Offshore drilling pollution standards evolving

Alan Spackman, Director
Offshore Technical and Regulatory Affairs

In this second of a two-part series, Alan Spackman discusses environmental standards for offshore drilling activities.

POLLUTION PREVENTION

DEVELOPED UNDER THE auspices of the IMO, the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto (MARPOL 73/78) covers accidental and operational oil pollution as well as pollution by chemicals, goods in five annexes that are currently in force or soon to enter into force: Oil (Annex I); noxious liquid substances (chemicals) carried in bulk (Annex II); harmful substances carried by sea in packaged form (Annex III); sewage (Annex IV); and garbage (Annex V). Annexes I and II entered into force in 1983, and currently have 121 Contracting Parties. Annex III entered into force in 1992, and currently has 104 Contracting Parties. Annex V entered into force in 1988 and currently has 108 Contracting Parties. Annex IV has recently received its 88th Contracting Party and will enter into force in September 2003.


Alan Spackman

Obviously, a variety of ships is used to support offshore oil and gas exploration activities; however, a significant number are also directly utilized in both drilling for (e.g., mobile offshore drilling units) and producing (e.g., floating production units) offshore oil and gas and these are subject to the provisions of the Convention and its annexes through the legislation and regulations imposed by the nation under whose flag they are entitled to fly.

Fixed and floating platforms are also subject to MARPOL 73/78 because Article 2(4) of the Convention defines "ship" as "a vessel of any type whatsoever operating in the marine environment and includes hydrofoil boats, air-cushion vehicles, submersibles, floating craft and fixed or floating platforms" thus extending the Convention to virtually all offshore facilities. The coastal State under whose jurisdiction such facilities operate is obliged to regulate such facilities. An agreement among the Parties regarding the application of the provisions of Annex I effectively limits its applicability to the discharge of machinery space drainage (which is limited in oil content to 15 parts per million or less, without dilution)[13]. Drilling and processing discharges and production displacement water discharges are left to national (or regional) regulation. Industry guidelines have been developed by both OGP[14] and API.

There is an active effort underway, inspired by Australia, to re-examine the applicability of the Annex I requirements to floating production, storage and offloading units and floating storage units (FPSOs and FSUs), particularly with respect to the possibility of oil outflow following accidental damage to the hull.[15]

There have been repeated, albeit unsuccessful, efforts to inspire the IMO to more explicitly address offshore oil and gas activities within the scope MARPOL 73/78. The most recent was let by the Russian Federation.[16]

Mobile Offshore Drilling Units (MODUs), FPSOs and other vessels employed by the industry are confronted with a unique challenge in conforming to MARPOL 73/78. While underway between operating locations they are subject to their flag-State's interpretation of MARPOL 73/78; however, when they actively engage in oil and gas development activities, they become subject to the host coastal State's interpretation of MARPOL 73/78. Not only are there wide variations in the interpretation and enforcement of the Convention among coastal States, but there are also variations in interpretation as to when the coastal State's authority begins.

As loss of well control poses the most serious threat to the safety of an drilling unit, and of causing a significant oil spill, the IADC has develop a series of minimum training standards in well control and a program for accrediting training institutions which those standards.[17]

ORGANOTIN ANTI-FOULING SYSTEMS

Concern over the adverse environmental impacts of organotin paints used to protect against marine growth on the hulls of ships and offshore installations led the IMO to develop the International Convention on the Control of Harmful Anti-fouling Systems on Ships in 2001. The Convention will enter into force after ratification by 25 nations representing more than 25% of the world's merchant shipping tonnage. There is currently only one signatory.

AIR-BORNE POLLUTION

There are a number of international agreements which may obligate nations to set standards for air emissions from oil and gas activities, these include:

The United Nations Framework Convention on Climate Change (UNFCCC) attempts to stabilize greenhouse gas concentrations in the atmosphere. The Convention was adopted in 1992 and entered into force on 21 March 1994. The Convention currently has received 186 instruments of ratification.

The Protocol to the UNFCCC was adopted by the Parties to the UNFCCC in Kyoto, Japan on 11 December 1997. The Protocol contains individual emissions limitations and reductions for the industrialized (Annex I) nations. It will enter into force after not less than 55 Parties to the Convention, incorporating Annex I Parties which accounted in total for at least 55% of the total carbon dioxide emissions for 1990 from that group, have deposited their instruments of ratification, acceptance, approval or accession. As at 25 September 2002, 95 Parties (25 Annex I Parties, accounting for 37%) have ratified or acceded to the Kyoto Protocol.

The 2001 Stockholm Convention on Persistent Organic Pollutants, which was developed, inter alia, in response to concerns on long-range air-borne pollution of the seas expressed in the negotiations on the Global Program of Action to Protect the Marine Environment from Land-based Activities. The Stockholm

Convention currently has 22 of the 50 ratifications required for it to enter into force.

Annex VI of MARPOL 73/78, which attempts to control potentially harmful emissions (nitrogen and sulphur oxides) in the exhaust of ships' engines. Indications are that Annex VI will enter into force in 2004. The IMO is also examining strategies to control greenhouse gas emissions related to ship operations.

In addition, there are regional agreements such as the UN Economic Commission for Europe's Convention on Long-Range Transport of Air Pollution.

POLLUTION INTERVENTION

The Oil Pollution Preparedness, Response and Cooperation Convention (OPRC Convention) was adopted in 1990 and entered into force in 1995. An IMO Convention, it is designed to help Governments combat major pollution incidents by facilitating co-operation and mutual assistance in preparing for and responding to major pollution incidents. Requirements regarding oil pollution emergency plans on installations are set out in the OPRC Convention. Sixty-six nations are parties to the OPRC Convention.

In 2000, the IMO adopted the Protocol on Preparedness, Response and Cooperation to Pollution Incidents by Hazardous and Noxious Substances (2000) (HNS Protocol), which follows the principles of the OPRC Convention for hazardous and noxious substances other than oil. With only one Contracting Party, the HNS Protocol has not entered into force.

Regional centers have been established in Malta (in co-operation with UNEP) and in the Caribbean to assist in training and anti-pollution efforts.

The International Convention Relating to Intervention on the High Seas in Cases of Oil Pollution Casualties, 1969, entered into force in 1975. This Convention affirms the right of a coastal State to take measures to protect its territory from oil pollution from casualties occurring on the high seas. The convention has 77 Contracting Parties. A 1973 Protocol to this Convention extends its principles to substances other than oil. The Protocol entered into force in 1983, and currently has 44 Contracting Parties.

Industry specific guidance on emergency response is provided by ISO 15544.[18]

BIOLOGICAL DIVERSITY

At the 1992 Earth Summit in Rio de Janeiro, world leaders agreed on a comprehensive strategy for "sustainable development." One of the key agreements adopted at Rio was the Convention on Biological Diversity. This Convention sets out commitments for maintaining the world's ecological underpinnings while maintaining economic development. The Convention establishes three main goals: the conservation of biological diversity, the sustainable use of its components, and the fair and equitable sharing of the benefits from the use of genetic resources. This free-

standing Convention entered into force in 1993 and has been ratified or otherwise accepted by 186 nations.

ENFORCEMENT

While there is a commonly held view that international agreements and their regulations direct the actions of industrial activities, they do not. It must be emphasized that it is only through the establishment of implementation and enforcement of legislation or regulations at a national level that these agreements are given practical effect. There are no established means for States party to UNCLOS to force non-parties, or even other States party to UNCLOS, to effectively implement the Convention; however, there is growing pressure for the industrialized nations to take action against non-conforming nations through trade agreements and through restrictions or conditions placed on aid and development programs.

MEASURING AND REPORTING

Most of the Conventions described above have one or more measures intended to foster compliance through requirements for monitoring or reporting of conformance with provisions of the Convention or its regulations for compliance purposes. Some are straightforward, e.g., requirements under Annex I of MARPOL 73/78 for oil content meters and recording devices to assure that the regulations regarding percentage oil content of ships' bilge water discharge are met. Others, such as those agreed under the Framework Convention on Climate Change, require Governments to collect and aggregate large volumes of data.

In late 1997, a private-sector initiative was begun with the mission of developing globally applicable guidelines for corporations to use for voluntarily reporting on their economic, environmental, and social performance. While targeted initially at corporations, the goal was to develop guidelines that could be used by any business, governmental, or non-governmental organization. Convened by the Coalition for Environmentally Responsible Economies, in partnership with UNEP, the Global Reporting Initiative (GRI) was established as a permanent, independent global institution in April 2002.

The GRI released its "Sustainability Reporting Guidelines"[19] in June 2000. These guidelines encourage "triple bottom line" reporting of an organizations economic, environmental and social performance. They use 16 high-level "core" environmental performance indicators and 19 additional indicators.

ISO 14004[20] provides practical guidance about environmental systems, including general guidance about external reporting. ISO 14031[21] provides guidance on the selection and implementation of performance indicators that con be used by management of a company to evaluate and report (internally or externally) on the company's environmental performance. ISO is developing a further standard to provide guidance on communicating environmental performance.[22]

To date, there is no consensus on the appropriate measures of environmental performance for the for the exploration and production industries; however the matter is under active consideration by the OGP.

While it is relatively simple to measure, or at least produce reliable estimates of discharges and emissions related to drilling activity, selection of measures by which performance is to be evaluated poses some difficulty. For example, the volume of drill cuttings produced in drilling a well is generally considered a matter of environmental concern. Section of footage drilled as a normalization factor would provide for straightforward comparison on a well-to-well basis; however, it could result in a non-productive well being considered as superior to on that is highly productive.

ENVIRONMENTAL MANAGEMENT SYSTEMS

Environmental managements systems are tools by which government and industry can strive to improve environmental compliance and performance. A number of management system guidelines have been produced. Such systems generally require the establishment of:

• Management commitment to managing environmental performance;

• A process for identification of applicable environmental legislation, regulations and standards;

• A process for attaining continuous improvement of environmental performance.

The ISO 14000 series of standards focuses on corporate environmental management systems and operating practices, products and services. The standards promote continual

improvement without specifying actual standards of performance. Under ISO 14001[23], companies may register their environmental management systems when it has been demonstrated to conform to specifications provided in the standard.

The European Union's Eco-Management and Audit Scheme (EMAS) was made available in 1995[24] as a tool for companies and other organizations to evaluate, report and improve their environmental performance. The European Commission has recognized ISO 14001 and its European counterpart EN ISO 14001 as establishing a specification for environmental management systems corresponding to its regulations.[25]

Both OGP and API have produced industry-specific guidance on the development of combined safety and environmental management systems.[26, 27] OGP has worked with UNEP to produce specific guidance on "Environmental Management in Oil and Gas Exploration and Production."[28] In addition, the IADC's North Sea Chapter has developed guidance on the development of combined health, safety and environmental management systems for mobile offshore drilling unit operations in the North West European region.[29]

Properly implemented corporate environmental management systems continuously challenge management to assess both current operations and new endeavors to develop approaches that will help them achieve improved environmental performance, with or without the imposition of specific goals or standards by regulatory bodies.

Adopting new or improved technology is clearly one means of improving environmental performance. For example, using slim-hole or expandable casing technology provides the potential for a well to be drilled with the production of fewer cuttings and with less total energy expended when compared to a traditional telescoping well design.

Unfortunately, these benefits can be offset by the more complex procedures required to drill such wells, the more complex well-control situations which may be encountered, and the potential for a longer period for return on investment because of lower production rates in the smaller well bore.

Environmental management systems also challenge management in other ways. Prescriptive regulatory may relieve management of difficult decisions on comparative benefit.

Regulatory standards tend to be "stovepipe" standards, i.e., they target environmental "benefits" in one specific area having already determined that potentially adverse impacts in other areas need not be considered, or simply ignoring such impacts.

For example, prohibiting sea-bed disposal of drill cuttings solves perceived location-specific water quality problems; however, it requires that another disposal site be identified, that the cuttings be stored, handled and transported to that site (with the attendant safety concerns, energy usage, and potential for spillage) and ultimately the disposal a the chosen site be mitigated.

Operating under an environmental management system, management is charged with deciding on the comparative benefits of the possible alternatives with the potential of subsequently being asked to justify its decisions to shareholders or others with in interest in the management system. Shareholder and others may also wish to evaluate the environmental performance for specific operations or activities or compare the company's environmental performance against that of its peers.

Some of the multi-national oil producers who have publicly reported their environmental performance have already come under pressure to disaggregate their data so that their performance could be examined in specific areas.

FOOTNOTES

13 MARPOL 73/78, Consolidated Edition, Unified Interpretations of Annex I, "Requirements for drilling rigs and other platforms."

14 OGP (formerly E&P Forum) "Exploration and Production Waste Management Guidelines, 1993"

15 IMO, Report to the Maritime Safety Committee and the Marine Environment Protection Committee on the 7th session of the Sub-Committee on Bulk Liquids and Gases, BLG 7/15 (25 July 2002)

16 IMO, Marine Environment Protection Committee, Follow Up Action to UNCED, "Development of the "Environment best practice guidelines in the offshore oil and gas activities," Submission by the Russian Federation, MEPC 44/13/2

17 See: http://iadc.org/wellcap.htm

18 ISO 15544, "Petroleum & natural gas industries – Offshore production installations – Requirements and guidelines for emergency response."

19 Available on the Global Reporting Initiative's website at: www.globalreporting.org.

20 ISO 14004:1996, "Environmental management systems – General guidelines on principles, systems and supporting techniques."

21 ISO 14031:1999, "Environmental management – Environmental performance evaluation – Guidelines."

22 ISO WD14063, "Environmental management – Environmental communications – Guidelines and examples."

23 ISO 14001:1996, "Environmental management systems – Specification with guidance for use."

24 Council Regulation (EEC) No. 1836/93 (29 June 1983).

25 Decision 97/265/EC (16 April 1997).

26 OGP (formerly E&P Forum) "Guidelines for the Development and Application of Health, Safety and Environmental Management Systems," 1994.

27 API RP 75, "Development of a Safety and Environmental Management Program for Outer Continental Shelf Operations and Facilities," Second edition, July 1998.

28 OGP (formerly E&P Forum) "Environmental Management in Oil and Gas Exploration and Production," 1997.

29 IADC North Sea Chapter, "North West European HSE Case Guidelines for MODUs," August 2002.