



“Prevention, what are the next challenges” Workshop

*21 – 23 September 2004
International Maritime Organisation, London*

WORKSHOP BACKGROUND MATERIAL

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1 Introduction

The theme of the International Oil Spill Conference (IOSC) planned for May 2005 is “Prevention, Preparedness, Response and Restoration, Raising Global Standards.” In support of the 2005 IOSC Conference, an IOSC Spill Prevention Workshop will be preparing key material for the 2005 IOSC in advance. The IOSC Spill Prevention Workshop will be conducted September 21 – 23, 2004 in London. This paper provides the Background Material for the Prevention Workshop with the essential basis for the discussions.

The Workshop will consider what is meant by the term “Prevention”. Clearly, an idealistic approach to this might interpret the term to mean the complete elimination of all discharges or spills and then consider the practicalities of achieving such an objective. Alternatively, and perhaps more realistically, the Workshop might consider the “Prevention of Oil Spills” which would recognise that accidental oil releases will occur no matter how good the preventative measures may be, but that in such circumstances it is the prevention of damaging pollution that matters most. The Workshop will debate the involvement and responsibilities of government, industry and the public in achieving, improving and sustaining the prevention of oil spill pollution.

The Workshop will address all potential sources of oil discharge, recognising that these will include Public and User sources, Oil Drilling and Production Facilities (fixed and floating), Pipelines, Terminals, Refineries, Vessels, Road Tankers, Retail Units and Land Runoff. Onshore and Offshore spills will be considered. However, it is recognised that this represents a wide spectrum of interest and that such a Workshop can only realistically touch on the key aspects of prevention in each area.

It is recognised that in many of these areas, considerable in-depth work has already been done by those most closely involved with each particular area of industry. In preparing this Workshop, the organisers wish to acknowledge these extensive achievements by others and hope that this Workshop will make a useful contribution to the valuable work already done. In particular we acknowledge the work done already by EPA, MMS, USCG, MCA, IMO, OCIMF, ITOPI, API, IPIECA, UKOOA..

2 Goals of the Workshop

2.1 The Context

In the wake of the most recent oil spill incidents, the public asks what has been learnt, what has been done so far and what more is to be done by government and industry to prevent future oil spills.

Even though much has already been done, there is a lack of publicity to address these topics and as a result both government and industry are criticised by the public for the apparent lack of action. There is also a lack of awareness and engagement on the part

of the public and more must be done to encourage the public to share responsibility for protection of the environment.

It must also be recognised that although much has been achieved by government and industry, there is still more to be done. Some of the areas that need further improvement include Communication by industry and government, Management of public involvement and awareness, Management of Human Factors, Development of Training , Management of illegal discharges and the continued development of cooperation and understanding between government and industry and the public.

The Goals of the Workshop were conceived with the purpose of addressing the questions that the public asks and also to address the reality that there is still much that industry and government can do to improve further the processes of achieving Prevention. By addressing these Goals it is expected that the Workshop will create a list of actions for the future development of improvements in the various processes of prevention. It is also expected that the Workshop output will establish a basis on which to communicate achievement by government and industry and to contribute to the process of public awareness.

2.2 The Goals

The Goals give rise to the Main Topics of the Workshop. These are identified in this section and again later in section 5.3.

- To provide clarity on the understanding of what is meant by Prevention. Hence the **Workshop Main Topic – What do we mean by the term Prevention?**
- To record what has been done/achieved and what is intended for the future. Hence the **Workshop Main Topic – What has been done and what more can reasonably be achieved?**
- To clarify the parts played by Government and Industry with the purpose of being clear about the respective responsibilities and the degree of cooperation involved. Hence the **Workshop Main Topic – What are the respective Roles and Responsibilities of Government and Industry in achieving Prevention and what forms of cooperation will best enhance the collective performance?**
- To clarify the effectiveness of regulation and enforcement of Prevention by comparing the merits of Incentives and Penalties for this purpose. Hence the **Workshop Main Topic – In what way should Incentives and Penalties be utilised to best enhance the achievement of Prevention?**

3 How is the Workshop to be Organised

The Workshop will be held in London from 21 – 23 September 2004 at the Headquarters of the International Maritime Organisation (IMO).

The workshop is to be attended by a small number of experts (about 30 people), representing many areas of Industry, Government, Policy Makers, Trade Organisations and Responders.

The workshop will commence with a Plenary Session to introduce the subject and to set the foundation for the work to be done by discussing and agreeing on the key issues and definitions involved. The workshop will then take the form of a series of Breakout Sessions to discuss in depth, the key issues. During these Breakout Sessions the Workshop attendees will separate into small groups, led by a Rapporteur. Following each of these periods, the groups will report back to the assembly by means of a Plenary Feedback Session, which will capture the findings from all groups. Each day will finish with closing remarks and a summary of the day's conclusions. The Workshop will culminate in the preparation of a Final Report to be issued before year-end and in good time for the 2005 Conference. The entire proceedings will be directed by the Chairman, supported by the Rapporteurs and a Facilitator.

4 The History of Prevention

The History of Prevention is dominated by the measures that have been provoked by the pollution events related to oil production, storage and transportation, both as operational pollution and as accidental pollution in form of major incidents that have occurred worldwide. These incidents have taken the form of either a serious safety event or a similarly serious pollution event. Safety events that have been caused by a release of hydrocarbons, and which result in an improvement in preventative measures, almost always benefit the environment as well as the safety regime.

Individual events, unlike the accumulation of small events, always attract substantial media and public attention and motivate new legislation. Although the Oil and Tanker Industries attract more public attention than any other source of oil pollution, the data shows that there are other significant offenders in terms of actual pollution. In fact, a significant amount of the oil spilled into the sea comes from land runoff. For inland waters, the oil most often enters as a result of a pipeline failure or of an incident involving a fixed facility.

The conventions, protocols, directives and acts of legislation that do follow the main incidents, are too numerous to record in their entirety. The list below provides many of the key milestones in the history of Oil Spill Prevention.

Early US Pollution Prevention Regulations

- *1899* Rivers and Harbors Act of 1899 (Refuse Act). Initially intended to address obstructions to navigation, Section 13 prohibited the discharge of deposit of any refuse into navigable waters of the U.S. The Supreme Court decision in *United States v. Standard Oil*, 384 U.S. 224 (1966) construed the Act to apply to water pollution control issues.
- *1924* Oil Pollution Act. This Act forbade the discharge of oil into navigable coastal waters. It applied to vessels using oil as fuel or carrying oil in amounts exceeding that needed for lubrication.
- *1948* Federal Water Pollution Control Act (FWPCA). The primary focus of this legislation was the establishment of water quality standards. It authorized the Federal Works Administrator to assist states, municipalities, and interstate agencies in constructing treatment plants to prevent discharges

of inadequately treated sewage and other wastes into interstate waters or tributaries. The original statute has been amended extensively to authorize additional water quality programs, standards and procedures to govern allowable discharges, etc.

- 1970 Oil Pollution Act. This act implemented the International Convention for the Prevention of Pollution of the Sea by Oil, which the U.S. ratified in 1954. It applied to vessels of 500 tons or larger, and prohibited the discharge of oil within 50 miles of land. Amendments in 1966 defined “navigable waters” as inland waters navigable in fact and the territorial seas.

Safe Loading of Ships

- 1966 International Convention on Load Lines designed to ensure the safe loading of ships. Protocol introduced in 1988.
- 1967 The *Torrey Canyon* incident gave rise to the development of the CLC 1969, the Fund 1972 and the Bonn Agreement of 1969 (Now replaced by the 1983 Bonn Agreement) the UK Prevention of Pollution Act, which came into force in 1971.
- 1967 The barge *The Florida* ran aground, releasing a large volume of fuel oil in Buzzard’s Bay, Massachusetts. This gave rise to an early understanding of the effects of contamination and dispersion and promoted the importance of prevention.

International Recognition of Liability and Compensation Need

- 1969 International Convention on Civil Liability for Oil Pollution Damage. (Now replaced by the CLC 1992)
- 1971 International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage. (Now replaced by the FUND 1992).
- International Convention on Liability and Compensation for Damage in Connection with the Carriage of Hazardous and Noxious Substances by Sea, 1996 (HNS 1996)

International Recognition of the Importance of Pollution Prevention

- 1954 The International Convention for the Prevention of the Sea by Oil (OILPOL 1954)
- 1969 International Convention relating to Intervention on the High Seas in Cases of Oil Pollution Casualties and the Protocol relating to Intervention at the High Seas in Cases of Pollution by Substances other than Oil, 1973.
- 1972 International Convention for preventing Collision at Sea (COLREGS).
- 1972 Oslo Convention on Protection of the Marine Environment in the North Atlantic (OSPAR).
- 1972 London Dumping Convention
- 1973/ 78 MARPOL International Convention for the Prevention of Pollution from Ships (MARPOL 73/78).
- 1974 SOLAS International Convention for Safety of Life at Sea includes many aspects of ship construction and equipment design that are equally relevant to both safety and the environment.
- 1989 International Convention on Salvage.

US Pollution Prevention and Preparedness

- 1968 The first National Contingency Plan (NCP) was developed and published in response to a massive oil spill from the oil tanker *Torrey Canyon* off the coast of England the year before. This plan provided the first comprehensive system of accident reporting, spill containment, and cleanup, and established a response headquarters, a national reaction team, and regional reaction teams.
- 1972 Federal Water Pollution Control Act Amendments (Clean Water Act). Various incidents brought to the public's attention the need to protect waters, including a dramatic event in June 1969 when a floating oil slick on the Cuyahoga River, Ohio, made the river "burst into flames." Congress significantly amended the FWPCA to become the principal federal statute protecting navigable waters and adjoining shorelines from pollution. Section 311 generally prohibited discharge of oil into the nation's water in quantities of determined to be harmful.
- 1973 NCP (40 CFR part 300) is revised to include a framework for responding to hazardous substance spills as well as oil discharges, as required by the 1972 amendments to the FWPCA.
- 1980 Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA - commonly known as Superfund) was enacted. As a result, the NCP was broadened to cover releases at hazardous waste sites requiring emergency removal actions.

European recognition of need to Control Onshore Facilities Design and Assess Risk.

- 1974 UK Flixborough onshore major chemical plant incident which drove the need for Control of Major Accident Hazard Regulations (COMAH) applicable to all future UK Refineries and Chemical installations onshore. Regulation did not appear until 1984. To be followed in 1995 by the EC Serveso Directive and the UK COMAH Regulations following the Serveso incident in Italy. These various regulations govern the design of Onshore Refineries, Terminals and Chemical plant and are especially pertinent to containment.
- 1976 Convention on the Limitation of Liability for Maritime Claims.
- 1978 The *Amoco Cadiz* Tanker Incident off the coast of Brittany, France, contaminated a wide range of coastal systems promoting the importance of prevention in such regions.

Recognition of Pollution Potential of an Oil Reservoir and Offshore Facilities Threat.

- 1979 The US Ixtoc Well Blowout in the Gulf of Mexico gave rise to an understanding of the effects of a prolonged release of oil that travelled all the way across the Gulf to impact the coast of Texas. This demonstrated the importance of prevention in offshore drilling production facilities.

Ratification/Clarification of Laws of the Sea

- 1982 The United Nations Convention of the Sea (UNCLOS) codified, confirmed and clarified many of the earlier international agreements concerning the Law of the Sea. It clarified the Rights of Innocent Passage for

foreign ships in coastal waters and at the same time emphasised the obligation of such vessels to comply with the relevant laws of the coastal state involved. It also defined Port State Jurisdiction.

European Recognition of the Need to Control Offshore Facilities Design and Assess Risk.

- *1988* An incident at the offshore production facility Piper Alpha occurred in the North Sea, UK, which resulted in the loss of 167 lives and significant environmental damage caused by the associated release of a large volume of oil. The resulting UK Regulations and EC Directives that followed required all future designs and operations to be the subject of a Safety Case with associated Construction and Design Regulations. These clearly define the containment standards to be applied and are equally relevant to environmental protection.

Oil Pollution Act and Oil Pollution, Preparedness, Response and Cooperation

- *1989* The *Exxon Valdez* tanker incident in Alaska, US, provided the impetus for the passage of the US Oil Pollution Act of 1990.
- *1990* US Oil Pollution Act (OPA 90). This Act amended section 311 of the FWPCA to require response planning by vessels, offshore facilities, and certain onshore facilities that handle, store or transport oil or hazardous substances.
- *1990* OPRC International Convention on Oil Pollution, Preparedness, Response and Cooperation.
- *1994* The latest revisions to the US National Contingency Plan were finalized in 1994 to reflect provisions of the OPA 90.
- *2000* Protocol on Preparedness, Response and Co-operation to Pollution Incidents by Hazardous and Noxious Substances, 2000 (OPRC-HNS 2000)

US Spill Prevention and Response at Non-Transportation-Related Facilities

- *1973* Oil Pollution Prevention Regulation, 40 CFR part 112 (Spill Prevention Control, and Countermeasure Rule). Promulgated to address the oil spill prevention provisions contained in the Clean Water Act of 1972, this regulation formed the basis for EPA's oil spill prevention, control, and countermeasures (SPCC) program. It requires each owner or operator of a regulated facility to prepare an SPCC Plan that addresses the facility's design, operation, and maintenance procedures established to prevent spills from occurring, as well as countermeasures to control, contain, clean up, and mitigate the effects of an oil spill that could affect navigable waters.
- *1994* Revisions to the Oil Pollution Prevention Regulation. Sections 112.20-21 were added to require facility response plans, facility response plan training programs, and facility response drills/exercises programs for facilities that meet criteria determining they could cause substantial harm to the environment in the event of a discharge of oil.
- *2002* Revisions to the Oil Pollution Prevention Regulation. Amended partly in response to the Ashland Oil tank collapse of 1988 and to the Edible Oil Regulatory Reform Act of 1995, the revised rule includes new subparts outlining the requirements for various classes of oil and revises other requirements.

Oil Spill Prevention at Transportation-Related Facilities

- 1975 Federal Hazardous Materials Transportation Law, 49 U.S.C. 5101 *et seq.* Hazardous Materials Regulations, 49 CFR Parts 171-180. Prescribe regulations for the safe transportation of hazardous material, including oil, in intrastate, interstate, and foreign commerce.
- 1979 Hazardous Liquid Pipeline Safety Act, 49 U.S.C. 601. This statute authorizes the regulation of pipeline transportation of hazardous liquids including crude oil and petroleum products.
- 1993 Response Plans For Onshore Oil Pipelines, 49 CFR part 194. Promulgated under the authority of the Oil Pollution Act of 1990, the rule provided requirements for oil spill response plans to reduce the environmental impact of oil discharged from onshore oil pipelines.
- 1996 Oil Spill Prevention and Response Plans Regulation, 49 CFR part 130. Promulgated under the authority of the Oil Pollution Act of 1990, the rule describes the prevention, containment, and response planning requirements applicable to transportation of oil by motor vehicles and rolling stock.

European Offshore Facilities subject to Environmental Assessment

- 1972 Convention on the Protection of the Marine Environment of the Baltic Sea Area (HELCOM 1974). Now replaced by HELCOM 1992
- 1976 The Convention for the Prevention of the Mediterranean Sea against Pollution (Barcelona Convention 1976)
- 1992 OSPAR Convention
- 1992 EEC Directives requiring all new onshore and offshore facilities to be subject to the approval of an Environmental assessment and the demonstration that all environmental risks will be adequately controlled.

Double versus Single Hull Debate

- 1989 US *Exxon Valdez* Incident. The debate about tankers having single or double hulls followed this incident and resulted in the 1993 Amendments to Annex I of MARPOL 73/78 and provoked OPA 90.
- 1993 EEC Council of Ministers passed a Resolution welcoming a Common Policy on Safe Seas.
- 2000 See later (2000 and beyond) actions which followed *Sea Empress*, *Erika* and *the Prestige*.

Port State Control

- 1981 IMO Assembly resolution A.466(XII) on Procedures for the Control of Ships.
- 1993 EEC Directive on Port State Jurisdiction.
- 1995 IMO Assembly resolution A.787(19) on Procedures for Port State Control
- 1995 EEC Council Directive on Minimum Requirements for vessels entering or leaving EEC Ports and carrying dangerous or polluting cargoes.

European Legislation - Maritime Safety Post Erika

– Erika I Package

- 2001 Directive 2001.106/EC on Port State Control. This amended Directive 95/21/EC.

- 2001 Directive 2001/105/EC (this is an amendment to Directives 94/57/EC and 97/58/EC) Common rules and standards for inspection and survey organisations and relevant activities of maritime administrations.
- 2002 Regulation (EC) 417/2002 Accelerated phasing – in of double hull or equivalent design requirements for single hull oil tankers. **Amended by Regulation (EC)1726/2003.**
- 2002 Regulation (EC) 2099/2002 establishing a Committee on Safe Seas and the Prevention of Pollution from Ships (COSS).

- Erika II Package

- 2002 Directive 2002/59/EC establishing a Community vessel traffic monitoring and information system.
- 2002 The Commission adopted a Proposal for Compensation Fund for Oil Pollution Damage.
- 2002 Regulation (EC) 1406/2002 Establishing a European Maritime Safety Agency. **Amended by Regulation (EC) 1644/2003.**

5 Expectations of the Workshop

As mentioned previously, the potential sources of oil discharge cover a wide spectrum of industry types and circumstances. It is unrealistic to expect the workshop to address all aspects in depth in the time available. Never the less it is hoped that the Workshop will clarify what is meant by Prevention, identify the Key Issues, answer some main questions and identify what needs to be done in the future to advance the Policy, Practice, Management and Culture of Prevention. The Organisation Committee has identified four Main Topics or questions for discussion. These are summarised in section 5.3 below.

5.1 Industry and User Spectrum

The potential sources of oil discharge include accidental and illegal/intentional discharges from a wide variety of industry circumstances. The oil industry itself has many facets and it therefore constitutes a wide range of potential sources of spill in its own right. The distributors, retailers and users of the crude oil and oil products also represent yet more potential sources of spill. Waste disposal on land, together with the illegal dumping/discharge of waste oil, results in a substantial source pollution to the sea from Land Runoff.

It is therefore important that this workshop should recognise all potential sources of oil spill and should address these to the extent that they represent risk and the potential for damage to the environment.

The Industry and User Spectrum includes:

- Onshore Drilling and Production Facilities.
- Offshore Fixed Drilling and Production.
- Floating Production and/or Storage Units (FPS and FPSO)

- Floating Drilling Units (Ship Shapes and Semi – Subs)
- Terminals (Receiving/ Discharging Facilities and Storage)
- Refineries
- Vehicle Transportation of Crude and Products
- Vessel (Tanker) Transportation (many sizes, forms and functions eg VLCC, FPSO Shuttle Tankers, Coasters, Lighters etc)
- Pipeline Transportation (Overland and Subsea)
- Retail Units (Service Stations)
- Vehicle Users of products
- Vessel Users of products
- Land Runoff
- Public users of products

In terms of pollution specifically from sea-based activities, the IMO/UNEP Joint Group of Experts on the Scientific Aspects of Marine Protection (GESAMP) Working Group provides the following estimates¹:

Shipping operational	22%
Shipping operational cargo	2%
Shipping VOC emissions	8%
Tanker accidents	19%
Other vessel accidents	<1%
Dry-docking	<1%
Ship scrapping	2%
Coastal refinery operational	13%
Coastal refinery accidents	<1%
Offshore exploration and production operational	2%
Offshore exploration and production accidents	<1%
Offshore exploration and production pipelines	<1%
Natural seeps	30%
Unknown	<1%

Pollution of inland water by oil is also significant, as oil discharged into inland waters often has a direct impact on human health and safety and on natural resources. In the U.S., the respective shares of the primary sources of inland oil spills, by quantity are²:

¹ Data for 1988-1997. Report to be released in Fall 2004. Preliminary results as presented at the 2003 International Oil Spill Conference.

² Based on US data for spills of 50 gallons or more. Data cover spills to navigable waters and adjoining shorelines, including all water used in interstate or foreign commerce, all interstate waters, and all other waters the use, degradation, or destruction of which could affect interstate or foreign commerce.

Pipeline	43%
Nat Facility ³	37%
Storage tank ³	13%
Other vehicle	1.4%
Railroad	1.2%
Tank barge	1.1%
Production well	0.9%
Other vessel	0.4%
Residence ³	0.1%
Transformer	0.1%

We should also recognise that all of the above potential sources of pollution are additionally vulnerable to acts of war, sabotage and terrorism in today's international security environment.

5.2 Risk and Consequence

It is important that the potential sources of oil spill or loss are considered in the context of the significance of the loss or impact of the potential spill and the risk of the event. Whilst many events in practice may be improbable, the potential consequence of even these unlikely events may be severe. It is therefore important that the Workshop should consider such matters as damage to company reputation, liability and costs as well as the environment and social impact of such spill events.

5.3 The Main Topics

The in order to satisfy the Goals of the Workshop, the discussion will address the following Main Topics :

- (1) **What do we mean by the term Prevention?**
- (2) **What has been done and what more can be reasonably achieved?**
- (3) **What are the respective Roles and Responsibilities of Government and Industry in achieving Prevention and what forms of cooperation will best enhance the collective performance?**
- (4) **In what way should Incentives and Penalties be utilised to best enhance the achievement of Prevention?**

³ There may be overlap between the facilities, storage tank, and residence categories, as state and federal records do not always accurately describe spill sources.

6 Issues and Questions to be considered

6.1 Issues and Questions on the Main Topics

Each of the Main Topics mentioned in section 5.3 above is considered here by outlining some of the perceived issues and by identifying some of the important questions. This is not intended to be comprehensive, but it is hoped that the material will serve to stimulate the Workshop debate and in some cases perhaps create controversy so the discussion will produce a fully comprehensive treatment of the important aspects for each Topic.

6.1.1 What do we Mean by “Prevention”?

According to UN Convention 1982 the definition of Pollution of the marine environment is given as: “The introduction by man, directly or indirectly of substances or energy into the marine environment, including estuaries, which results in or is likely to result in such deleterious effects as harm to living resources and marine life, hazards to human health, hindrance to marine activities, including fishing and other legitimate uses of the sea, the impairment of quality for the use of sea water and reduction of amenities.”

Pollution prevention may be generally defined as the use of processes, practices, materials, products to *avoid or minimize* pollution and the risk it poses to human health and the environment.

Government pollution prevention policies often call for reducing pollution at the source, and for minimizing and mitigating the environmental impacts of the pollution⁴. Governments generally recognize that it is not practicable to prevent all pollution from occurring, but that prevention must involve a concerted effort to reduce the hazards through changes in technology, materials, maintenance, training or other practices. Oil pollution prevention regulations often focus on avoiding and minimizing the impacts from releases of oil from vessels, tanks, pipelines, oil-fired equipment, etc.

The boundary of where prevention stops and response begins, however, is often blurred, particularly in the case of discharges from fixed facilities, which may not directly affect watercourses. In certain cases, any effort made to keep spilled oil from entering water may be considered part of the “prevention” effort, while in others it may be considered part of “response.” Certain governmental regulations differentiate between prevention, control, and response. For instance, the U.S. EPA distinguishes between *preventing* the occurrence of a discharge (maintenance, equipment inspection, training on proper procedures for oil transfers, etc.), *controlling* a discharge to prevent oil from entering waters (secondary containment), and applying *countermeasures* to mitigate the impacts of a discharge on the aquatic environment.

⁴ U.S. EPA national pollution prevention strategy, Canadian Environmental Protection Act of 1999

The industry's concept of pollution prevention often follows much the same general principles and approaches. For example, certain companies⁵ outline their environmental policies in detailed terms:

- Prevention: Prevent oil spill from occurring
- Watercourse protection: Prevent oil reaching watercourse
- Containment: Prevent oil in water from reaching other areas
- Recovery: Recover and properly dispose of oil spill emulsion
- Clean up: Clean up area affected by the spill and properly dispose of debris
- Report and co-operate: Report spills to the appropriate authority and co-operate in clean up efforts.

In other cases, industry combines the prevention and watercourse protection together as "prevention" measures.

In discussing the concept of Prevention, it is useful to understand the framework and influences in which Prevention is achieved.

Firstly, there is the strictness of regulation with which every company is expected to comply. It is not an exaggeration to say that almost all companies genuinely attempt to meet this expectation. However, their ability to meet and go beyond the obligation will be influenced by commercial imperatives. On the positive side, the threat to company reputation, liability and financial damage will be incentive enough to encourage good performance. Many companies enhance or pre-empt regulatory action by developing industry standards. While they are voluntary they arguably create a minimum expectation for the purpose of tort law. They are already well aware of the apparent and invisible costs of an accident and this calculation alone is sufficient in many cases to ensure that a company recognises that good environmental performance is good business. However, there are occasions when a company may feel financially challenged by the demands of achieving good performance and may be tempted to relax its standards. There is a natural balance between the pressures of regulation and the various forms of financial imperative, which shape a company's actual performance.

Within each company, actual performance will be governed by its internal Culture and Cost factors. Establishing a good, environmentally sympathetic culture at Board and Senior Management level will do most to encourage a good culture elsewhere in an organisation. Such a Culture is fundamental to achieving good performance.

In addition, there are three key "mechanical" elements required to control good performance within the culture. These are: a management system; operator/crew competence; and good policies and standards governing containment integrity and the additional measures to prevent spills from causing harm if primary containment is breached.

It is important for us to recognise that the general public and the users of industry products have a part to play in the process of prevention. This is an issue about awareness, involvement, consultation and culture. The public need to recognise that they are Stakeholders in this process. There is a need to ensure that the public are aware of the impact of damage to the environment and to be aware of the precautions that may be taken to minimise this impact. This should be aimed at encouraging them to take responsibility for the impact of what they do. There is a need to involve the

⁵ www.fosoil.com/pollution

public in what industry and government are doing to prevent pollution and to consult with the public on aspects which may affect them directly. In this way it may be expected that there will be a better understanding of what has been done and what more needs to be done. The processes of involvement, consultation and making the public more aware of environmental issues may be expected to secure their better understanding of industry and government achievements and influence their culture so that they contribute more directly to the process of prevention.

The following possible options are offered for the attendees to consider whilst debating a preferred definition for Prevention in the first Plenary Session:

- “The Balance between The regulatory requirements to prevent loss / cause damage to the environment and the Commercial Imperatives for Company Financial Performance”.
- “To make impossible all oil discharges”
- “To make impossible all oil discharges that are of such a size and type that they may cause damage to the environment”.
- “To provide effective management of the release of all significant discharges of oil to land and sea”.

There are also several questions to be answered as follows:

Q 1 A) Relative to the other issues that government may address (ie health, economic development, political unrest etc), how should spill prevention or the environment in general be ranked?

Q 1 B) How important should prevention be when conducting E & P.

Q 1 C) What are the commercial imperatives?

Q 1 D) What are the costs of an incident – apparent and invisible?

Q 1 E) What are the good commercial arguments for avoiding loss?

Q 1 F) How do we involve the public and get public recognition that they are Stakeholders and have a responsibility in the process and achievement of Prevention.

Q 1 G) How do we communicate the messages which are aimed at influencing public attitudes and culture.

Q 1 H) how important is it to government or the public to know that a spill or environmental damage is not going to occur?

6.1.2 What Has Been Done and What More Can Reasonably be Achieved

The industry has achieved a great deal by improving standards of general Health, Safety and Environmental performance over the past fifteen years. Much of what has been done to improve safety performance can be equally valuable in improving environmental performance. Where major incidents have occurred, these have given

rise to new legislation, distinct improvements in design and /or operational procedures and practices.

The historical information in section 4 shows how the industry has progressed by improving its understanding of the impact of oil spills and the importance, therefore, of prevention. A great deal of effort has been put into improving ship design, operational procedures, crew training and competency. Emphasis has been placed on ensuring cooperation in the event of an incident with the purpose of minimising the impact of an incident. Onshore and offshore refineries, terminals, drilling, and production facilities have also been subject to similar improvements over the same period. International, regional and country-specific legislation has been developed to govern improvement and companies have worked hard to improve operating culture to complement this government direction.

However, we should not allow these achievements to make us complacent and we are all aware of the occasional significant incident that reminds us that there is still room for further improvement.

In this Workshop we need to identify those areas where improvement is desirable and where perhaps recent events identify remaining failures in our industry's performance. We should also be conscious of the need to consider the possible future requirements that may occur because of the changing circumstances in our industry. We should ask ourselves, in the light of declining profitability in particular locations (e.g. the UK North Sea) whether such circumstances are likely to reduce the affordability of comprehensive maintenance programmes and whether this may give rise, in time, to an increased vulnerability to a loss of integrity in facilities.

We should ask ourselves whether the steps being taken to improve ship operator performance, vessel condition monitoring and crew competency are likely to give improvements in large and small ship operators alike.

Q 2 A) What new Preventative Standards are needed in each of the industry headings listed above?

Q 2 B) What must be done to better control Product User performance and Public performance?

Q 2 C) What were the prime causes of past incidents – Do these identify the basis for prevention?

Q 2 D) Has Industry (and Government) learnt from past events – are the mechanisms in place adequate for the associated Knowledge Transfer?

Q 2 E) How can prevention programmes be developed in such a way as to encourage innovative approaches, better use of technology, “out of the box thinking”?

6.1.3 What are the Roles and Responsibilities of Industry and Government and what forms of cooperation will best enhance the achievement of Prevention?

Government defines both goal-setting (performance based) and prescriptive legislation in order to regulate the performance of industry and the public. There is an expectation that Government will do this in the interests of a scientific need and also to discharge its commitment to social responsibility. There is an ongoing debate about the effectiveness of these two forms of legislation and the extent to which a goal setting approach depends upon the commitment and ability of Industry to perform and be to some extent, self regulating. The criticism of prescriptive legislation is that it can never satisfy all the likely circumstances and in consequence of the attempt to be all embracing usually becomes too restrictive. While the criticism of performance based legislation is that it offers no specific guidance only an end goal for compliance. The unique nature of this legislation is difficult to implement.

Industry claims to have a social conscience and therefore might be expected to be capable of being self-regulating within a defined framework. However, many would argue that the occasional incidents of extremely poor performance demonstrate that this is not the case and that it cannot be trusted to deliver when Commercial Imperatives motivate operational “short cuts”. Perhaps one of the issues is the ability of Oil Operating Companies to manage the quality of the performance of those that contract to it for services, engineering and transport.

It is clear that Government takes the lead in defining what is required in terms of the performance needed to prevent pollution. This definition may take the form of a Goal Setting Framework or it may be Prescriptive and be designed to meet specific circumstances. It is for industry to take responsibility for delivering the required performance level within these defined requirements.

It is easy to conclude that good legislation coupled with good and responsible industry performance is the ideal, but ‘naive’ to expect that this will always be achieved. Even in the best of circumstances, something may still go wrong. It is therefore suggested that there is a high value to be derived from developing and maintaining good Government / Industry Relationships where the right degree of understanding and cooperation will contribute to the best collective performance.

Q 3 A) Define the Roles and Responsibilities of Government and Industry?

Q 3 B) What are the elements of good Regulation?

Q 3 C) What is the correct mix of prescriptive versus performance based regulation?

Q 3 D) Does industry carry the prime responsibility for delivering the act of prevention?

Q 3 E) How does Social Responsibility influence Government and Industry.

Q 3 F) How does the Media influence what Governments and industry do?

Q 3 G) What is the impact of large company consolidations (mergers) on prevention efforts?

Q 3 H) How much responsibility belongs to industry as a producer and how much belongs to the users.

Q 3 I) How can a nation instill value in prevention efforts(to industry or the public)?

Q 3 J) How can prevention standards of one nation be applied to another sovereign state?

Q 3 K) Should all nations accept the responsibility for encouraging prevention- can all nations afford the cost involved?

Q 3 L) Should all product users accept the responsibility of spill prevention.

6.1.4 How should Incentives and Penalties be utilised?

There is no doubt that the threat of substantial penalty for causing pollution concentrates the minds of those responsible for operations. The threat of liability and damage to Reputation concentrates the minds of those at Board level. Incentives to perform may work effectively within an organisation where crew, staff and managers may be encouraged to perform by the prospect of an associated good performance payment. This may also be applied in a design contractor sense, but more difficult to measure and apply successful plant or ship performance retrospectively. The penalties and incentives should encourage better design and operation of plant and equipment to prevent spills.

Accidents are often attributed to human error and so it is not surprising that there is a growing emphasis on the principle of “Prevention through People”. This relies on appropriate training and the ability to influence management and staff attitude and culture to be sympathetic to the value of prevention. Achieving these goals depends on the ability of government and industry to manage the Human Factors involved.

Since the Oil Pollution Act of 1990, the US Environmental Protection Agency has been actively using well-publicized civil penalties and criminal fines to deter potential oil spills. In its most recent large case, the United States received \$34 million dollars in a civil settlement with a major oil pipeline company that had a number of significant spills. The object of deterrence is to improve the conduct of the entire regulated community, and not just the defendant in a particular case. Deterrent effect is magnified by large well-publicized enforcement cases, as well as by repeated, locally intensive enforcement initiatives. These approaches work by creating the impression of an enforcement presence beyond its actual size. A key concept in EPA’s civil penalty enforcement programs is the imposition of a penalty that is higher than the economic benefit the violator received by properly preventing an oil spill (or by properly investing in spill prevention measures).

Q 4 A) Outline available forms of incentive and penalties.

Q 4 B) Record best use of incentives and penalties.

Q 4 C) Do commercial imperatives act as sufficient incentive?

Q 4 D) How can prevention be initiated, encouraged and sustained by:-

- *Punative or Regulatory action?*
- *Proactive Vs Reactive System?*
- *A Damage and Penalty oriented system Vs an Incentive based System?*

6.2 Further Issues to Consider

The following general issues and questions should be born in mind as the topics are debated:

6.2.1 What affects small versus large company performance? – Is there really a difference that is driven by the profitability of the company? How can we assist small business with performance?

6.2.2 How is good culture achieved/maintained and has enough been done to address the human factor aspects of this topic?

6.2.3 How do the incident /loss performances of various elements of the oil industry compare?

6.2.4 What can the good performing elements teach those that perform less well?

6.2.5 How does this performance comparison look expressed in terms of risk?

6.2.6 Which matters most risk or consequence?

6.2.7 What constitutes an effective management system?

6.2.8 What are the requirements of achieving competence?

6.2.9 What is involved in obtaining and maintaining containment integrity?

6.2.10 Which prevention measures are appropriate in the event that primary container integrity is breached?

7 Workshop Conduct

It is hoped that all participants in the Workshop will enjoy the experience and gain from the debate. We hope that all will contribute to the success of the proceedings by offering constructive input and generous listening.

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