedures for the Analysis of Oil and Grease and Non-Polar Material under the Clean Water Act and Resource Conservation and recovery Act; Final Rule, *Federal Register*, 40 CFR Parts 136 and 260, May 14, 1999, Volume 64, Number 93, pages 26315-26327.

IMO/IPIECA Report Series, Guide To Oil Spill Exercise Planning, Volume 2, 1996.

IMO/IPIECA Report Series, Sensitivity Mapping For Oil Spill Response, Volume 1, 1996.

International Association of Oil and Gas Producers (formerly E&P Forum), "Guidelines for the Development and Application of Health, Safety and Environmental Management Systems", Report No. 6.36/210

International Maritime Organization Resolution A.891(21). Training of Personnel on Mobile Offshore Units.

IPIECA Report Series, A Guide To Contingency Planning For Oil Spills On Water, Volume 2, March, 2000.

IPIECA Report Series, Choosing Spill Response Options to Minimize Damage, Net environmental Benefit Analysis, Volume 10, 2000.

IPIECA Report Series, Dispersants And Their Role In Oil Spill Response, Volume 5, 1993.

IPIECA/ITOPF Briefing Paper, Oil Spill Compensation, A Guide To The International Conventions on Liability And Compensation For Oil Pollution Damage, March 2000.

IPIECA/ITOPF Briefing Paper, The Use Of International Oil Industry Spill Response Resources: Tier 3 Centres, April, 1999.

ISO 13702. Petroleum & Natural Gas Industries. Control and Mitigation of Fires and Explosions on Offshore Installations -- Requirements and Guidelines

ISO/DIS 15544. Petroleum & Natural Gas Industries. Emergency Response On Offshore Installations -- Requirements and Guidelines

Method 1664, Revision A, Normal Hexane Extractable Material (HEM; Oil and Grease) and Silica Gel Treated Normal Hexane Extractable material (SGT-Hem; Non-polar Material) by Extraction and Gravimetry.

OSPAR Decision 98/3 on the Disposal of Disused Offshore Installations, Ministerial Meeting of the OSPAR Commission, Sintra: 22-23 July 1998.

PARCOM Decision 92/2 on Oil Based Muds and the Guidelines for Sampling, Analysis, and Calculation of Oil on Cuttings and PARCOM Decision 92/9 including Annex 1 on Use of Oil Based Muds for Contracting Parties to the Convention for the Prevention of Marine Pollution From Land Based Sources and Annex 2 Guidelines for Sampling, Analysis, and Calculation of Oil on Cuttings Submitted by the Secretariat; OSPAR Convention for the Protection of the Marine Environment of North-East Atlantic; Working Group on Sea-Based Activities; (SEBA); Hamburg 15-19 February 1999; SEBA 99/7/Info. I-E.

PARCOM Recommendation 92/6 on Best Available Technology for Produced Water Management on Offshore Gas and Oil Installations Presentations by the Secretariat, Norway, Netherlands, and Germany; OSPAR Convention for the Protection of the Marine Environment of North-East Atlantic; Working Group on Sea-Based Activities; (SEBA); Hamburg 15-19 February 1999; SEBA 99/8/Info. I-E.

Report of EPA Efforts to Replace Freon for the Determination of Oil and grease and Total Petroleum Hydrocarbons: Phase I & II; EPA-820 & 821 for R-93-011 & R-95-003, September 1993 & April 1999.

Technical Meeting Document, Environmental Protection in Offshore Oil and Gas Activities,

International expert Meeting, November 17-20, 1997 Trade Association for the Oil and Gas Industry, London, UK.

Update from Norwegian Pollution Control Authority Concerning Ecotoxicological Documentation and Drilling Fluids General Conditions, Given as a Part of the Permit of Discharge of Oil, Drilling Fluids and Chemicals, Exploration Drilling by Ingunn Myhre, Executive officer, Department of Industry for the Oil and Gas Industry, Norway.