

# **Offshore Oil and Gas in the UK**

- **an independent review of the regulatory regime**

**December 2011**

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## **FOREWORD**

I was asked earlier this year to chair a Review Panel, the purpose of which was to consider findings from official reports which had been published - and were continuing to emerge - into the circumstances surrounding the tragic accident which befell Transocean's Deepwater Horizon rig in the process of drilling BP's Macondo well in April 2010. The rig had been drilling a deep water prospect in Mississippi Canyon Block 252 in the Gulf of Mexico when well control was lost, leading to explosions which ultimately cost 11 lives and precipitated one of the worst oil spills in US history.

The principal role of the Review Panel exercise was to examine the recommendations which emerged from these various reports, to consider their relevance to the oil and gas industry in the UK and review the extent to which they might inform modification or improvement of the regulatory regime in this country. The Panel comprised three independent appointees, including myself, all with an element of experience and knowledge relevant to the industry, alongside a senior representative of each of the three national regulatory bodies with responsibilities for the offshore oil & gas sector, namely: the Department of Energy and Climate Change (DECC), the Health and Safety Executive (HSE) and the Maritime and Coastguard Agency (MCA).

In considering the consequences of the Macondo accident for the UK regulatory regime, the Panel were mindful of some significant differences between the United Kingdom Continental Shelf (UKCS) and the Gulf of Mexico - both in the physical environment concerning weather, climate and normal sea state, and the nature of the regulatory regime, where a goal-setting approach plays a major role in the UK compared to a largely prescriptive US approach. To identify the issues that the Panel needed to address in the UK context, a 'gap analysis' was carried out on the findings and recommendations of five official reports on the Macondo incident and one on the closely related Montara incident in Australia (see Appendices E-G). As well as examining the implications of the Macondo recommendations, the Panel took the opportunity to consult a wide range of interested parties to take their views on the efficacy of the UK regime. Receipt of written comments was supplemented by a series of stakeholder interviews conducted by myself

and other independent panel members. The Panel is grateful to all those organisations and individuals who wrote to us and found the time to hold valuable discussions.

The consultation process indicated that both the UKCS operators and the regulators have already taken significant steps in response to the lessons emerging from the Macondo incident. It also highlighted a number of additional issues and themes, many of which reflected the different environment in which the oil and gas industry operates in the UK. This report gives the Panel's observations and recommendations around all the issues where, in its judgment, there is scope for achieving improvement in the current regime and further reducing the risk of major accidents and consequential environmental damage. The Panel paid particular attention to implementation assurance processes and regulators' resourcing issues as both can significantly impact the overall effectiveness of the offshore regime.

In the latter stages of finalising our report, the European Union published draft proposals for a regulatory initiative across the EU. The Panel notes that many of these proposals resonate with the findings and recommendations of this report. Readers should bear in mind that although several official reports on Macondo have been published by a range of US authorities, investigations are ongoing and further findings may yet emerge from which valuable lessons might be learned. It is vitally important that regulators and industry alike continue to analyse evidence as it becomes available and carefully consider its relevance to the UK environment. Indeed, in the spirit of continuous improvement, the process initiated by this report should be continued indefinitely as future enhancements are suggested by operational experiences and technology developments.

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## **EXECUTIVE SUMMARY**

### **Overarching Observations and Recommendations**

The exploitation of offshore hydrocarbon resources in often hostile environments is, by its very nature, a hazardous activity with the potential to cost lives and cause environmental damage. In a society which values the economic and social benefits of the product of that activity, it will fall to the industry and the regulatory authorities to ensure an acceptable balance between the risks and rewards it presents.

From its analysis of the existing UK framework and the information it gleaned from its discussion with those directly involved in the sector from both an operational and regulatory perspective, the Review Panel was reassured that the UK regime already incorporates a number of positive, key features which were not present in the US at the time of the Macondo incident. At a high level, the Panel notes and commends in particular:

- the UK's "goal-setting" safety regime and its ability to foster innovation and continuous improvement in process integrity,
- the strength of the mechanisms in place for independent, third party verification in the crucial areas of well design and integrity of safety critical equipment,
- the rigour with which the potential environmental impacts of the industry are examined and of the controls and procedures in place to mitigate them,
- the detailed and comprehensive emergency response framework which exists for managing the consequences of incidents should they occur,
- the high regard in which the UK authorities, in the form of DECC, HSE and MCA, are held both by UK operators and international observers,

- the fact that the events in the Gulf of Mexico have clearly acted as a catalyst for UK operators, working in concert with the regulators and other stakeholders, to redouble their efforts to improve safety and to strengthen response capabilities.

Clearly, however, it must be recognised that no system is perfect - that there can be no room for complacency or a belief that improvement is unattainable. This is particularly the case in a sector which is so often pushing the boundaries of the possible in the quest to exploit ever more inaccessible resources. The Review Panel makes the following broad observations in relation to the scope for improving the effectiveness of the regulatory regime:

- Although the Panel views the UK safety-case system as, on the whole, robust and effective at identifying risks and appropriate measures for mitigation and response, it has some concerns about the processes for confidently assuring that these plans are reliably and effectively implemented.
- Much of the UK offshore environmental regulation regime is concerned with preventing or minimising any leakage of hydrocarbons during normal operations, and is strongly governed by EU regulation in this area. Consequently it is relatively prescriptive compared to the safety regime, with less scope or encouragement for operator initiatives to innovate or be pro-active.
- Offshore regulation is spread over three authorities: HSE (safety), DECC (environment compliance and leak containment) and MCA (clean-up at sea). The framework is more complex than for onshore oil and gas production, where HSE and the Environment Agency form a single Joint Competent Authority. Additionally, in the event of a major oil spill, there is some clarification required as to exactly how responsibilities dovetail during Emergency Response operations.
- There has not been a major drilling-related incident on the UKCS of the scale or consequence of the Macondo incident. However there have been incidents requiring closure of blowout preventers, as a result of failures in the other risk control

mechanisms. It is not clear that the lessons from such incidents were always as widely or rapidly communicated and implemented as they should be.

- Although it is clear that in the UK the licensees are ‘jointly and severally liable’ for any environmental and economic consequences of an offshore oil and gas leak, some of the US concerns about the extent of that financial liability, the scope of responsibility and the ability of responsible parties to pay, apply also in the UK.
- At the time it occurred, technical solutions rapidly to stop an uncontrolled well release of the sort experienced at Macondo were no more available on the UKCS than in the Gulf of Mexico. Advances in capping technology and their availability on the UKCS are welcomed, but capping and containment of free-flowing deepwater wells and the development of fail-safe flow barriers remain key technology challenges for the industry.

Consequently the Review Panel has identified six main areas where key improvements should be made in the UK regulatory regime:

1. **Assured implementation of safety and environmental management systems.** Regardless of how sophisticated and robust the systems for control and management of risk, their success requires the provision of positive assurance that they are properly implemented and remain effective.
2. **Improvements in the learning culture and processes for spreading best practice.** Where incidents are potentially high in impact but occur very infrequently, it is particularly important to extract and promulgate, quickly and comprehensively, valuable learning to prevent a recurrence with more severe consequences.
3. **A more integrated regulatory system.** Given the intrinsic link between the safety of those employed on offshore installations, the protection of the physical environment in which they operate, and the management systems in place to control these risks, closer collaboration between relevant regulators is likely to contribute to a strengthened and more efficient regime.

4. **A clearer command and control structure in the event of a spill.** Efforts to mitigate the impacts of a serious oil spill incident are heavily dependent on a strategic and co-ordinated approach, with absolute clarity over roles, responsibilities and expectations.
5. **Robust arrangements to ensure operators' level of liability and ability to pay in the event of a spill.** The licensees are fully responsible for meeting the costs arising from the impact of any incidents and so both the scope of their financial responsibilities and their ability to meet them should be clearly and unambiguously defined.
6. **Intensified R&D to develop improved avoidance, capping, containment, clean-up and impact monitoring of major offshore oil spill incidents.** Innovation has clearly been key to the industry's ability to exploit hydrocarbon resources in a range of increasingly challenging environments, and it ought to be applied with similar vigour to develop tools and strategies to assure safety and protect those environments.

The following Chapters give a detailed commentary on these and other issues emerging from the Macondo incident, identifying relevant new or re-invigorated initiatives that have already been taken to address them in part (which we strongly commend and endorse), and giving recommendations for further action that we consider is required to improve the effectiveness of the UK offshore oil and gas regulatory system. A full list of the Panel's recommendations can be found in Chapter 12.

# **CHAPTER 1**

## **WELL PLANNING AND CONTROL**

### **Introduction**

The Review Panel noted that several of the available reports investigating the Macondo blowout highlighted weaknesses in well planning, well design and well control. These aspects are among the central contributory causes of the incident. Particular recommendations are contained in the US National Commission Report to the President<sup>1</sup> (the Presidential Report). The Department of Energy and Climate Change Select Committee Report<sup>2</sup> also has content relevant to well planning and control.

Some of the important recommendations to emerge were as follows:

- There should be developed a proactive, risk-based performance approach similar to the “safety case” system applied on the UKCS.<sup>3</sup>
- There ought to be a requirement that wells be designed to mitigate integrity risks during post-blowout containment efforts.<sup>3</sup>
- Critical components should be required to be equipped with sensors to provide accurate diagnostic information.<sup>3</sup>
- The case for prescribing a second set of blind shear rams on blowout preventers should be examined.<sup>4</sup>
- There should be a strengthening of the processes which provide assurance that simple failures, such as faulty batteries, do not occur.<sup>4</sup>

### **Review Panel Considerations:**

#### **Response to date by Industry and Regulators**

The Review Panel noted that, soon after the Macondo incident, a key response in the UK was the establishment of the Oil Spill Prevention and Response Advisory Group (OSPRAG). This forum, set up for a limited period to address immediate issues, acted as a focus for the

review of UK practices, factoring in emerging intelligence from investigations into Macondo. OSPRAG was formed as a tri-partite body composed of senior representatives drawn from industry, relevant regulatory authorities and trades unions. Working to a formal remit and priorities<sup>5</sup>, OSPRAG directed and supported four sub-groups, one of which (the Technical Review Group) focussed heavily on well design, control and containment issues. OSPRAG issued two interim reports on its work and published its final report in September 2011.<sup>6</sup>

The Review Panel notes HSE's and DECC's close involvement in OSPRAG, with senior representatives from both being part of the main group and regulatory specialists sitting on relevant sub-groups. This provided an important opportunity for the regulators further to influence the industry's response to Macondo. As regards wells issues, an HSE Wells Principal Specialist Inspector served on the OSPRAG Technical Review sub-group.

Although OSPRAG was a temporary 'task and finish' group, the Review Panel welcomes and supports the OSPRAG initiative to establish a new, permanent, cross-industry group, the Well Life Cycle Practices Forum (WLCPF), the structure and aims of which are as follows<sup>6</sup>:

*"The WLCPF was constituted as an Oil & Gas UK forum and held its inaugural meeting on 10 December 2010. Membership of the forum is open to those member companies of Oil & Gas UK responsible for the well design, well construction and well management, and intervention operations. In spring 2011, the WLCPF included individuals, typically drilling and wells managers, from 29 operators and four well management companies. This may increase as Oil & Gas UK extends its membership.*

*The remit of the WLCPF is to provide a permanent forum in which well-related pan industry issues can be discussed, with the structure and means to form working groups to tackle these issues. The activities of the WLCPF include:*

- *Identifying and implementing areas for cross organisation co-operation when implementing the OSPRAG-Technical Review Group's recommendations.*
- *Identifying, implementing and maintaining industry best practice, guidelines and standards applicable to UKCS well design, well construction and well management, and intervention operations.*

- *Providing industry regulators and stakeholders with a forum to discuss cross industry issues that are relevant to enhancing health, safety and environmental excellence.”<sup>7</sup>*

This group brings together technical experience and expertise from across the industry to work closely with the HSE and other regulators. WLCPF has the capacity and brief to disseminate the lessons from Macondo (and other major incidents) in the form of standards and guidance on good practice in areas such as:

- blowout preventer (BOP) issues
- well examination schemes
- verification schemes for safety critical elements
- competency, behaviours and human factors
- relief well planning requirements
- well life cycle integrity guidance

The Panel also considered<sup>8</sup> work done post-Macondo independent of OSPRAG. The Panel heard<sup>9, 10</sup> that HSE and DECC have significantly increased their scrutiny of well control issues. This includes a more systematic collection of information from offshore inspections for consideration by DECC and HSE Specialists.

HSE established an internal review group to examine recommendations from authoritative reports from key US investigations as they emerge and has, to date, undertaken a number of new initiatives designed to improve the assurance that risks from wells are being properly controlled, including:

- Extending coverage of the inspection of wells operations.
- Developing an inspection tool to test operator’s written schemes of verification for well control equipment.

- The development of regulatory expectations for effective blowout preventer equipment integrity management systems and structured inspections to test compliance.
- Challenging industry to demonstrate the effectiveness of a floating installation's ability to move-away from a well centre as a mitigation measure after an incident involving a major or significant release of hydrocarbons, such as an uncontrolled blowout.

In the work it has done after Macondo, HSE has formed a view that current industry guidance (API RP 53)<sup>11</sup> fails adequately to address some of the difficult-to-test functions connected with blowout preventer equipment.

*“There are technical challenges in testing blowout prevention equipment (BOPE) functions with the result that some functions are not always tested, for example autoshear; deadman (loss of power and / or communications); and emergency disconnect. The current industry guidance (API RP 53) on BOPE testing does not address the testing of these functions.”*<sup>12</sup>

HSE also noted that maintenance assurance routines are not always sufficiently robust to detect and remedy potential for single line component failure. Its review observed on a trend toward increased complexity in blowout preventer control systems, with more reliance on software based systems. These introduce challenges to both initial and in-service integrity management.

From this HSE identified a requirement to challenge the robustness of blowout preventer equipment maintenance and test regimes. It has actively encouraged the industry to supplement the limited requirements of API RP 53. HSE also formally requested the Well Life Cycle Practices Forum to address specific concerns arising from the Deepwater Horizon incident. These included whether and, if so, when BOP's should have two blind shear rams, generic training and competency issues and the provision of industry guidelines. The Forum welcomed this challenge, which along with the OSPRAG recommendations, gives an initial focus for its work. HSE intends to communicate its own expectations which will include requirements for:

- manufacturers to provide adequate instructions for inspection, maintenance and test of well control equipment, based on a structured engineering approach, such as Failure Mode and Effects Analysis (FMEA) to identify single line components and explain how to inspect, maintain and test parts provided for redundancy and diversity of the blowout preventer control systems,
- a periodic review by the users of the effectiveness of their maintenance activities in the light of practical experience from the 'as found condition' and the number and nature of any failed BOP tests,
- ensuring that the acceptance criteria defined by maintenance routines for safety critical elements reflect their relevant verification performance standard,
- reporting of failures of safety critical elements and blowout preventers to operate on demand, in the form of key performance indicators for the attention of senior managers and the verifier's Independent Competent Person.

### **Observations and Recommendations**

It is the Review Panel's view that the requirement for independent verification of well planning and design is a particular strength of the UK regime and the Panel welcomes the establishment of the Well Life Cycle Practices Forum as a vehicle for identifying and promulgating best practice in this area.

On the specific issue of whether there should be additional prescriptive standards (and more specifically two blind shear rams) the Panel believes that the key issue is that the system can be demonstrably relied upon to work on demand. Chapter 5 is devoted to ensuring that robust mechanisms for achieving such operational assurance are always in place.

The Panel's view is that specific decisions on the appropriate number of shear rams must be based on the risks presented by the particular circumstances at each well and the range of controls available to deal with them. This will be reflected in the well plan notified to the regulator. If the balance of the evidence suggests that one set of shear rams is adequate, and their operation can be assured, then one set would be sufficient. If there is uncertainty, then

the risk controls for the well should be re-considered as a whole, including the option to use more than one set of shear rams. Risk assessment should take into account that a BOP is a secondary means of controlling a well, usually relied upon *after* problems begin. The Panel believes priority should be given to ensuring the primary methods of well control are sufficiently robust to avoid circumstances that necessitate unplanned operation of the BOP. The decision to include more than one set of shear rams may be appropriate where risk assessment concludes that specific well and geological factors make the risk of failure of these primary methods unacceptably high.

Consequently, while the Panel does not propose further prescriptive requirements for the number of well control devices, it does affirm the critical importance of testing and maintenance to defined manufacturers' requirements as is proposed by HSE, and the subsequent monitoring of adherence to these by the operators of offshore installations.

The Review Panel considered there to be three fundamental goals in connection with the control of wells:

- That all wells be designed and their execution planned by competent professionals utilising all current knowledge and best practice to minimise any potential well control issues – and that independent, competent verification of this should be mandatory.
- That well control equipment be fit for purpose and be capable of being relied upon to operate when required.
- That well execution should be managed and monitored so as to assure that approved plans are followed.

## **Recommendation 1.1**

**To help achieve these goals, the Panel recommends that:**

- **The Well Life Cycle Practices Forum (WLCPF) remains in place permanently.**
- **Competent, authoritative representatives from industry and HSE meet regularly in the WLCPF to agree, review and continuously improve standards for good and best practice in well integrity and control for application in the UKCS.**
- **The standards take account of the Macondo blowout and encompass operating practices; adequacy and reliability of safety critical equipment (especially BOPs); hardware maintenance and testing; personnel training and competency; human and organisational factors.**
- **The standards are shared with international regulatory and industry partners and standard setting organisations.**

Examples of steps towards achieving these goals, some of which are being explored by HSE and are endorsed by the Panel, include:

- Adoption of structured engineering approaches and integrity management systems.
- Structured questionnaire inspection tools for safety critical equipment verification.

## **Recommendation 1.2**

**In the light of Macondo, Bardolino<sup>13</sup> and other examples provided to the Panel, it recommends that the WLCPF should also promptly consider:**

- **whether a change in well control standards is necessary to require at least two barriers to be in place (in addition to the BOP) when moving a well to an under-balanced situation with a producing zone open, and**

- **whether any change is necessary to require operators to give notice advising each time a situation is reached where the BOP plus one other barrier to a release is reached.**

The industry's regulators should continue their scrutiny of the effectiveness with which industry implements good well control practice, particularly when incidents happen. The Panel encourages the use of regulatory influence and powers to secure improvements where this is found necessary.

As is detailed in Chapter 5 dealing with Assured Implementation, any plan is only of value if it is implemented fully, competently and in a timely manner. Planning and drilling of a well and the consequent management of any well control issue, anticipated or not, is no different. In addition to the above recommendations, the Panel considers those in Chapter 5 to be critical if the stated goals are to be achieved.

## **NOTES**

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<sup>1</sup> USA. National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling. 2011. *Deep Water: The Gulf Oil Disaster and the Future of Offshore Drilling. Report to the President. January 2011*. First Edition. US Government Printing Office.

<sup>2</sup> UK. House of Commons. 2011. *UK Deepwater Drilling: Implications of the Gulf of Mexico Oil Spill (Second Report of Session 2010-11 - Volume I: Report, Together With Formal Minutes, Oral and Written Evidence)*. HM Stationery Office.

<sup>3</sup> USA. National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling. 2011. *Deep Water: The Gulf Oil Disaster and the Future of Offshore Drilling. Report to the President. January 2011*. First Edition. US Government Printing Office. p. 252, 275

<sup>4</sup> UK. House of Commons. 2011. *UK Deepwater Drilling: Implications of the Gulf of Mexico Oil Spill (Second Report of Session 2010-11 - Volume I: Report, Together With Formal Minutes, Oral and Written Evidence)*. HM Stationery Office. p. 15, 17

<sup>5</sup> Oil Spill Prevention and Response Advisory Group (OSPRAG). 2011. *Strengthening UK Prevention and Response: Final Report*. [ONLINE] Available at: <http://www.oilandgasuk.co.uk/cmsfiles/modules/publications/pdfs/EN022.pdf>. [Accessed 04 November 2011]. Page 6, Sections 1.2 and 1.3

<sup>6</sup> Oil Spill Prevention and Response Advisory Group (OSPRAG). 2011. *Strengthening UK Prevention and Response: Final Report*. [ONLINE] Available at: <http://www.oilandgasuk.co.uk/cmsfiles/modules/publications/pdfs/EN022.pdf>. [Accessed 04 November 2011].

<sup>7</sup> Oil Spill Prevention and Response Advisory Group (OSPRAG). 2011. *Strengthening UK Prevention and Response: Final Report*. [ONLINE] Available at: <http://www.oilandgasuk.co.uk/cmsfiles/modules/publications/pdfs/EN022.pdf>. [Accessed 04 November 2011]. Page 15, section 2.1.6

<sup>8</sup> UK. HEALTH & SAFETY EXECUTIVE, 2011. *Deepwater Horizon Incident Review Group: Interim Summary Report*. October 2011. Internal Report. [appended].

<sup>9</sup> KENNEDY Wendy DECC Director Offshore Environment and Decommissioning. 2011. *Interviews on 18<sup>th</sup> May and 6<sup>th</sup> June and 2011. Aberdeen, UK*. [Interview notes in records of Review Panel]

<sup>10</sup> WALKER Steve HSE Head of Offshore Division. 2011. *Interview on 16<sup>th</sup> June 2011. Aberdeen, UK*. [Interview notes in records of Review Panel]

<sup>11</sup> AMERICAN PETROLEUM INSTITUTE. 2004. *Recommended Practices For Blowout Prevention Equipment Systems For Drilling Wells*. Edition 3. American Petroleum Institute.

<sup>12</sup> UK. HEALTH & SAFETY EXECUTIVE, 2011. *Deepwater Horizon Incident Review Group: Interim Summary Report*. October 2011. Internal Report. [appended]

<sup>13</sup> BOP activation on 23/12/2001 at well 22/13a-8 (Bardolino), drilled from the Transocean Sedco 711 exploration rig for Shell. Notified to HSE under regulatory requirements to report a dangerous occurrence. [Refer also in this report to Chapter 4 – Learning from Incident Experience and Best Practice]

## **CHAPTER 2**

### **ENVIRONMENTAL PROTECTION**

#### **Introduction**

The Panel noted that the Salazar Report, the Outer Continental Shelf Safety Oversight Board, the US National Commission on the BP Deepwater Horizon Oil Spill and the UK Energy Select Committee all made recommendations in relation to the relevant environmental regulatory regimes.

In particular, the reports highlighted the requirement for:

- A robust environmental management system;
- Separation of environmental consideration from leasing and development to ensure environmental concerns are given appropriate weight and consideration;
- Inspection Programmes with appropriate support for front-line inspectors;
- Comprehensive Oil Pollution Emergency Plans which are relevant to the specific project, a plan for the worst case scenario and detailing the response to that scenario;
- Transparency of information relating to environmental issues.

#### **Review Panel Considerations:**

The aim of the Panel in considering the issue of environmental assessment was to ensure that appropriate measures were in place to protect the marine environment and to ensure that the environmental impact of oil and gas activities is properly assessed and minimised.

The Panel noted the information submitted to the Energy Select Committee by DECC<sup>14</sup>, which explained the environmental process in the UK and also took into consideration DECC's submission to the Review Panel<sup>15</sup>, which provided further information about its environmental procedures and the changes that had been implemented since the Deepwater Horizon oil spill. In particular, it was noted that:

- There is a divide between licensing and the environment in that they are managed within separate Units of DECC. Strong environmental legislation ensures that environmental

considerations take priority over licensing and development. DECC derives no benefit from licence revenue, which goes directly to the Treasury, and there are no targets in relation to licensing income;

- Prior to any licensing round taking place, a Strategic Environmental Assessment (SEA) is carried out by DECC. The SEA process informs licensing decisions by considering the environmental implications of potential offshore oil and gas activities that could result from implementation of the licensing programme. Where appropriate, blocks are withheld from the licensing round;
- There is a comprehensive framework of environmental legislation designed to cover all aspects of oil and gas activity over the whole life cycle;
- Oil Pollution Emergency Plans (OPEPs), that are required for all drilling activity, must (post-Macondo) consider the worst case scenario of an uncontrolled well blowout and the response must be developed accordingly; all existing OPEPs have been updated in line with these requirements;
- The number of offshore environmental inspectors is in the process of being increased from 7 pre-Macondo to 19 post-Macondo<sup>16</sup> to allow a greater number of inspections to drilling rigs and greater assurance that operators are doing what they say they will do;
- Detailed supplementary guidance has been sent to Operators advising of changes to the requirements since Macondo<sup>17</sup>;
- It is explicit in DECC guidance that operators must have an Environmental Management System (EMS) which incorporates mechanisms designed both to meet the environmental goals established as requirements of the OSPAR Offshore Strategy and to achieve continual improvement in environmental performance.<sup>18</sup>

## **Environmental Impact Assessments**

The Panel noted that the UK regime was constrained by EU Directives and international obligations under OSPAR and/or MARPOL.<sup>19</sup> European Union policy on the environment is based on the precautionary principle and on the principle that preventive action should be taken to protect the environment.<sup>20</sup>

Natural England, the Countryside Council for Wales (CCW)<sup>21</sup> and the Joint Nature Conservation Committee (JNCC)<sup>22</sup> advised that they were happy that the existing regulatory framework is fit for purpose, and that it allows new environmental issues and requirements to

be given appropriate weight when considering an application for new Oil and Gas or Carbon Capture & Storage activities or when responding to a major oil pollution event.<sup>23</sup> However, JNCC and CCW also made the point that access to accurate and up to date information about the environment is critical in both planning for and responding to pollution incidents – and, in particular, concerns were raised about the understanding of seabird abundance and distribution at sea.

As part of their considerations of enhancements to oil spill response procedures, OSPRAG looked at the validation of existing data on the location of seabirds at sea and their vulnerability to potential oil spills. Discussions were held with JNCC to determine the best approach to validate or update the data, and OSPRAG recommended that a detailed proposal be developed to address this issue. OGUK's Environmental Directorate will prepare this for consideration by the Oil Spill Response Forum by the end of 2012.<sup>24</sup>

A paper from the Whale and Dolphin Conservation Society acknowledges that there have been significant changes in environmental legislation since the early 1980s, but expresses the view that there is still work to be done to achieve a real and sustainable change in Government thinking and to ensure that environmental protection is deeply embedded in all levels of decision making.<sup>25</sup>

Industry representatives advised the panel that the environmental regime was comprehensive, but believed that it was overly complex and could be more efficient than at present. They considered that some of the administrative burden is disproportionate to the environmental risk, particularly in the area of production operations.<sup>26</sup> It was also noted that, post-Macondo, it was taking longer for permits to be issued due to the regulator's additional requirements, such as the consideration of how long it would take to drill a relief well and ensuring that the Macondo lessons have been taken on board.<sup>27</sup>

OGUK considered that there was significant duplication of information in the environmental permitting processes, and some operators of oil and gas producing installations felt they were best placed to manage risk, minimise environmental impacts, and manage environmental performance, with the minimum of regulatory control.<sup>28</sup> In particular OGUK and Chevron referred to the concept of an Environmental Assurance Plan (EAP). The EAP is in its early stages of development and OGUK are currently seeking consensus of this concept across

their membership. However, it is envisaged that the EAP would operate in a similar way to the Safety Case for HSE. Each EAP could contain baseline performance, targets and standards and could be a powerful tool for taking a holistic, installation or asset level approach to environmental performance, assessment and continual improvement.

In addressing these issues, DECC advised the Panel that under the requirements of EU Directive 85/337<sup>29</sup>, before a consent is given, projects likely to have significant impacts on the environment must be subject to an assessment with regard to their potential environmental effects. The environmental impact assessment must identify, describe and assess in an appropriate manner the direct and indirect effects of a project on human beings, fauna and flora, soil, water, air, climate, the landscape, material assets, cultural heritage and the interaction between these factors.

DECC further advised that the Environmental Statement (ES) for any proposed project is a standalone document to satisfy the obligations as required under the Offshore Environmental Impact Assessment (EIA) Regulations and the EIA Directive and, as it must assess the effects of the project on the environment, it cannot be exclusively a goal-setting or risk-based approach. However, the ES does include environmental commitments and, once a project has been consented, it could form the basis of a live document, to be updated during various phases of the project<sup>30</sup> (i.e. from field development phase to production phase and to decommissioning phase). This approach would allow the ES to be updated with additional environmental information and it could be used to assess performance against the environmental protection goals and to assess the risk elements associated with the relevant phase of the project, making it more like the EAP concept. However, this would require changes to the way such documents are prepared and used because current industry practice is to contract out environmental submissions, and the ES is not consequently used as a living document.<sup>31</sup>

As detailed in DECC's submission<sup>31</sup> to the Energy Select Committee, all licensed operators on the UKCS must additionally have an independently verified Environmental Management System (EMS)<sup>32</sup>, which is designed to achieve the prevention and elimination of pollution from offshore sources and to deliver and manage compliance with environmental laws and regulations on an ongoing basis. The requirements include the auditing and reporting of environmental performance, and it is by necessity a "living" document that could

accommodate a goal setting and risk based approach. It does not negate the requirement for an environmental impact assessment, but could be more closely aligned to the ES to develop the EAP concept.

With regard to reducing the administrative burden, DECC advised that it planned to extend the use of the Oil and Gas Portal. The Portal allows applications for a limited number of Directions/Permits to be made electronically. In the future it is intended that an application for an EIA Direction and Chemical Permit would also facilitate options to upload other relevant applications for the operation, which would reduce the duplication of administrative and environmental information.

Overall the Panel was impressed by the depth of analysis and scrutiny which the regulator applied in considering and ultimately approving key environmental assessments. However, it believes that there is scope for initiatives to consider the way such documents are constructed, reviewed and used. Whilst the Panel appreciates that Environmental Statements need to have a well-defined format, as required by UK and EU legislation, it did see evidence to support the operators' view: that the current processes are time-consuming; that operators are unconvinced of the value of the depth of the detailed assessment required; that the process does little to demonstrate this value; and that consequently this does not encourage operators/service companies to be positively engaged in commissioning and implementing new or improved environmental approaches.

Conversely, the regulator's view is that any natural habitat that could potentially be impacted by oil & gas activity needs to be properly identified and assessed to ensure that any environmental impact is minimised. Existing systems such as the ES/EMS could be used to develop the EAP concept, but the operators' propensity to contract out environmental work makes their "ownership" of them as living documents difficult to maintain. The Panel believes that there is an opportunity for all to benefit if the current requirements could be amalgamated into an operator "owned" ES/EMS, with a requirement that this is maintained and updated throughout the life of the project.

## **Recommendation 2.1**

**The Panel recommends that Industry and DECC should continue to work together to develop and adopt improvements such as:**

- **the EAP concept, possibly using the ES/EMS as living tools to engender a goal-setting approach to environmental regulation aimed at continuous improvement, particularly in relation to low-frequency, high-impact incidents.**
- **the identification and unified treatment of generic aspects of environmental assurance documents, to allow more effort to be devoted to other more specific or localised areas of potential impact and risk, through more extensive use of online systems, etc.**

Such approaches might unlock benefits yet remain consistent with the obligations imposed by international conventions.

## **Recommendation 2.2**

- **The Panel also challenges the industry to take greater ownership of existing environmental regulatory requirements, including review of contractual arrangements for preparing and updating the relevant documents, to make them into tools that drive improvements in environmental assessment and protection.**
- **The Panel recommends that the Regulator should continue to work with the industry to identify ways in which existing reporting requirements, especially regarding environmental compliance, might be simplified or rationalised, and that more might be done to demonstrate the need for, and consequent value of, the detailed environmental assessments required of them, with a view to providing increased scope for innovative approaches to the improvement of environmental standards.**

## **Oil Pollution Emergency Plans (OPEPs)**

The Panel welcomes the tightening of environmental procedures brought in by DECC following the Macondo incident and confirmation that, in relation to drilling operations, recently issued guidelines require operators to assess the potential impact of high-risk, low-frequency worst-case scenarios that must include an uncontrolled hydrocarbon release where all containment barriers have failed resulting in a blowout. It was noted that various changes to procedures have been put in place.<sup>33</sup>

### **Recommendation 2.3**

- **The Panel recommends that guidance documents relating to offshore environmental impact assessment, enforcement, regulatory activities, etc. should be regularly reviewed and revised, initially in the light of changes in procedures arising from Macondo and subsequently taking account of any other relevant incidents, to reinforce the UKCS continuous improvement culture and to ensure that operators are fully aware of current requirements and environmental best practice expectations.**

The Panel found no evidence to suggest that there was a culture of copying and pasting in the UK in relation to the production of OPEPs. DECC were clear that OPEPs must be site specific and cover the relevant activity being carried out. OPEPs that did not satisfy these requirements would not be approved. It was also noted that the approval of the OPEP takes account of any comments received from the MCA, the Joint Nature Conservation Committee and the Marine Management Organisation or Marine Scotland (as geographically appropriate) and that the OPEP is made available to the public on request.<sup>34</sup>

However, in their written submission, Greenpeace told the Panel that there should be:

- full transparency in relation to oil spill contingency arrangements and response plans;
- adequate oil spill modelling, including the worst scenario of a blowout, and
- proper consideration and analysis of the environmental impact

and that this should be in the public domain before a licence is issued.<sup>35</sup>

DECC advised the Panel that information on emergency planning can already be made available to the public on request.<sup>36</sup> In addition, the relevant offshore regulations for environmental impact assessments require public notice for all Environmental Statements (ESs), and these must include a detailed assessment of the potential environmental impact of a hydrocarbon release. Where a project requires an ES this document will underpin the information and response strategy detailed in the subsequent OPEP, but will also include additional details in relation to the mitigation measures in place to prevent a release. This public notice process, and notification of all other applications on the DECC oil and gas website<sup>37</sup>, allows anyone with an interest to participate in the consultation process.

OPEPs, on the other hand, are additional to the environmental impact assessments, and are operational response documents that set out the operator's arrangements for responding to incidents with the potential to cause marine pollution from oil and gas installations, seeking to prevent such pollution or minimise its impact. In the past, DECC has received very few requests for OPEPs. However, since Macondo, the number of requests has increased, particularly for activities proposed in deep water or areas to the west and north of Shetland. DECC maintains a full list of all submitted final drafts of OPEPs, and all approved OPEPs, on their oil and gas website<sup>38</sup>, and copies of either will be released upon request, subject to the necessary redactions of confidential information and personal data.

The Panel noted that the Environmental Statement process had previously been subject to independent review by an academic institution and that this had led to a number of improvements in the guidance.<sup>39</sup>

#### **Recommendation 2.4**

- **The Panel recommends that a selection of approved ESs and OPEPs, with a focus on high-risk wells, are periodically subjected to independent peer review by selected environmental experts (academics, independent consultants, members of the UK Environment Groups) to ensure that there can be continuing confidence that the identification and analysis of key issues is robust and evidence-grounded,**

**incorporating the best scientific/engineering practice, and that routine and unquestioned practice is challenged and lessons learned.**

Concerns were expressed to the Panel about the adequacy of the oil spill modelling included within OPEPs. These related to the time periods which the computer simulations cover, their ability to deal with deepwater releases and the extent to which they reflect seasonal weather variations.

DECC & MCA confirmed that modelling presented in an OPEP is used to provide an indication of the fate and potential area of impact e.g. where oil is likely to beach onshore and the time taken for this to occur under typical wind conditions. Where modelling is carried out over extended periods, the output will inevitably become less accurate. However, the main purpose of the modelling in the OPEP is to identify where oil could beach, and how quickly, to inform the proposed response strategy. In the event of an incident, the modelling becomes a management tool, and allows the most appropriate response strategy to be determined and implemented to provide early and effective intervention to mitigate the impact of the spill.

Modelling in the OPEP cannot accurately reflect the changing weather conditions that will occur during the course of the activity. For ongoing production activities, the modelling in the OPEP therefore uses annual recorded wind data, whereas for shorter duration activities such as drilling the modelling can use annual or relevant seasonal weather conditions. The latter should provide a more realistic picture of where oil could be transported by the prevailing conditions, but both approaches provide an indication of where and when any oil could come ashore. In the event of an incident, the modelling would be run using the weather conditions at the time of the incident to provide site-specific forecasts to inform the response. Existing operational models do not represent deepwater processes in detail but are likely to be adequate for the worst-case scenario (i.e. where all oil reaches the surface).

In order to establish generic benchmarks, OSPRAG initiated a review of oil spill modelling under several scenarios across the UKCS, including an uncontrolled release of hydrocarbons to the west of the Shetland Isles. Despite OSPRAG's recent disbanding, its Indemnity and Insurance Review Group (IIRG) is continuing in existence in order to complete the review of the outcomes from this exercise.<sup>40</sup> Other work in this area is being taken forward by the

newly constituted Oil Spill Response Forum (OSRF)<sup>41</sup>, the establishment of which is welcomed by the Panel.

### **Recommendation 2.5**

- **The Panel recommends that, where appropriate, DECC guidance for OPEPs should be updated to reflect the findings of OSPRAG’s oil-spill modelling review.**
- **The Panel recommends that OSRF explores and stimulates improved oil-spill modelling techniques both at surface and subsea.**

## **Oil-Spill Response to Minimise Environmental Impact**

### **Capping and Containment**

An important new contingency capability in the wake of Macondo has been the development and construction of a new generation of capping devices suitable for deployment for the current full range of subsea wells on the UKCS. These initiatives, led and funded by the industry, are to be commended as providing a powerful addition to the arsenal of mitigation measures in well blowout events. Key to their utility is, however, their reliability and the competence of those deploying them. The Panel considers that robust arrangements need to be put in place to cover the testing, reliable deployment and regulation of this new category of environment-critical devices.

### **Recommendation 2.6**

- **Given the wide diversity of circumstances and environments in which capping devices might be called upon, the Panel recommends regular testing of their deployment in a range of scenarios, including during the course of relevant offshore National Contingency Plan for Marine Pollution from Shipping and Offshore Installations (NCP) exercises (see Chapter 3).**

- **Because such devices are not part of an offshore installation, a mechanism needs to be developed to bring them under the jurisdiction of the regulatory regime.**
  
- **Given the need to ensure that any stand-by capping device will perform its key function, we recommend that the Regulators and Industry should agree requirements for:**
  - **their regular maintenance,**
  - **appropriate testing of their ability to operate on demand,**
  - **appropriate training for their deployment and operation,**
  - **verification that these activities have been properly conducted.**

### **Subsea Use of Dispersants**

DECC and the MCA advised the Panel that the use of chemical dispersants to enhance the natural process has proved to be effective for surface spills, providing that the oil is amenable to dispersant treatment. The UK already has a robust protocol for the licensing and control of use of oil treatment products. No product can be used if it does not pass a strict test of efficacy and no product can be used if, in combination with the oil present, it results in more toxicity to the marine ecosystem than the oil alone. Those protocols were developed with all UK stakeholders representing nature conservation and fisheries. The terms of use place limitations on where, when and in which circumstances they may be used, the objective being to achieve a net environmental benefit or a “least worst” outcome given the challenge of the incident. The environmental impact assessment carried out after the Sea Empress incident of 1996 concluded that there was no lasting impact to the environment<sup>42</sup> as a result of the dispersant used during that oil spill response operation (some 30-40% of spilt oil was assessed to have been dispersed using chemical dispersants).

The Panel were informed that the potential regulation of the use, and the environmental effects, of subsea application or injection of dispersants (an approach used during the Macondo incident) are currently being investigated by the Marine Management Organisation (who administer the testing and approval of products for the UK, and, where appropriate approve the use in English and Welsh waters), Marine Scotland (who, where appropriate, approve the use in Scottish waters), DECC (who would be the relevant licensing authority for

use in connection with oil and gas activities) and industry, through an OSRF workgroup. A study is also being undertaken by the Centre for Environment, Fisheries and Aquaculture Science (Cefas) on behalf of OSRF to identify the gaps in current knowledge and to determine how these might be addressed. This will take account of Gulf of Mexico monitoring activities and the outcome of the review will be taken into consideration in the development of regulators' policy and guidance.

The Panel recognised that the environmental consequences of subsea injection of dispersants during an oil release are not well characterised or understood. It commends the work being carried forward by OSPRAG/OSRF, the Marine Management Organisation, Marine Scotland and Cefas to improve this situation.

### **Recommendation 2.7**

- **The research and development relating to subsea application of dispersants should continue, to better understand the potential benefits of this approach for different water-depths and oil release flow-rates, compared to surface spraying or natural dispersion.**
- **The industry should define (through representative bodies such as the Oil Spill Response Forum) optimised dispersant systems and injection processes which give maximum benefits with low toxicity in accelerating dispersal and degradation to minimise the risks of oil reaching the shoreline or damaging bird and sea life.**
- **The regulatory bodies should develop subsea application guidelines for dispersant and injection process selection.**
- **There is a requirement for speedy clarification of the regulatory position and relevant competent authorities in relation to dispersant use in near-shore and offshore areas.**

## NOTES

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<sup>14</sup> UK. House of Commons. Energy & Climate Change Committee. 2011. UK Deepwater Drilling: Implications of the Gulf of Mexico Oil Spill. Written Evidence. *Memorandum submitted by the Department of Energy and Climate Change, Health & Safety Executive, and Maritime and Coastguard Agency* [ONLINE] Available at: <http://www.publications.parliament.uk/pa/cm201011/cmselect/cmenergy/450/450we10.htm>. [Accessed 23 November 2011].

<sup>15</sup> UK. DEPARTMENT OF ENERGY AND CLIMATE CHANGE, 2011. *Oil & Gas Regulatory Review. Consideration Of The Findings From Investigations Into The Deepwater Horizon Incident. Submission from the Department of Energy and Climate Change.* July 2011. Internal Report [appended]

<sup>16</sup> Seven pre-Macondo (6 inspectors & 1 senior inspector); 19 post Macondo (17 inspectors & 2 senior inspectors)

<sup>17</sup> UK. DEPARTMENT OF ENERGY AND CLIMATE CHANGE, 2011. Summary of DECC Letters to Industry. December 2010, July & September 2011. [appended]

<sup>18</sup> OSPAR Commission. 2003. *Strategies of the OSPAR Commission for the Protection of the Marine Environment of the North-East Atlantic. Part IV – Offshore Oil and Gas Industry* [ONLINE] Available at: [http://www.ospar.org/content/content.asp?menu=00120000000070\\_000000\\_000000#offshore](http://www.ospar.org/content/content.asp?menu=00120000000070_000000_000000#offshore). [Accessed 23 November 2011].

<sup>19</sup> MARPOL” is a contraction of “Marine Pollution” and refers to the International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. All ships flagged under countries that are signatories to the MARPOL convention are subject to its requirements, regardless of where they sail and member nations are responsible for vessels registered under their respective nationalities

<sup>20</sup> “Community policy on the environment shall aim at a high level of protection taking into account the diversity of situations in the various regions of the Community. It shall be based on the precautionary principle and on the principles that preventive action should be taken, that environmental damage should as a priority be rectified at source and that the polluter should pay” EUR-Lex - 12002E174 – EN. 2011. *European Union Treaty establishing the European Community (Nice consolidated version) - Part Three: Community policies - Title XIX: Environment - Article 174 - Article 130r - EC Treaty (Maastricht consolidated version)*. [ONLINE] Available at: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:12002E174:EN:HTML>. [Accessed 23 November 2011].

<sup>21</sup> COUNTRYSIDE COUNCIL FOR WALES. 2011. Letter to DECC. *Comments on the Regulatory Regime for the Offshore Oil and Gas Sector.* 24 June. [Written submission in records of Review Panel].

<sup>22</sup> JOINT NATURE CONSERVATION COMMITTEE. 2011. Email to DECC. *Gulf of Mexico Implications JNCC Response Document.* 10 June. [Written submission in records of Review Panel]

<sup>23</sup> NATURAL ENGLAND. 2011. Letter to DECC. *Comments for the Formal Review of UK Regulatory Approach to Oil & Gas Sector.* 22 June. [Written submission in records of Review Panel]

<sup>24</sup> Oil Spill Prevention and Response Advisory Group (OSPRAG). 2011. *Strengthening UK Prevention and Response: Final Report.* [ONLINE] Available at: <http://www.oilandgasuk.co.uk/cmsfiles/modules/publications/pdfs/EN022.pdf>. [Accessed 04 November 2011]. p.25

<sup>25</sup> GREEN, M., SIMMONDS, M. 2008. Riding the Waves – The Peaks and Troughs of an Environmental Campaign. *ECOS*. Vol 29. No 3/4. December 2008

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<sup>26</sup> SIRGO Eric (General Manager Upstream Europe), LEE Peter (Operational Excellence Manager). Representing Chevron. 2011. *Interview on 7<sup>th</sup> July 2011. Aberdeen, UK.* [Interview notes and written submission in records of Review Panel].

<sup>27</sup> WHITE Glenn – Rowan Drilling, CLYNE Neil - Transocean, ELLINS Martin – KCA Drilling. Representing members of the INTERNATIONAL ASSOCIATION OF DRILLING CONTRACTORS NORTH SEA CHAPTER. 2011. *Interview on 7<sup>th</sup> July 2011. Aberdeen, UK.* [Interview notes in records of Review Panel].

<sup>28</sup> ENDEAVOUR ENERGY UK LIMITED. 2011. Letter to DECC. *Regulatory Review.* 7 July. [Written submission in records of Review Panel]

<sup>29</sup> As amended by 97/11/EC and 2003.35/EC. [ONLINE] Available at: <http://ec.europa.eu/environment/eia/full-legal-text/85337.htm>

<sup>30</sup> If any significant changes occur (e.g. increase in production above certain criteria) then this may trigger a requirement for a new Environmental Statement.

<sup>31</sup> UK. DEPARTMENT OF ENERGY AND CLIMATE CHANGE, 2011. *Oil & Gas Regulatory Review. Consideration Of The Findings From Investigations Into The Deepwater Horizon Incident. Submission from the Department of Energy and Climate Change.* July 2011. Internal Report [appended]

<sup>32</sup> DECC requires all operators of installations to have an independently verified Environmental Management System (EMS), which satisfies the requirements of OSPAR Recommendation 2003/5 that recognises the requirements of international standards. As part of the DECC EMS requirements, operators must also produce an annual public statement providing an overview of their offshore operations and environmental performance. The public statements are available via the DECC website [ONLINE]. Available at [www.og.decc.gov.uk](http://www.og.decc.gov.uk) [Accessed 23 November 2011]

<sup>33</sup> UK. DEPARTMENT OF ENERGY AND CLIMATE CHANGE, 2011. *Oil & Gas Regulatory Review. Consideration Of The Findings From Investigations Into The Deepwater Horizon Incident. Submission from the Department of Energy and Climate Change.* July 2011. Internal Report [appended].

<sup>34</sup> DECC maintains a full list of all final draft and approved OPEPs. [ONLINE] Available at <https://www.og.decc.gov.uk/environment/arp.htm> [Accessed 23 November 2011]

<sup>35</sup> GREENPEACE. 2011. Submission to DECC. *Independent Review of UK Offshore Oil and Gas Regulation.* July. [Written submission in records of Review Panel].

<sup>36</sup> KENNEDY Wendy DECC Director Offshore Environment and Decommissioning. 2011. *Interviews on 18<sup>th</sup> May and 6<sup>th</sup> June and 2011. Aberdeen, UK.* [Interview notes in records of Review Panel]

<sup>37</sup> DECC OIL & GAS WEBSITE. 2011. Environment. *Information on Permits and Statistical Data.* [ONLINE] Available at: <https://www.og.decc.gov.uk/environment/arp.htm>. [Accessed 24 November 2011].

<sup>38</sup> DECC maintains a full list of all final draft and approved OPEPs. [ONLINE] Available at <https://www.og.decc.gov.uk/environment/arp.htm> [Accessed 23 November 2011]

<sup>39</sup> MANCHESTER UNIVERSITY. 2011. *Quality Review of Environmental Statements for Offshore Petroleum Production and Pipeline Developments.* [ONLINE] Available at: [https://www.og.decc.gov.uk/environment/opprr\\_qreview.doc](https://www.og.decc.gov.uk/environment/opprr_qreview.doc). [Accessed 24 November 2011].

<sup>40</sup> The completed modelling was not reviewed by the Panel.

<sup>41</sup> The creation of ORSF was an OSPRAG recommendation. Its stated purpose is: “To further develop and maintain an effective, robust and sustainable oil spill response capability for upstream operations on the UKCS”. ORSF members include operators & licences, Oil & Gas UK representatives; regulators, spill response organisations and Local Authority umbrella organisations

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<sup>42</sup> EDWARDS, R. 1998. *Sea Empress Environmental Evaluation Committee: Final Report*. Stationery Office Books

## **CHAPTER 3**

### **EMERGENCY RESPONSE**

#### **Introduction**

The Panel observed that reports published by the US Presidential Commission, US Department of the Interior and the Energy Select Committee all contained recommendations with respect to response and co-ordination during a spill. These emphasised the need for clarity in the arrangements for a unified command of operations to avoid conflicts between the priorities regarding safety, spill containment and environmental clean-up at sea and onshore.

#### **Review Panel Considerations:**

In considering the strengths and weaknesses of the existing framework for emergency response in the UK, the Panel focussed on five particular aspects:

- Contingency Planning
- Command & Control Response Co-ordination
- Communication of Status
- Training – Resilience
- Exercises

#### **Contingency Planning**

The Panel recognise that an approved and fit for purpose contingency plan is a key foundation for successful response and co-ordination during incidents.

The Panel examined the appropriateness of the UK National Contingency Plan (NCP) for Marine Pollution from Shipping and Offshore Installations. The NCP is an overarching document which provides guidance on the roles and responsibilities of pollution response organisations.

As noted in Chapter 2, operators of offshore installations are required to submit Offshore Oil Pollution Emergency Plans (OPEPs) which establish detailed arrangements for responding to incidents which cause or have the potential to cause marine pollution by oil. MCA comments on the suitability of technical aspects such as oil spill modelling and deployment of chemical dispersants. DECC gives final approval of the Plan, which must also detail the manner in which an operator's response strategy would dovetail with the NCP.

The Panel recognise that the NCP is a robust, tried and tested publication which is regularly reviewed, usually every 5 years. The MCA advised the Panel that following the Macondo incident, coinciding with correspondence between the Prime Minister and the First Minister of Scotland, the NCP was tested on 18<sup>th</sup> & 19<sup>th</sup> May 2011 through Exercise Sula<sup>43</sup> and that the Plan will be revised in the light of that exercise and any recommendations issued by this Review Panel.

### **Command & Control Response Co-ordination**

The Panel acknowledges that the current dual or parallel command structure as listed in the NCP is appropriate; however clarification is recommended.

The Panel were keen to understand the existing mechanism for establishing unambiguous command and control in the event of a spill incident and the responsibilities for communicating the incident to government and the media. During an interview with the Secretary of State's Representative<sup>44</sup> (SoSREP) and using submissions from the Maritime & Coastguard Agency (MCA), the Panel learned that the SoSREP is responsible for providing the overall direction for containment measures to mitigate damage to the environment from marine pollution incidents involving offshore installations that require a national response. Such a response is governed by the National Contingency Plan (NCP) for Marine Pollution from Shipping and Offshore Installations<sup>45</sup>. The MCA are the custodians of the NCP.

It was explained that the SoSREP<sup>46</sup> has the power to take ultimate control of any salvage operation where there is a threat of significant marine pollution affecting United Kingdom. When engaged in incident working the SoSREP acts independently of any Government Department and reports directly to the Secretary of State. The power to intervene was extended to include containment during incidents involving offshore installations with the

implementation of the Offshore Installations (Emergency Pollution Control) Regulations in 2002.

Under the NCP, the offshore operator has a duty to implement its approved Oil Pollution Emergency Plan (OPEP) to contain the spill and minimise damage to the environment. The SoSREP is empowered to exercise intervention powers<sup>47</sup> on behalf of the Secretary of State for the Department of Energy and Climate Change (DECC) to whatever extent is required in the public interest. The SoSREP's jurisdiction is limited to minimising or preventing further loss of oil following an accident and typically may address containment issues including sealing, capping, drilling a relief well, etc. The SoSREP role does not include any responsibility for either at-sea or shoreline clean-up activities (see below). Although the operator remains responsible for all clean-up operations, management and co-ordination of at-sea clean-up rests with the MCA, as the UK competent authority, whilst the Local Authority (LA) takes responsibility for onshore clean-up.

Where there is a risk to safety, intervention powers<sup>48</sup> may be used by the SoSREP. However the use of such the powers is restricted to within UK Territorial Waters (12 nautical miles) and therefore unavailable during the majority of incidents involving offshore installations.

The MCA Counter Pollution & Salvage Branch (CPS)/Marine Response Centre (MRC<sup>49</sup>) Chair monitors the operators' response to the offshore clean-up<sup>50</sup>, for which they are wholly responsible. The MRC Chair can intervene and over-ride decisions taken by the operator if he/she considers their actions not to be in the best interests of the marine environment, the shoreline, shipping or offshore installations.

As part of the operating procedures under the NCP, the MCA MRC Chair monitors the relevant local authority Shoreline Response Centre (SRC) as they carry out the shoreline clean up operations chaired by the Local Authority Chief Executive. However the SRC function may be incorporated into a Strategic Co-ordinating Group (SCG) which will be chaired by the Chief Constable or the Local Authority Chief Executive.

The MCA nominates a representative to attend the SCG meetings providing a link to the maritime response units. The MCA can offer support and training, marshal additional resources and provide additional equipment from national stockpiles, the European Maritime

Safety Agency (EMSA) or other International agreements such as NORBRIT and BONN<sup>51</sup>, to supplement existing stocks if needed. However the MCA does not have powers to take command should it disagree with the actions proposed by the Chief Constable or the SCG. In particular for oil spill pollution damage above the low water mark, it seems that neither the SoSREP nor the MCA have powers to resolve any conflicts between the best interests of well containment, at-sea clean-up, overall safety (beyond the 12 mile limit) and onshore clean-up decisions.

The SoSREP and the MRC Chair, to some extent, constitute a Dual or Parallel Command system to monitor the entire at sea oil-spill management chain and to exercise authority over their particular domain(s) if needed. However, the Panel considers that the current Command and Control powers for offshore oil spill incidents in some important areas lack clarity regarding who can/should assume overall command, and when.

### **Recommendation 3.1**

- **While the NCP provides an effective response procedure to be acted upon when there is a spill of national significance, the Panel recommends that the point at which command responsibility for the containment/clean-up operation should transfer from operator/contractor to SoSREP/Government is clarified in the NCP. The roles and responsibilities of the various organisations and personnel involved following such a transition should also be clarified.**
- **The Review Panel recommends that the NCP should clearly state who should assume overall command and control of all aspects of oil spill containment and response operations, including safety, regardless of location, should there be conflicting interests between cells.**

Such powers could be vested with the SoSREP but this would require significant legal extensions from the current position.

## **Communication of Status of Operations**

The Panel is acutely aware of the essential communications requirements not only between response cells on the proposed mitigation measures but to the media and the general public covering all aspects of the operation.

The Panel investigated the processes by which the status of the containment/clean-up operation is communicated to both government and the general public. Discussions with the MCA and SoSREP revealed that during a spill of national significance:

- The SoSREP will deliver information directly to the Secretary of State for the Department of Energy and Climate Change (DECC).
- The MRC Chair will likewise provide information to Department for Transport (DfT) officials who will, in turn, brief their Ministers and, if the situation dictates, COBR.
- Liaison Officers play a key role in ensuring efficient communications and integration between the response cells and hence effective coordination of the overall operation.
- Although the MCA assume the lead with media response on oil spills, the responsibility for briefing the media on all aspects of the incident, containment and oil recovery of the actual spill, is not entirely clear.

The importance of effective communications between cells was highlighted during the Macondo incident and addressed during the NCP Exercise Sula by initiating a conference call at prearranged intervals between the Heads of Cells to state their progress and future intentions. Successful as it was, further development is required.

The Panel identified that a key role to emerge from the Deepwater Horizon incident is the need for an official (government) spokesperson who can deal effectively with all aspects of the incident (in coordination with the SoSREP, the MCA, relevant Local Authorities and relevant technical experts from the operators and the industry at large).

### **Recommendation 3.2**

- **The Panel therefore recommends the establishment of a communication function with authoritative and unambiguous responsibility to brief media and Government Ministers in the event of an incident of national significance.**

### **Training**

The Panel recognise that an effective incident response in accordance with the NCP relies on all personnel actively engaged in response cells being appropriately trained to perform their duties effectively.

The DWH incident shoreline response required the use of large numbers of casual untrained personnel therefore valuable time was spent on providing introductory training on response measures to state and local representatives.

The MCA advised the Panel that they provide an annual training programme to Local Authorities, on the beach clean-up supervisor role and contingency planning and response requirements, to ensure a good standard of response is achieved. Members of the MCA Counter Pollution and Salvage Branch undertake initial Oil Spill Management<sup>52</sup> (Level 5) training and refresher courses every three years to ensure the standard of knowledge is maintained by the regulators.

Oil spills of national significance escalate and can become protracted, necessitating the attendance of suitable personnel on a long term basis.

### **Recommendation 3.3**

- **The Panel recommends that the MCA instigates a training programme for all potential members of the Marine Response Centre (MRC) and DECC maintains its training commitment for the Operations Control Unit (OCU). Particular attention should be paid to the numbers of support staff required to ensure that sufficient resilience is in place to maintain a qualified presence during a protracted incident.**
- **The MCA training programme for local authority personnel should continue, thus ensuring a mechanism is in place to ensure non-statutory authorities have capability to conduct clean-up on the shore.**

### **Oil-Spill Response Exercises**

The Panel acknowledges that whilst the MCA organises NCP exercises on an annual basis to test aspects of the plan through shipping and offshore incident scenarios, all the response organisations listed in the NCP are not tested every year. Furthermore a full NCP exercise involving an offshore installation is currently scheduled to take place only once every five years.

The Panel appreciate that exercises play a major role in ensuring the preparedness of the relevant organisations and authorities, testing the reaction and ability of participants gained during training sessions to respond to a spill of national significance.

A large number of pollution response exercises are conducted annually by ports and harbours with limited participation by the MRCCs. The MCA Counter Pollution & Salvage Officers (CPSOs) attend and actively participates in a number of exercises each year to provide feedback and evaluation for audit. The activation and exercising of other response cells during these exercises is very limited.

DECC advised that offshore operators are also required to conduct OCU exercises to test the emergency response interface with DECC and the SOSREP. This current programme of exercises, NCP and OCU, assesses the response capability of each offshore operator every five years.

The CPSOs frequently attend the OCU exercises or participate through conference calls, providing advice and confirmation on response actions of the operator.

#### **Recommendation 3.4**

- **The Panel considers that only through more frequent testing of the full range of response cells which would be mobilised in the event of a major incident can the requisite experience be gained by the key individuals involved. It does not consider that the present frequency is sufficient to ensure this, and therefore recommends that:**
  - **the frequency of the NCP exercises involving an offshore installation should be increased to at least every three years to ensure a high level of response preparedness by all parties.**
  - **a programme of smaller scale exercises is initiated by the MCA in a similar manner to those conducted by DECC and the OCU, to aid the development of the MRC, to test the communications within the cell and its integration with Shoreline Response Centres, Environment Groups and the Maritime Rescue Co-ordination Centres (MRCC).**
- **The Panel also suggests that the frequency of the DECC OCU exercises with operators should reflect the risk particular installations pose to the environment.**
- **The current requirement of Tier 2/3 response contractors is to provide to DECC, every five years, evidence of their ability to respond and deploy mechanical equipment including aerial surveillance and spraying capability. The Panel**

**recommend the frequency of the response demonstration is increased to align with the NCP exercises.**

## NOTES

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<sup>43</sup> Exercise of the National Contingency Plan to test the response to a deepwater drilling incident to the West of Shetland.

<sup>44</sup> SHAW Hugh. Secretary of State's Representative for Maritime Salvage and Intervention. 2011. *Interview on 20<sup>th</sup> June 2011. Aberdeen, UK.* [Interview notes in records of Review Panel]

<sup>45</sup> As a party to the United Nations Convention on the Law of the Sea (UNCLOS), the United Kingdom (UK) has an obligation to protect and preserve the marine environment. The National Contingency Plan is one of the measures that the UK has taken to meet this obligation

<sup>46</sup> UK HOUSE OF COMMONS Transport & Regional Affairs Committee Environment, 1999. *Command and Control: Report of Lord Donaldson's Review of Salvage and Intervention and their Command and Control (Command Paper)*. Edition. Stationery Office Books

<sup>47</sup> UNITED KINGDOM. 2002. *The Offshore Installations (Emergency Pollution Control) Regulations 2002. Statutory Instrument No 1861 of 2002*

<sup>48</sup> UNITED KINGDOM. 2003. *The Marine Safety Act 2003 chapter 16*

<sup>49</sup> Assessment and evaluation of the spill is conducted by the Counter Pollution & Salvage Officer (CPSO) in consultation with the Head of Counter Pollution & Salvage Branch to determine the scale and requirement to establish a Marine Response Centre (MRC) in accordance with the National Contingency Plan (NCP)

<sup>50</sup> MARITIME & COASTGUARD AGENCY. 2011. *National Contingency Plan for Marine Pollution from Shipping and Offshore Installations*. [ONLINE] Available at: [http://www.dft.gov.uk/mca/mcga07-home/emergencyresponse/mcga-dops\\_cp\\_environmental-counter-pollution\\_and\\_response/mcga2007-ncp.htm](http://www.dft.gov.uk/mca/mcga07-home/emergencyresponse/mcga-dops_cp_environmental-counter-pollution_and_response/mcga2007-ncp.htm). [Accessed 24 November 2011]

<sup>51</sup> In Northern Europe there are several international agreements between various coastal states directed to ensure a consistent approach between states in the event of major salvage and marine pollution incidents. A major counter-pollution interstate agreement is the Bonn Agreement, which aims to ensure intergovernmental co-operation dealing with pollution by sharing information. Within the Bonn Agreement area there are two further interstate agreements. NORBRIT is a bilateral agreement between Norway and UK, focused on counter pollution. MCA provides further information [ONLINE] Available at: [http://www.dft.gov.uk/mca/mcga-environmental/mcga-ops\\_cp\\_sosrep\\_role/mcga-dops\\_cp\\_ncp\\_uk\\_response\\_to\\_salvage/mcga-dops\\_cp\\_coastal\\_states\\_agreement.htm](http://www.dft.gov.uk/mca/mcga-environmental/mcga-ops_cp_sosrep_role/mcga-dops_cp_ncp_uk_response_to_salvage/mcga-dops_cp_coastal_states_agreement.htm). [Accessed 24 November 2011].

<sup>52</sup> Recognised by the International Maritime Organization (IMO) and conducted by spill response contractors accredited by the Nautical Institute on behalf of the MCA.

## **CHAPTER 4**

### **LEARNING FROM INCIDENTS AND IMPROVING BEST PRACTICE**

#### **INTRODUCTION**

The US National Commission on the Deepwater Horizon incident commented in its “Presidential Report”<sup>53</sup> that:

*“As the nation considers exploring for and producing energy from offshore frontiers, we have a new opportunity to do things right.”*

In considering the UK regime in light of Macondo, the House of Commons Energy and Climate Change Committee acknowledged its strengths as exemplified by the safety case approach established following the 1988 Piper Alpha disaster. However, the Committee was concerned that the offshore industry tended to be more reactive than proactive in planning for high-consequence, low-probability events.<sup>54</sup>

#### **Review Panel Considerations:**

An important aspect in the prevention of major safety and environmental incidents is learning from previous incidents. The Panel’s aim in examining this area was to gauge the extent to which the industry in the UK, and the regulatory regime in which it operates, are as effective as they could be in learning from experience and in promulgating best practice informed by, amongst other things, that learning process.

By definition, high-consequence, low-probability events are relatively uncommon. However, their very rarity and severity highlight how important it is to maximise learning from them whenever they occur. Historically, major accidents and catastrophes have always generated significant learning, which has led to subsequent improvement. The last large-scale offshore catastrophe on the UK continental shelf area was the 1988 Piper Alpha disaster.

Perhaps more important is the need continually to search existing risk control systems for signals of potential failure and incident pre-cursors, sometimes rather subtle or weak, which warn of problems but do not themselves escalate into major incidents.

This implies that those who create risk must continually check to reassure themselves and others that it is properly managed with an intensity in proportion to the likely consequences and adapt to advances in standards, good practice and technological progress.

### **Good Practice and Best Practice**

The Review Panel explored the meaning of the terms good and best practice. The expressions are in frequent use, but it may not be widely understood that they have quite specific meanings in the language of the regulators. HSE explained how it distinguishes between the two.<sup>55 56</sup> This aligns with the view of regulators internationally.<sup>57</sup>

In essence, good practice is the generic term for those standards for controlling risk judged and recognised as satisfying the law when applied to a particular relevant case in an appropriate manner. It is concerned with doing things well on a routine basis, such that regulators can have confidence that risks are under control. Applying good practice need not be innovative or novel and is likely to be similar to the measures that others implement for similar risks.

Sources of written, recognised good practice include:

- Laws, regulations, approved codes of practice (ACoPs), regulatory guidance.
- International (ISO), regional (CEN) and national standards (BS, DIN, API etc).
- Industry standards or recommended practices and guidelines published, for example by trade federations, professional institutions, governing bodies etc).
- Group or individual company specifications.

Best practice, on the other hand, means a standard of risk control that exceeds the legal minimum and, by using new ideas to improve risk control arrangements, goes beyond what may be regarded as the current norm.

Commercial competition and effective regulation encourage continuous improvement within industry and, over time, best practice can become good practice. This can happen as a result of wider adoption (or reduced cost) of innovations in technology or because of changes in accepted practices. Advances in knowledge about hazards and their effects and the lessons from incidents can also change acknowledged good practice.

DECC told the Panel that it applies internationally recognised Best Available Techniques (BAT) and Best Environmental Practice (BEP) as defined by the OSPAR Convention<sup>58</sup> including, where appropriate, clean technology, in their efforts to prevent and eliminate marine pollution.

Whether applied by HSE or DECC in their respective remits of safety and environment, best practice stems from a deliberate desire to identify what more can be done to reduce risk. In a progressive industry like oil and gas, what constitutes best practice today will represent merely good practice at some point in the future and the process of ensuring the momentum of continuous improvement ought properly to be a collaborative one between the industry and its regulators.

### **Interpreting Signals and Making Connections**

In this area the Review Panel specifically considered HSE's review of six significant Macondo investigation reports<sup>59</sup> where it was noted that, before the disaster, several early indications of failure were present. There was evidence of ambiguity and significant uncertainty in, for example, the blowout preventer battery pack condition, the well cement condition and the monitoring of well pressures and flows. HSE observed that evidence suggested signals were not pursued and connections between them were not made, both of which would have enabled appropriate and timely corrective action to be taken.

The Panel also considered two particular well incidents which had occurred in the UK before Macondo, and were investigated by HSE.

The 'Bardolino' incident occurred in December 2009. An unplanned influx ( a 'kick') in this well resulted in the unexpected ejection of approximately 95 barrels of well fluids, including hydrocarbons. The blowout preventer was used to close the well, which was subsequently

brought back under control. HSE's investigation revealed that the duty holder had failed to monitor the well properly during a key stage. This impaired the drill crew's ability to detect a valve failure inside the well that caused the influx.

The 'Bittern' well incident happened exactly a year later during the completion phase of another well. During an operation to install sealing equipment inside the well, flow monitoring revealed a sudden, rapid influx. The well was closed using the blowout preventer and brought back under control. No fluids or hydrocarbons were released. HSE's investigation discovered that good practice lessons learned from the earlier Bardolino incident were incorporated into the Bittern well programme and assisted the drill crew in reacting rapidly to the situation and preventing a worse outcome.

The Macondo, Bardolino and Bittern incidents all featured signals of process abnormality and possible failure of control, and highlight how several seemingly unconnected minor faults can combine to increase the risks of a major accident occurring. Recognising the significance of these connections is vital within the major hazard context. When such signals or indications of uncertainty are recognised in high hazard operations, those in control must focus on the potential for heightened risk and put additional precautions in place accordingly. Such precautions must include consideration of whether it is safe to continue an operation at all.

It was clear to the Review Panel that HSE is already active in alerting duty holders to the benefits of looking for signals of potential failure and other areas of uncertainty within their operations. No doubt there are companies that are active in doing so, but the Macondo incident highlights the importance of focussing attention on this aspect of risk management and its role in the prevention of safety and environmental incidents.

### **The Need for Sharing and Learning from Incidents**

Sharing learning from previous incidents and events is also vitally important. Thorough post-event analysis enables identification of lessons which, if widely implemented, can prevent recurrence elsewhere. In a major hazard industry such lessons should not be proprietary to any one organisation; they must be shared for the safety of all and for the protection of the environment.

The Review Panel reviewed how the UK offshore regime shares learning in the context of spreading good/best operational practice and best environmental practice and encouraging continual improvement.

It heard from some stakeholders a clear desire for more emphasis to be placed on process safety risks, in addition to personal and occupational health and safety.<sup>60, 61</sup> This point has particular relevance to the Deepwater Horizon incident as highlighted by Hopkins (2011)<sup>62</sup>. Senior management were visiting the rig just hours before the disaster, at a time when several indications of incomplete well control had failed to prompt corrective action by the rig crew. Hopkins highlights that a significant reason for the management visit was to stress the importance of safety. Whilst, collectively, those managers had considerable operational experience as drilling engineers or rig managers, it appears they were focused more on occupational safety issues and missed the opportunity closely to scrutinise the major hazard-critical operations ongoing at the time of the visit.

*“The VIPs on the Deepwater Horizon were certainly sampling the details. But it was a biased sample - biased towards conditions rather than behaviours, and biased towards occupational safety. As a result, they failed to sample details of how well the rig was managing its major accident hazards”<sup>63</sup>*

This highlights how ongoing compliance with occupational health and safety should not be allowed to deflect focus away from installation integrity and satisfactory environmental protection obligations. These should be routinely achieved, and upper management should ensure the principles are firmly embedded in ‘business as usual’ From a regulatory perspective, the Panel observed that while HSE far from neglects occupational health and safety, it places significantly more emphasis on the control of major accident hazards. The Review Panel agrees with that emphasis and encourages operating companies to reflect it where it is not already the case.

The adequacy of risk control arrangements needs to be monitored routinely by operating companies and their contractors. When incidents happen, and have potential to become catastrophes or major accident hazard pre-cursors, these need to be properly investigated by operating companies without delay, and the lessons shared across their organisations. The legislative basis for this is already established, requiring operators to have systems for

*“...adequately investigating the immediate and underlying causes of incidents and accidents to ensure that remedial action is taken, lessons are learnt and longer term objectives are introduced”<sup>64</sup>.*

Furthermore, in a global industry like oil and gas, lessons should be shared across the entire industry in a prompt and timely fashion, so that all can benefit and have an opportunity to prevent a recurrence. While it is clearly difficult to draw direct comparisons between different well-control incidents, there is perhaps a possibility, as Hopkins (2011) proposes, that a more effective sharing and learning culture might have allowed lessons from previous incidents to inform a more favourable outcome at the Macondo well.

In considering the general issues around learning and sharing information, the Panel is clear in its view that commercial confidentiality, the prospect of adverse publicity or even legal action must not become barriers to sharing and learning from incident experience. Information can be shared in an anonymous context provided that relevance and adequacy of detail are not lost. Furthermore, it is vital that information is shared promptly (days-weeks rather than months-years); even if full investigations are incomplete it will usually be the case that significant learning can be derived from initial findings.

### **The Structures Available for Sharing Lessons Learned**

The Review Panel observed that the regulators already publish expectations for compliance with good practice in a range of guidance documents. Whilst acknowledging that it has an important part to play in this, HSE drew attention to its expectation that the industry itself should encourage and promote sharing and learning, rather than depend on regulatory authorities to manage it on its behalf. At the same time, there appears a clear view within the industry that regulators have a unique, sector-wide perspective that equips them to play an important role.

Clearly, industry and regulators can and should work in concert in this area. However the Review Panel supports the view that the primary responsibility for providing opportunities to learn from incidents and share good or best practice should obtain and be led within industry, supported by the regulators where appropriate or necessary.

As part of that process, regulators should routinely scrutinise the effectiveness with which companies monitor, investigate and learn from their undertakings, particularly when incidents happen, and the extent to which the lessons are shared within organisations and across companies in a timely manner. The Panel encourages the use of regulatory influence and powers to secure improvements in these processes.

In consultations with the oil and gas industry<sup>65</sup>, the Panel heard that the *as low as reasonably practicable* (ALARP) principle of risk management and the responsibility to utilise Best Available Technologies (BAT) & Best Environmental Practice (BEP) drive the industry to share and spread good and best practice. The review Panel considers this, along with the many well established, formalised structures and fora which exist for this purpose, are an important strength of the UK regime.

The Review also heard that, alongside the regulatory mechanisms already discussed, HSE and DECC themselves have a range of methods to share information. Besides the wealth of guidance they publish, HSE and DECC use Information Notices, Safety Alerts & Environmental Alerts to highlight important new information relevant across the offshore industry. The Panel's review found that there are several good examples where regulators have spread lessons and learning to beneficial effect. These include:

- Taking account of emerging lessons from the Macondo incident itself, where DECC wrote to all operators to clarify the scope of using the worst-case scenario to aid response planning.<sup>66</sup> This guidance and environmental best practice was disseminated via seminars held in Aberdeen and London with operators, at both senior management and operational level, and with drilling contractors.
- DECC, MCA and stakeholders working together to plan, undertake and share learning from the May 2011 Sula Exercise.<sup>67</sup>
- DECC and MCA engaging in a rolling programme of SOSREP Exercises with operators and key stakeholders to test OPEP provisions and take forward exercise feedback.

- HSE's recent offshore corrosion project, its SI971 (Safety Representatives) project, and its Key Programme initiatives (KP1, KP2, KP3 and the current KP4), in which examples of good and best practice are highlighted.

The KP3 project<sup>68</sup>, in particular, was concerned with asset integrity and examined underlying issues, including corporate and cross-industry learning and communication. The project found wide variations, not only between duty holders, but among individual installations operated by the same duty holders. It concluded that the situation could be improved. HSE published examples of good practice collected during the project<sup>69</sup>. A subsequent review of the industry's response noted some improvement, but found evidence that some companies could still improve the effectiveness of information sharing across their businesses.

The Review Panel was reassured that following Macondo, regulators have used learning from that specific incident in requiring UK operators to provide additional detail of their policies and practices for conducting drilling operations. For deepwater drilling operations and other complex wells, such as High Pressure High Temperature wells, this includes rigorous testing against the findings and recommendations of the reports into the causes of the Deepwater Horizon accident. In particular, operators must demonstrate how they plan for and mitigate the risks highlighted in the various reports, as they apply to their specific operation. This includes the effective demonstration of coordination between operator and contractors involved in drilling the well, and between the operator, contractors and relevant Government agencies. The effectiveness of these arrangements forms part of pre-spud checks onshore and/or offshore prior to consent.

Additionally, environmental impact assessment guidance and procedures have been strengthened, to ensure that there is appropriate coverage of the potential impact of oil spills and to introduce a risk-based peer review process for all assessments relating to higher risk wells.

The Panel also noted that the regulators are involved in dialogue with partner organisations in other oil and gas basins through participation in, for example:

- International Regulators Forum

- North Sea Authorities Forum
- Regular bilateral meetings between regulatory authorities
- Involvement with international standards organisations
- Committees and conferences

For the UKCS this goes towards meeting one of the recommendations expressed in the US National Commission report:

*“A3: Working with the International Regulators’ Forum and other organizations, Congress and the Department of the Interior should identify those drilling, production, and emergency-response standards that best protect offshore workers and the environment, and initiate new standards and revisions to fill gaps and correct deficiencies. These standards should be applied throughout the Gulf of Mexico, in the Arctic, and globally wherever the international industry operates. Standards should be updated at least every five years as under the formal review process of the International Organization for Standardization (ISO).”*

The many existing fora and systems within the industry for sharing information are positive initiatives, but the Review Panel considers there is scope within the existing architecture for duplication and fragmentation and that, therefore, more can be done to provide assurance that learning is shared in a transparent and effective fashion.

The Panel also concluded that improvements are needed within the regime if the goal of implementing a more effective learning culture is to be attained. Industry can do more to learn lessons and share information. Regulators can raise their level of scrutiny in monitoring the effectiveness with which this is done, and take appropriate enforcement action where necessary.

## **Recommendation 4.1**

- **Installation operators and licensees should review their safety and environmental management systems to ensure they take sufficient account of ambiguous or uncertain signals of process abnormality and their scope to have a compounding effect in critical aspects of major hazard risk control. The signals should be treated as indicators that an operation may be unstable or unsafe and prompt the necessary action to ensure that risk is kept under control.**

It could be fruitful to look outside the oil and gas industry to examine how other high-hazard sectors handle the concept of indirect or uncertain signals and indications of process/operational uncertainty. The nuclear power generation and aerospace industries are two possible sectors that may provide learning opportunities.

Responsibility for implementing this recommendation must rest first and foremost with the operators - they create the risks, and it is they who must control them.

The regulators have an associated responsibility. HSE and DECC should consider how they can develop or enhance any relevant existing guidance they have in the field to make clear their expectations of what constitutes good practice in this area. HSE and DECC should also use their interventions with the industry to check the extent and effectiveness of how companies implement this recommendation.

Although obligations to share any learning from incidents or near-misses experienced by UK operators are clearly defined by existing legislation and several fora exist to do so, the Panel remain unconvinced that sharing occurs on a timely basis, risking the occurrence of an avoidable incident.

## **Recommendation 4.2**

- **The industry should agree principles to ensure concerns about proprietary information and legal exposure do not prevent rapid sharing amongst operators of lessons which could help mitigate the risk of a serious incident. Regulators should use existing powers and influence to help ensure learning is shared on a timely basis.**
  
- **The industry, under the auspices of OGUK, should develop and implement proposals to:**
  - **measure the performance and effectiveness of industry arrangements for the timely (days-weeks rather than months-years) sharing and learning from incidents and near-misses,**
  
  - **demonstrate that best practice is being identified and spread in an effective and transparent way and on an ongoing basis,**
  
  - **routinely review industry performance to identify and resolve any issues that could hinder company to company sharing, learning and best practice implementation,**
  
  - **secure a more strategically coordinated approach for the gathering and dissemination of lessons from incidents and standards of good/best practice within the UK regime and internationally.**
  
- **Regulators should increase their level of scrutiny and monitoring of how companies learn from incidents and share experience rapidly, and take action to secure improvements, including the use of formal enforcement measures.**
  
- **HSE should review and strengthen the guidance in its Loss of Containment manual, which emphasises the legal requirements under the Management of Health and Safety at Work Regulations, to investigate the causes of**

**accidents/incidents, learn appropriate lessons and implement appropriate remedial action and changes to future practice.**

The responsibility for implementing these recommendations rests equally among operating companies, OGUK and its industry partners operating on the UKCS. It may be appropriate for the Offshore Industry Advisory Committee (OIAC) to have an overview of developments. DECC and HSE will have roles in cooperating with Oil and Gas UK in its development and implementation of this recommendation.

Examples of measures that might be introduced to address these recommendations include:

- A coordinating body to centralise and organise information and lessons from incidents, acting as a single learning portal and corporate memory for the industry
- Greater transparency in the regulation and enforcement arena, making the results of inspections and investigations publically available in a similar manner as the regulators currently publish improvement notices and safety/environment alerts.
- Regulators exploiting their unique industry overview of incidents by becoming more pro-active in disseminating lessons arising from them and stimulating a learning culture of continuous improvement in best practice.

## **NOTES**

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<sup>53</sup> USA. National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling. 2011. *Deep Water: The Gulf Oil Disaster and the Future of Offshore Drilling. Report to the President. January 2011*. First Edition. US Government Printing Office.

<sup>54</sup> UK. House of Commons. 2011. *UK Deepwater Drilling: Implications of the Gulf of Mexico Oil Spill (Second Report of Session 2010-11 - Volume I: Report, Together With Formal Minutes, Oral and Written Evidence)*. HM Stationery Office.

<sup>55</sup> Risk management: Good practise. 2011. *Risk management: Good practise*. [ONLINE] Available at: <http://www.hse.gov.uk/risk/theory/alarp2.htm>. [Accessed 13 September 2011].

<sup>56</sup> Good and best practice offshore – collection of examples. 2011. *Good and best practice offshore – collection of examples*. [ONLINE] Available at: <http://www.hse.gov.uk/foi/internalops/hid/spc/spctosd51.htm>. [Accessed 13 October 2011].

<sup>57</sup> WALKER, S., DE JONG, J. 2011. *The Involvement of IRF in Setting Standards and Best Practices*. Paper presented to the INTERNATIONAL REGULATORS FORUM (IRF). 2011. Proceedings of the 2011 IRF Summit Forum. Stavanger. 4-5 October 2011. [ONLINE] Available at <http://www.irfoffshoresafety.com/>

<sup>58</sup> OSPAR COMMISSION. 2011. *Convention for the Protection of the Marine Environment of the North-East Atlantic. Appendix 1..* [ONLINE] Available at: [http://www.ospar.org/html\\_documents/ospar/html/OSPAR\\_Convention\\_e\\_updated\\_text\\_2007.pdf](http://www.ospar.org/html_documents/ospar/html/OSPAR_Convention_e_updated_text_2007.pdf). [Accessed 24 November 2011].

<sup>59</sup> UK. HEALTH & SAFETY EXECUTIVE, 2011. *Deepwater Horizon Incident Review Group: Interim Summary Report*. October 2011. Internal Report. [appended].

<sup>60</sup> MOLLOY Jake - RMT, TAYLOR John - UNITE, CRAIG Mike – UNITE. representing members of trade unions. 2011. *Interview on 6<sup>th</sup> June 2011. Aberdeen, UK*. [Interview notes in records of Review Panel]

<sup>61</sup> WHITE Glenn – Rowan Drilling, CLYNE Neil - Transocean, ELLINS Martin – KCA Drilling. Representing members of the INTERNATIONAL ASSOCIATION OF DRILLING CONTRACTORS NORTH SEA CHAPTER. 2011. *Interview on 7<sup>th</sup> July 2011. Aberdeen, UK*. [Interview notes in records of Review Panel]

<sup>62</sup> HOPKINS, A, 2011. *Management Walk-Arounds:.* Working Paper 79. National Research Centre for OHS Regulation: Australian National University. [ONLINE] Available at: <http://ohs.anu.edu.au/publications/pdf/WP%2079%20Hopkins%20Gulf%20of%20Mexico.pdf>. [Accessed 02 November 2011].

<sup>63</sup> HOPKINS, A, 2011. *Management Walk-Arounds:.* Working Paper 79. National Research Centre for OHS Regulation: Australian National University. [ONLINE] Available at: <http://ohs.anu.edu.au/publications/pdf/WP%2079%20Hopkins%20Gulf%20of%20Mexico.pdf>. [Accessed 02 November 2011] page 13, para 4

<sup>64</sup> UK. HEALTH & SAFETY EXECUTIVE, 2000. *Management of Health & Safety at Work Regulations 1999: Approved Code of Practice and Guidance*. Second Edition. HSE Books. Page 19, (Regulation 5 and approved guidance para 36).

<sup>65</sup> PATERSON Robert, BORWELL Mick. representing OIL and GAS UK. Accompanied by WRIGHT Boyd (CENTRICA), DICKSON David (BP), JACKSON Crawford (PETROFAC), RONWAY Peter (CNR), HENDRON Andrew (CONOCOPHILLIPS), TAYLOR Simon (APACHE) representing oil and gas operating companies. 2011. *Interview on 16<sup>th</sup> June 2011, Aberdeen, UK*. [Interview notes in records of Review Panel]

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<sup>66</sup> UK. DEPARTMENT OF ENERGY AND CLIMATE CHANGE, 2011. Summary of DECC Letters to Industry. December 2010, July & September 2011. [appended]

<sup>67</sup> 'Sula' was an exercise to test the UK's National Contingency Plan in the event of a Macondo type incident. During the exercise the industry deployed and tested the Tier 2/3 counter pollution equipment. For further information refer to: UK MARITIME AND COASTGUARD AGENCY. 2011. *Exercise SULA National Contingency Plan Exercise 18th and 19th May 2011 Exercise Report*. [ONLINE] Available at: [http://www.dft.gov.uk/mca/exercise\\_sula - 18-19\\_may\\_2011 - final\\_report.pdf](http://www.dft.gov.uk/mca/exercise_sula_-_18-19_may_2011_-_final_report.pdf).

<sup>68</sup> UK. HEALTH & SAFETY EXECUTIVE. 2011. *HSE Offshore: Key programme final reports*. [ONLINE] Available at: <http://www.hse.gov.uk/offshore/programmereports.htm>.

<sup>69</sup> UK. HEALTH & SAFETY EXECUTIVE. 2011. *Human factors/ergonomics – Introduction to human factors*. [ONLINE] Available at: <http://www.hse.gov.uk/humanfactors/introduction.htm>. [Accessed 15 September 2011].

## **CHAPTER 5**

### **IMPLEMENTATION ASSURANCE**

#### **Introduction**

An underlying theme of the majority of the Deepwater Horizon investigation reports is that if established good practice had been followed then the incident would not have occurred, or its severity would have been greatly reduced.

Much of the UK safety regime is based on a goal-setting approach incorporating standards representing good/best practice. The same can be said of some aspects of environmental regulation, even though it contains more elements of prescription. The Panel considers that a goal setting approach can only be said to be robust if the policies and procedures it generates are implemented fully, competently and in a timely manner.

#### **Review Panel Considerations:**

In considering its recommendations, the Review Panel was, therefore, guided by the principle that incident prevention depends on operators not only developing sound plans to manage and control potential risks, but actually adhering to those plans in practice - the assured implementation of risk controls. This Chapter addresses that issue.

#### **Management Systems**

The UK regime requirement for duty holders and operators to maintain, and demonstrate to the regulatory authorities, detailed safety and environmental management systems is a significant measure of assurance that they are alive to their duties and obligations under legislation.

In high hazard sectors, management systems need to establish sufficient independent layers of protection to ensure that in the event of the failure of one, others will stand to protect

against the occurrence of a major hazard. This must include taking account of the possibility that the management system itself may not always be followed.

The prevalence of incidents that are caused by lack of compliance with management systems, or the procedures developed by them, is well documented. Even robust management systems can deteriorate over time. Furthermore, intentional violations or departures from procedure can arise from a well meaning intent to get the job done. Incidents of this kind often arise from what are categorised as Human and Organisational factors<sup>70</sup>.

A safety and environmental management system is only as good as its weakest point. The consequence of this in a major hazard context means high levels of assurance are essential. This capacity for catastrophe leaves no room for complacency. Exemplary safety and environmental systems therefore use a regime of measurement, testing, audit, monitoring and review as ways to ensure they are implemented in practice or, conversely, to identify instances where that is not the case and correction or improvement is needed.

The health and effectiveness of auditing systems is critical, and it is clear that the UK regime takes account of the potential for vulnerabilities. The safety regime is distinct in its requirement for the operation of a verification scheme. Under this scheme, a body independent of the operator checks that safety critical elements and plant (provided to prevent a major accident occurring or to mitigate its effects) are suitable and maintained in good order for the life of the installation. This verification mechanism overlies the management and maintenance arrangements made by the installation operator.

Additionally, all licensed operators on the UKCS must have an independently verified Environmental Management System (EMS)<sup>71</sup>, which is designed to achieve the prevention and elimination of pollution from offshore sources and to deliver and manage compliance with environmental laws and regulations on an ongoing basis.

For oil and gas wells, operators must also have a scheme of examination for all wells to verify that it is designed, constructed and maintained in a safe condition throughout its life, from initial design to final abandonment. Like verification schemes, the well examination scheme requires the certification of an independent competent person.

The Review Panel supported the philosophy and design of the verification regime but focussed its attention on examining how it is implemented and operated.

### **Measuring Performance**

Regulators advised the Panel that UK oil and gas operators are required to use monitoring, audit and review to determine the effectiveness and fitness for purpose of their management systems. Senior managers should, therefore, know that the items, elements and systems they provide for safety and environmental protection remain in place and remain effective.

Within this framework, any failure of, for example, a safety critical element to operate on demand is a key indication that risk controls are not effective. The significance is that an item that fails a test, but is subsequently repaired, is an item that would have failed to provide protection during an emergency. Effective management systems will ensure that senior managers are aware of such failures.

The Panel also reviewed monitoring of high risk operations, which it considers needs to be undertaken in proportion to the hazard potential. This applies equally to routine processes with high consequence potential as to non-routine operations. In the course of its recent “KP3” project<sup>72</sup>, HSE specifically examined the effectiveness of auditing and verification systems. The project and the subsequent review of industry’s response both noted that industry needed to strengthen and improve monitoring and audit systems and make them more effective.

An important monitoring tool, already well embedded in the industry, is the use of key performance indicators. Their purpose is to enable the correct and timely business decisions to be taken that will improve the control of major hazard risks.

At installation-specific level these indicators can give senior managers valuable feedback about the strengths of important process safety controls. A mixture of leading and lagging indicators are necessary to judge performance. Company level indicators can aggregate the performance of a number of installations to measure overall safety and environmental performance, and provide top management with key information. For example:

- Number of impaired safety critical elements
- Quantity of backlogged or deferred safety-critical maintenance
- Quantity of verification scheme anomalies
- Failures of key safety equipment to operate on demand when tested
- Number of audit actions not closed-out
- Actual implementation of competence training versus plan

Beyond company level, there is information that signposts the overall performance of the UK oil and gas industry. Published statistics draw attention to the rate and frequency of major and significant hydrocarbon releases occurring on oil and gas installations in the UK continental shelf<sup>73</sup>. These incidents are all potential precursors to major accidents. The fact that, thus far, none has escalated to become a catastrophe is welcome, but all are important indications of failure to contain and control risk.

Unplanned hydrocarbon releases were the topic of another specific HSE key programme (KP1). Its investigation of all reported offshore hydrocarbon releases revealed that the most frequent immediate cause, by some margin, was degradation of equipment. In respect of major releases, however, operator error and procedural violation became an increasingly important factor. These accounted for half of the releases from pipes or valves opened to the atmosphere.

In particular relation to wells, the Panel learned of two incidents in the past twelve years where a last line of defence - closure of blowout preventer shear rams - was necessary to prevent a well blowout. Statistics record several other significant dangerous occurrences in relation to wells.

While industry has reduced the number of major and significant releases since KP1, in recent years the downward trend has levelled out. Reports of incidents suggest that there is a need for increased focus and effort throughout the industry.

The Panel learned that, working both on its own initiative and in partnership with regulators, the UK industry has been active in seeking to drive down and eliminate loss of containment events. The industry's Step Change initiative has targeted leadership, asset integrity, safety

culture and workforce involvement as key parts of a strategy for improvement to improve. The Panel fully supports these various initiatives.

Existing guidance<sup>74</sup> emphasises that senior management commitment and involvement are vital for successful safety and environmental performance. Senior managers are actively encouraged to lead by example in instilling a safety culture, and to ensure they are confident that system compliance is achieved and maintained. There is a suitably clear emphasis in guidance that health, safety and environmental performance are not stand-alone functions, but rather integral contributors to productivity, competitiveness and profitability. Put simply, good risk control is good business.

Achieving a positive culture for the control of major hazards is fundamental to managing their risks effectively. Organisations that do not measure their performance in creating positive cultures limit their opportunity to succeed in this respect.

*“We must, at senior management level, want to hear what is really happening, not what our managers think we want to hear. We should know where there are problems and where things could go wrong. Our staff must feel able to tell us this. When they do, we must work with them to find a solution.”<sup>75</sup>*

Despite the progress made by industry and regulators, there is still scope for improvement. The findings of the KP3 programme, coupled with the recent statistical record of major and significant hydrocarbon releases and spill incidents, remain matters for concern. Any major or significant hydrocarbon release has the potential to escalate to become an incident on the scale of Piper Alpha or Deepwater Horizon. A sense of vulnerability must prevail to ensure these incidences are driven down.

The Review Panel concluded that operators and regulators alike need to keep under review, and continually test the implementation in practice, of safety and environmental management systems, using a range of mechanisms to verify that the multiple methods used to prevent or deal with an incident remain effective. Continued vigour is required to develop cultures in which the existing assumptions about why it is safe to operate are robustly and continually challenged, and necessary improvements are implemented.

The goal must be to secure a more robust culture of major accident hazard protection and a greater degree of assurance that the requirements within safety cases and environmental protection arrangements are known throughout the workforce, known to be in place, and known to be effective, or challenged and changed where this is not the case.

### **Recommendation 5.1**

- **The Review Panel recommends that Oil and Gas UK develop within six months (or as soon as possible thereafter) industry guidelines of best practice for implementation assurance, and that these are used by the regulators in their ongoing scrutiny of management control systems for prevention of, or dealing with, major incidents.**

One way to achieve this goal is to focus anew on installation safety cases and oil pollution emergency plans. These should be living documents, central to the way facilities are operated and with contents widely understood by senior managers and workforce alike. Any organisation that regards them simply as a regulatory necessity denies itself the opportunity of realising the value that they can add to their business.

The Review Panel noted that, at present, there exist few key performance indicators that seek to assess the extent to which a desired safety culture is embedded in a company's organisation or the degree to which there has been compliance with agreed procedures in the process of implementation. These are areas the Panel believes industry should develop, especially in view of the emphasis it places on fostering and maintaining positive cultures. Improvements in the effectiveness of auditing and monitoring arrangements are key to providing assurance on procedural compliance and the performance of safety cultures. This will enhance risk management and lead, for instance, to reduced pre-cursor incidents.

Senior management inspections that focus on operational major hazard safety and environmental protection are one important mechanism for ensuring implementation assurance. An example of good practice used by some operators to reinforce their internal implementation monitoring processes is a Technical Review Group that acts as an internal

inspectorate to audit safety and environmental practices and to promote a culture of continuous improvement throughout the company.

Another way in which these recommendations might be supported is by the establishment of an on-site authority independent from commercial or production pressures, competent to assess the risk of major accidents and specifically empowered to prevent them occurring. While it could be beneficial to focus functional capability in one individual in this way, care would be required to ensure that it did not lead, counter-productively, to a culture where those in other key roles absolved themselves of collective Major Accident Hazard (MAH) responsibility.

The Review Panel strongly believes that modern technology could be more fully and widely employed to monitor high-risk wells and operations remotely. At present, for example, at least one operator monitors high risk drilling operations from an onshore location and has identified and corrected non-compliance activities by its offshore drilling personnel. The use of decision support tools could also improve the diagnosis and prevention of major safety hazards (see also Chapter 11).

Ultimately, responsibility for implementing improvement rests with industry. However the regulators should make clear their expectations and thereby assist in establishing the new standard to be achieved. This could be done by reviewing relevant guidelines and as part of the normal course of regulatory interventions.

## **NOTES**

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<sup>70</sup> UK. HEALTH & SAFETY EXECUTIVE. 2011. *Human factors/ergonomics – Introduction to human factors*. [ONLINE] Available at: <http://www.hse.gov.uk/humanfactors/introduction.htm>.

<sup>71</sup> Refer to Chapter 2: Environmental Protection

<sup>72</sup> UK. HEALTH & SAFETY EXECUTIVE. 2011. *HSE Offshore: Key programme final reports*. [ONLINE] Available at: <http://www.hse.gov.uk/offshore/programmereports.htm>.

<sup>73</sup> UK. HEALTH & SAFETY EXECUTIVE. 2011. *HSE Offshore: Statistics*. [ONLINE] Available at: <http://www.hse.gov.uk/offshore/statistics.htm>.

<sup>74</sup> UK. HEALTH & SAFETY EXECUTIVE, 2004. *Leadership for the Major Hazard Industries: Effective Health and Safety Management. (Leaflet)*. Edition. HSE Books

<sup>75</sup> UK. HEALTH & SAFETY EXECUTIVE. 2004. *Leadership for the Major Hazard Industries: Effective Health and Safety Management. (Leaflet)*. Edition. HSE Books. Page 5

## **CHAPTER 6**

### **COMPETENCY AND TRAINING OF WORKFORCE**

#### **Introduction**

Competence can be defined as the ability to undertake responsibilities and perform activities to a recognised standard on a regular basis. It is a combination of skills, experience and knowledge. The inadequate management of competence is often a contributory factor associated with major accidents in the offshore and process industries.<sup>76</sup>

Getting competence right is part of preventing a major accident at a well site, an environmental disaster, or both.

#### **Review Panel Considerations:**

Few details have thus far emerged from the various US Macondo investigations in relation to training and competency, but the Panel expects learning in this area will emerge from the investigations still ongoing.

The Review Panel heard evidence from operators<sup>77</sup> and contractors<sup>78</sup> that deal with the training and competency of offshore workers as part of their ongoing management of offshore production facilities and exploration drilling installations.

Drilling contractors highlighted two different routes for well control personal certification according to either the International Well Control Forum (IWCF) or International Association of Drilling Contractors (IADC) schemes. Licensees/Operators can contractually specify the use of a particular scheme, but that specification could be different to the corporate route chosen by the drilling contractor.

The regular use of simulators and exercises to test emergency drilling scenarios and keep training fresh was also regarded by drilling contractors as being important<sup>79</sup>.

Based on the evidence it was clear to the panel that ensuring the competence of an operator's drill-site representative (the "company man") is also vital. The ability of the drill-site representative to engage effectively with the drilling contractor site management is important, as is a clear understanding of the role and responsibility of this individual during an emergency.

The Panel were informed by HSE that there is a statutory requirement<sup>80</sup> for the drilling contractor to ensure that all staff are capable of carrying out their allocated tasks. In the UK sector, it is common for the licence/operator company to specify to the drilling contractor which subcontractor companies will be used for particular operations. It is the drilling contractor that holds the legal duty for ensuring safety of the offshore installation and everyone onboard. Therefore the drilling company should be fully empowered by its client to satisfy itself that personnel provided by third-party contractor companies are competent. Third party personnel in this context includes personnel provided by the licensee/operator itself.

The Panel were told that the operator must be able to provide the necessary level of assurance to DECC, before permits are issued, that all necessary measures and actions have been taken and procedures/systems are in place with regard to; prevention of a significant environmental impact as a result of a planned operation; mitigation of the risk of environmental incidents; and sufficiency of pollution control and response arrangements in the event of an incident.

As part of this process operators are required to demonstrate to DECC those procedures by which they can assure the competency and training of personnel contracted to conduct well operations. Operators and key contractors and sub-contractors are required to demonstrate that there are standards set for competency at all levels which are job specific, that there is appropriate assessment of that training and that training is proportionate to the hazards and risks concerned.

In considering the features of the regulatory regime relating to competence and training, the Review Panel found that the existing legislative and inspection arrangements are satisfactory, but that the industry and regime could do more in practice to provide robust assurance that all personnel involved in a drilling operation have the necessary competence to deal with routine work and emergency situations.

The Review Panel also considers there is a need for licensees/operators and drilling contractors to improve how they cooperate to monitor and verify the competence of all parties involved in a drilling operation. This particularly includes subcontractors' staff and itinerant workers.

The goal to be achieved is that personnel from the range of companies involved in a drilling operation should be part of a common, integrated safety ethos. This ethos should drive a requirement for continually improving standards of training and competence toward a highest common denominator level across the industry.

Besides the technical competence required for their roles, it is important to ensure that all personnel, whether permanent, third party or itinerant, have received appropriate training in major accident hazard awareness and operational/process risk identification.

The Review Panel considers there is a key benefit to be gained by enhancing the emergency element and realism of safety training and exercises to better equip individuals and teams to take effective decisions under stress. Rogue wells are not tamed by individual effort. A team-based approach is necessary and therefore emergency scenarios should exercise teams.

### **Recommendation 6.1**

- **In regard to training and competency of personnel involved in drilling operations, the Review Panel recommends that:**
  - **The regulators work with the industry (through OGUK) to develop clear competency guidelines for different offshore job functions and develop appropriate audit processes to ensure their effective implementation.**
  - **Operators of drilling installations ensure that emergency exercises cover realistic worst case major accident hazard scenarios, including events in which control of a well is lost and a blowout develops.**

- **The WLCPF undertakes research to learn from practices used in other high hazard industries for training and exercising crews for emergency scenarios and applies any resultant learning in standards and guidelines for UKCS best training practice.**
  
- **The WLCPF examines, and periodically reviews, standards of training and certification for personnel involved in drilling operations. The standards should be revised as necessary to ensure a common approach in the UK basin and should apply to all personnel involved in a drilling operation, including those provided by third-party companies.**

Examples that illustrate some of the ways to implement these recommendations include:

- Ensuring emergency exercises test and train for clear communication, clarity of authority and issuing of instructions, and the procedures and authorisations for shutting down a well, including shearing of drill-pipe.
  
- Investigating the use of Crew Resource Management (CRM) training for the management of emergency situations, learning from practices in the aerospace industry.
  
- Increased use of simulators to improve exposure of rig crews collectively and individually to realistic emergency situations and decision making.
  
- Drill sites adopting a mandatory programme of MAH safety drills involving crew from all organisations on the installation.
  
- Including rig abandonment practices and stretcher evacuations in rig safety drills.
  
- Using an independent examiner to witness selected emergency exercises and HSE/DECC requiring the inspection of emergency exercises from time-to-time.

- HSE and DECC continuing to inspect the arrangements put into practice by well operators and installation duty holders/operators to ensure compliance with legislative requirements and the standards industry establishes.

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<sup>76</sup> UK. HEALTH & SAFETY EXECUTIVE. 2011. *Human factors/ergonomics – Training and competence*. [ONLINE] Available at: <http://www.hse.gov.uk/humanfactors/topics/competence.htm>.

<sup>77</sup> PATERSON Robert, BORWELL Mick. representing OIL and GAS UK. Accompanied by BY WRIGHT Boyd (CENTRICA), DICKSON David (BP), JACKSON Crawford (PETROFAC), RONWAY Peter (CNR), HENDRON Andrew (CONOCOPHILLIPS), TAYLOR Simon (APACHE) representing oil and gas operating companies. 2011. *Interview on 16<sup>th</sup> June 2011, Aberdeen, UK*. [Interview notes in records of Review Board]

<sup>78</sup> WHITE Glenn – Rowan Drilling, CLYNE Neil - Transocean, ELLINS Martin – KCA Drilling. Representing members of the INTERNATIONAL ASSOCIATION OF DRILLING CONTRACTORS NORTH SEA CHAPTER. 2011. *Interview on 7<sup>th</sup> July 2011, Aberdeen, UK*. [Interview notes in records of Review Board]

<sup>79</sup> WHITE Glenn – Rowan Drilling, CLYNE Neil - Transocean, ELLINS Martin – KCA Drilling. Representing members of the INTERNATIONAL ASSOCIATION OF DRILLING CONTRACTORS NORTH SEA CHAPTER. 2011. *Interview on 7<sup>th</sup> July 2011, Aberdeen, UK*. [Interview notes in records of Review Board]

<sup>80</sup> UK. HEALTH & SAFETY EXECUTIVE. 2008. *Guide to the Well Aspects of the Offshore Installations and Wells (Design and Construction, etc) Regulations 1996 (Legal)*. 2<sup>nd</sup> Edition. HSE Books.

## **CHAPTER 7**

### **WORKFORCE ENGAGEMENT**

#### **Introduction**

Lord Cullen's report on the Piper Alpha disaster highlighted the importance of the involvement and commitment of the whole workforce in achieving safe operations offshore.

While examination to date of the Deepwater Horizon incident has not focussed on broader workforce involvement in safety matters, future reports may well do so. Until then, drawing firm conclusions would be inappropriate. Nonetheless, the Review Panel has considered existing structures for workforce involvement within the UK regulatory regime, whether they remain appropriate and how they might be enhanced.

#### **Review Panel Considerations:**

##### **Safety Culture**

Effective control and management of major hazards requires a good safety culture to pervade an organisation and installation. Several of the other chapters and recommendations in this report bear on how the Panel believes it is possible to improve the safety culture in the offshore industry - from good to great. However there are particular characteristics of the industry that need to be reflected in the development of its safety culture. Offshore installations are characterised by the co-existence of workers of several employers in an environment that is both isolated and potentially hazardous. Personnel need to cooperate on many issues, not least the prevention of major accidents where securing a strong culture of safety and environmental awareness is vital to the effective management of risks.

Ultimately, legal responsibility for the safe operation of an installation and connected activities rests with the owner or operator, whose appointed Offshore Installation Manager (OIM) is responsible for the day-to-day management of the installation and in charge of the health, safety and welfare of persons on or around it.<sup>81</sup> Helping reinforce this principal, there

already exist several other key offshore roles that have, or should have, risk analysis and prevention uppermost amongst their daily responsibilities. These include: Supervisors; Safety Representatives; Quality, Health, Safety and Environment (QHSE) Advisors and Client Representatives.

Owners and operators, and those commissioning drilling works must assure themselves that OIMs, or others with safety critical roles, are not hindered in taking safety-related decisions by any commercial pressure or consideration - real or perceived. The Review Panel noted that, in recent years, the industry has pursued improvements in its safety cultures and endorsed the principle that everyone is authorised to stop a job should they have safety concerns<sup>82</sup>. Nevertheless, the House of Commons Energy and Climate Change Committee was concerned that there remains a risk that those responsible for taking decisions to halt operations could feel commercial pressure not to do so.

Although it was apparent from stakeholder consultations that many in and around the industry have done a great deal to foster improved safety and environmental awareness, the Panel's perception was of a mixed picture in terms of success, with scope for more to be done fully to embed that awareness in workforce thinking and operational practice across the sector in a consistent way. The Panel is of the view that successfully establishing risk management as a priority has a positive influence on behaviours and attitudes. It considers workforce engagement in this to be a key feature of securing a strong, positive risk control culture.

### **Recommendation 7.1**

- **The Review Panel therefore recommends that individual operators and industry organisations such as OGUK and IADC continue to develop management systems and best practices for rig crew engagement which drive a continuously improving culture of safety and environmental protection within their workforce.**

## **Safety Representatives**

Although there are complex layers of “top-down” management systems in place, the Panel believes that workforce Safety Representatives have a crucial role to play.

Given the workplace characteristics of offshore installations, high quality worker involvement and consultation is of key importance for the identification and control of risks. A bespoke legislative regime exists in the UK to take account of this in the form of the Offshore Installations (Safety Representatives and Safety Committees) Regulations 1989. UK law and practice differs considerably from the US in this respect, and appears to result in higher and more effective general levels of workforce participation in risk management.

It was clear to the Panel that employers understand the benefit of engaging and enabling their workforce in safety and environmental matters. It heard in evidence<sup>83,84</sup> that employers seek value from a productive partnership with the offshore workforce in general, and the appointed Safety Representatives in particular. This was broadly echoed by trades unions<sup>85</sup>, who nevertheless expressed concerns about the levels of training extended to Safety Representatives and the extent of their involvement in major process hazard assessments and inspections on some offshore installations.

Key requirements of the legislative framework are that operators consult workforce Safety Representatives in the preparation, revision and review of an installation Safety Case and that Safety Representatives have statutory powers to inspect installations and investigate incidents. Clearly these provisions create an opportunity for operators to use workforce knowledge and experience better to control the risk of a major accident or environmental impact. The Panel noted also that many offshore installations have appointed QHSE (Quality, Health, Safety and Environment) officers to support the implementation of environmental management systems.

Compliance in practice with the UK requirements has actively been pursued by HSE and DECC since long before the Macondo disaster and it has continued since the incident. However, the operation and implementation of the workforce involvement regime in the UK was recently subject to additional scrutiny by HSE in the context of the KP3 exercise and the subsequent review of the industry’s response to its findings<sup>86</sup>.

Influenced by that and by the work of the OIAC Workforce Involvement Group (WIG)<sup>87</sup>, HSE recently undertook a targeted project specifically to assess overall industry compliance with Safety Committee and Safety Representative Regulations.<sup>88</sup> The project identified areas of good practice and areas where there was a need for improvement. It examined five key areas:

- Safety representatives, constituencies and elections etc
- Functions and powers of safety representatives
- Safety committees
- Duties of installation operators, owners and employers
- Time off and training

The results<sup>89</sup>, including examples of best practice, have been published and emerging issues have been referred to OIAC's Workforce Involvement Group and the Step Change Workforce Engagement Group.

Based on the evidence presented to them<sup>90 91</sup>, the Panel concluded that the contributions Safety Representatives can make, and the attendant benefit the industry can derive from them, are closely related to the training they receive. The view of the Panel is that more could be done by operators to equip Safety Representatives with a higher level of competence, particularly concerning major operational hazard risks, which will in turn enable more effective results in the form of risk management, improved cultures and, ultimately, bottom-line business benefits.

Safety Representatives will be more effective if they have a good understanding of the major process hazards in an organisation's activities and how the risks are managed. Training in this respect would impart the ability, knowledge and understanding necessary to make them more competent in this area. Included in this must be the ability to communicate effectively with workforce and managers alike. Any additional training necessary to achieve this should be based on an analysis of individuals' needs and may need to go beyond the legal minimum requirement.

Keeping in mind the concerns expressed by the Energy and Climate Change Committee<sup>92</sup> concerning the possibility of safety representatives being or feeling intimidated into not reporting process safety concerns, the Panel urges the continued pursuit of existing strategies to instil a more widespread and comprehensive application of effective workforce engagement. The object of the existing measures for industry compliance with the Safety Representatives and Safety Committees Regulations must be to enhance major risk control through a uniform climate of trust and confidence, under which safety and environmental related concerns can be raised, received, reviewed and dealt with openly, on all offshore installations, without any fear of recrimination.

### **Recommendation 7.2**

- **The Panel recommends that operating companies take steps to ensure that safety representatives:**
  - **remain freely and fairly elected and candidates are committed and capable to undertake the requirements of the role;**
  - **are provided with appropriate access to training over and above the statutory minimum requirements to develop competence in the identification of major risk hazards and communication skills, in addition to occupational safety matters;**
  - **are appropriately involved in the preparation and maintenance of safety cases,**
  - **are encouraged to exercise their powers to report process safety concerns, inspect installations and investigate incidents, as part of their normal duties and without any fear of recrimination.**
- **The Panel also recommends that operating companies expand the scope of existing non-statutory workforce involvement in environmental roles to include offshore environmental protection issues, particularly the development, maintenance and implementation of OPEPS.**

Responsibility for implementing these recommendations should rest with operating companies, coordinated with assistance from OGUK, IADC, HSE's Offshore Division and DECC. The industry and its regulators should work in concert with the relevant trades unions as well as through the Step Change and OIAC organisations.

Methods to put these recommendations into practice could involve developing agreed industry standards for Safety Representative training and workforce consultation over-and-above the statutory minimum. Avenues should be explored to create a more consistent application in approach by operators across the industry. To measure the extent and quality of industry's progress, HSE should consider repeating its workforce involvement project after a suitable interval.

Any review of training arrangements for Safety Representatives should take into account maintaining an appropriate balance between occupational safety matters and identifying process and operational hazards. Skills for communicating and presenting ideas may be important and skills for inspection and investigation should not be ignored.

Safety Representatives should have adequate time to properly discharge their functions during offshore working time.

The industry should aim to enhance workforce participation through training and engagement of all offshore staff in inspection and monitoring of operational hazards. Improving awareness of signs of deviations from normal operating conditions and developing a team safety culture will encourage concerns to be raised and openly reviewed.

## NOTES

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<sup>81</sup> UK. HEALTH & SAFETY EXECUTIVE, 2002. *A Guide to the Offshore Installations and Pipeline Works (Management and Administration) Regulations (Guidance booklet)*. Revised Edition. HSE Books.

<sup>82</sup> PATERSON Robert, BORWELL Mick. representing OIL and GAS UK. Accompanied by WRIGHT Boyd (CENTRICA), DICKSON David (BP), JACKSON Crawford (PETROFAC), RONWAY Peter (CNR), HENDRON Andrew (CONOCOPHILLIPS), TAYLOR Simon (APACHE) representing oil and gas operating companies. 2011. *Interview on 16<sup>th</sup> June 2011, Aberdeen, UK*. [Interview notes in records of Review Panel]

<sup>83</sup> PATERSON Robert, BORWELL Mick. representing OIL and GAS UK. Accompanied by WRIGHT Boyd (CENTRICA), DICKSON David (BP), JACKSON Crawford (PETROFAC), RONWAY Peter (CNR), HENDRON Andrew (CONOCOPHILLIPS), TAYLOR Simon (APACHE) representing oil and gas operating companies. 2011. *Interview on 16<sup>th</sup> June 2011, Aberdeen, UK*. [Interview notes in records of Review Panel]

<sup>84</sup> WHITE Glenn – Rowan Drilling, CLYNE Neil - Transocean, ELLINS Martin – KCA Drilling. Representing members of the INTERNATIONAL ASSOCIATION OF DRILLING CONTRACTORS NORTH SEA CHAPTER. 2011. *Interview on 7<sup>th</sup> July 2011, Aberdeen, UK*. [Interview notes in records of Review Panel]

<sup>85</sup> MOLLOY Jake - RMT, TAYLOR John - UNITE, CRAIG Mike – UNITE. representing members of trade unions. 2011. *Interview on 6<sup>th</sup> June 2011, Aberdeen, UK*. [Interview notes in records of Review Panel]

<sup>86</sup> UK. HEALTH & SAFETY EXECUTIVE. 2011. *HSE Offshore: Key programme final reports*. [ONLINE] Available at: <http://www.hse.gov.uk/offshore/programmereports.htm>

<sup>87</sup> OFFSHORE INDUSTRY ADVISORY COMMITTEE (OIAC). 2011. *OIAC - Workforce Involvement Group*. [ONLINE] Available at: <http://www.hse.gov.uk/aboutus/meetings/iacs/oiac/wig.htm>

<sup>88</sup> UK. 1989. *The Offshore Installations (Safety Representatives and Safety Committees) Regulations 1989. Statutory Instrument No 971 of 1989*

<sup>89</sup> UK. HEALTH & SAFETY EXECUTIVE. 2011. *HSE Offshore: Workforce involvement*. [ONLINE] Available at: <http://www.hse.gov.uk/offshore/workinvolvement.htm>

<sup>90</sup> MOLLOY Jake - RMT, TAYLOR John - UNITE, CRAIG Mike – UNITE. representing members of trade unions. 2011. *Interview on 6<sup>th</sup> June 2011, Aberdeen, UK*. [Interview notes in records of Review Panel]

<sup>91</sup> PATERSON Robert, BORWELL Mick. representing OIL and GAS UK. Accompanied by WRIGHT Boyd (CENTRICA), DICKSON David (BP), JACKSON Crawford (PETROFAC), RONWAY Peter (CNR), HENDRON Andrew (CONOCOPHILLIPS), TAYLOR Simon (APACHE) representing oil and gas operating companies. 2011. *Interview on 16<sup>th</sup> June 2011, Aberdeen, UK*. [Interview notes in records of Review Panel]

<sup>92</sup> UK. House of Commons. 2011. *UK Deepwater Drilling: Implications of the Gulf of Mexico Oil Spill (Second Report of Session 2010-11 - Volume I: Report, Together With Formal Minutes, Oral and Written Evidence)*. HM Stationery Office.

## **CHAPTER 8**

### **LIABILITY AND INSURANCE ISSUES**

#### **Introduction**

The Panel noted that both the US National Commission on the BP Deepwater Horizon Oil Spill and the UK Energy Select Committee made recommendations in relation to the liabilities and compensation costs that could arise in relation to oil spills. In particular, in the context of the UKCS regime, these related to:

- Sufficiency of the OPOL limit & coverage;
- Clarity on liability and ability to pay for an incident;
- Compulsory third-party cover for small companies;
- Extension of the Environmental Liability Directive offshore
- Guidelines and clarity on compensation process.

#### **Review Panel Considerations:**

##### **Financial Cover**

The Panel's aim was to verify that adequate checks were being carried out on companies operating on the UKCS to ensure that they had sufficient funds available to meet both first and third party costs in the event of an incident on the UKCS.

##### **i) Costs Incurred Directly by the Licensees such as capping a leaking well or drilling a relief well (First Party Costs)**

The panel received evidence in this area from a number of parties with differing views. Chevron and DECC advised the Panel, commenting respectively, that the UK requires demonstration of financial competence<sup>93</sup> and that UKCS licensees are jointly and severally liable for costs associated with oil and gas activities. In contrast, Greenpeace stated that in their view the Industry is not capable of responding to a deepwater blowout and that any

company wanting to drill should be able to demonstrate their ability to cover the costs of a major incident.<sup>94</sup> They went on to comment that the ability to pay is not publicly available and impossible to verify.<sup>95</sup>

The Panel endorses the UK regime which imposes joint and several liability, but were concerned to ensure that companies had the means to meet first party costs in the event of an incident and that the costs of drilling a relief well were adequately assessed. The Panel investigated this issue with DECC, who recognised that financial checks in the past have focused on industry's ability to carry out the agreed work programme rather than to pay for unforeseen events. However, since Macondo, depending on the circumstances of the proposed drilling operation (e.g. strength of balance sheet, details of activity being undertaken), explicit confirmation that sufficient finance of insurance/indemnity provision, in addition to Offshore Pollution Liability Association Ltd (OPOL) cover, is available to cover the cost of drilling relief wells was being sought. DECC advised the panel that permits to drill are not issued unless this is the case.<sup>96</sup> The amount of cover is currently determined by the companies, based on the specific features of the well. However, it is recognised that this process could be reinforced by independent, third party verification both of the cost and the sufficiency of the provision.<sup>97</sup>

### **Recommendation 8.1**

- **Given the importance of ensuring that companies have sufficient funds to meet first party costs in the event of an incident, the Panel strongly recommends that independent third party verification by an insurance expert of both the estimated costs and the ability to pay, including suitability of the insurance cover to meet them, should be submitted to DECC prior to consent being given to drill a well.**

### **ii) Clean-up and Remediation (Third Party Costs)**

In addition to first party costs, companies are also jointly and severally liable for clean-up and other remediation measures. Companies either self-insure or maintain insurance to cover these costs. However, in addition to their own provisions, all operators on the UKCS have Offshore Pollution Liability Association Ltd (OPOL) cover. This is unique to the UK and is

fully described in the Select Committee Report<sup>98</sup> and in DECC's evidence paper to the Committee.<sup>99</sup> OPOL provides for the mutual agreement from all of its members for the settlement of claims up to US\$ 250 million per incident in the event of a default by an operator (Industry agreed to increase the limit for the settlement of claims from US\$120 to US\$250 million following the Gulf of Mexico incident).

Susie Wilks of Client Earth, in her evidence to the Panel, questioned OPOL's "restrictive terms, absence of independent oversight and lack of enforceability", and recommended, "A legally binding system enforceable in court is needed to provide certainty and transparency to claimants."<sup>100</sup>

DECC advised that OSPRAG had set up an Indemnity and Insurance Review Group (IIRG) to review the provisions of OPOL and the financial and cross-indemnity arrangements behind the current mutual co-operative industry mechanism (Offshore Cooperative Emergency Services).<sup>101</sup> Despite the potential for a blowout being remote, as part of this work a review was commissioned of the potential for beaching of oil from such an event at five indicative sites around the UKCS. Initial feedback demonstrates that for the majority of the central/northern North Sea wells landing is unlikely for a well where a capping device can be successfully deployed within 30 days. For a productive well in the West of Shetland area, however, the prevailing winds and tides could cause landings on Shetland, Orkney and possibly north of the mainland on a timescale of less than 30 days. This conclusion is currently being assessed in terms of clean-up and third party compensation costs, to compare against the new OPOL limit.<sup>102</sup> The latter (\$250M) is based on the assumption that a well can be capped within 30 days.

DECC advised the Panel that where the OPOL limit is deemed insufficient, it will be looking to the individual operator involved to provide reassurance that they have sufficient additional funds/insurance cover in place. This reflects the fact that there are only a limited number of operators involved in these high risk activities and ensures that companies engaged in lower risk activities are not required to obtain higher levels of insurance than needed.<sup>103</sup>

The Review Panel recognise the value of the OPOL safety net, which is unique to the UK and welcome the work carried out by OSPRAG through the IIRG to ensure that the costs of high risk wells are adequately covered. The Panel considers that for such wells liability limits

should be based on the worst case scenario: a well continuing to leak until a relief well is drilled and the influx is plugged at source, typically taking 90 days.

## **Recommendation 8.2**

- **The Panel recommends that the IIRG should conclude their findings with urgency and that DECC should ensure that these inform new procedures and guidelines, which should also include a requirement for independent verification that insurance/indemnity cover is sufficient to meet third party costs.**
- **The Panel also recommends that third party costs for high-risk deepwater wells should be revised upwards. Despite the availability of caps, the costs should cover a 90 day release, which would reflect the typical time required to drill a relief well and so plug the original well at source.**

### **iii) Definition of Direct Costs and Extension of the Environmental Liability Directive**

The Panel agreed with Client Earth that clarity was required on what is included in ‘direct costs’. It was noted that pointers were given on the OPOL website and that it is difficult to provide a definitive list. Nevertheless, it was felt that OPOL could consider providing further information in relation to this aspect of liability.

The Panel also agreed that there was a case for extending environmental liability to include ‘indirect costs’ due to damage to the ecosystem and biodiversity. The European Commission has made proposals to improve and clarify existing EU liability and compensation provisions by clarifying the scope of environmental liability. The Panel strongly supports strengthening of provisions in this area.

### **Recommendation 8.3**

- **The Panel recommends that DECC should discuss the issue of damage to the ecosystem/biodiversity with industry (OGUK) with a view to introducing provision to cover this aspect. The Panel recognises that quantifying these costs can be challenging and suggest that the provision might take the form of a charge in the event of an incident (essentially a fine or payment of ‘damages’) to provide a further incentive to avoid any release of oil during Exploration and Production operations. Such damages should be used to fund long-term remedial work required to restore the area to its original environmental condition.**

#### **iv) Claims and compensation process**

The Panel were concerned that a mechanism should be in place for rapid distribution of compensation after an oil spill had taken place and sought clarification as to who would consider claims and authorise payments.

DECC advised that the Operator would administer the funding of all activities. If the operator defaults then OPOL would step in.<sup>104</sup>

However, during discussions with industry representatives, it was clear that there are currently no set procedures in relation to claims and it was recognised that guidance and good practice on such mechanisms should be an area considered as part of the current work underway under the auspices of OSPRAG and IIRG.

The Panel appreciates the Industry’s view that work should be done to ensure that OPOL has appropriate mechanisms in place to deal with claims in the event of an incident in an effective and timely manner.

#### **Recommendation 8.4**

- **The Panel recommends that liability and insurance issues should be taken forward as a matter of urgency by OGUK and a clear claims and compensation procedure adopted by all operators in the UKCS, taking into account the evaluation that is to be carried out of the Gulf Coast Claims Facility once all claims in relation to Macondo have been paid out.**

## NOTES

<sup>93</sup> “...authorisation to undertake any exploration, development or production work within the UK section requires appropriate demonstration of financial and technical competence on the part of the licensee.” SIRGO Eric (General Manager Upstream Europe), LEE Peter (Operational Excellence Manager). Representing Chevron. 2011. Interview on 7<sup>th</sup> July 2011. Aberdeen, UK. [Interview notes and written submission in records of Review Panel]

<sup>94</sup> “...at the moment, the Industry is neither technically nor financially capable of responding to a deep water blowout in the UK.....any company which wants to drill for oil or gas is to be able to demonstrate that it can fully cover any and all costs arising from a major disaster as a fundamental condition of licensing.” GREENPEACE. 2011. Submission to DECC. *Independent Review of UK Offshore Oil and Gas Regulation*. July. [Written submission in records of Review Panel]

<sup>95</sup> “DECC claims under the current arrangements, the granting of a licence and/or drilling consent is conditional on a company showing that they have sufficient financial resources to cover the costs of a spill. However to Greenpeace’s knowledge, neither the estimates of a cost of a spill nor proof of the companies’ ability to pay for one is publically available information, and therefore it is impossible to independently verify whether a company has sufficient means.” GREENPEACE. 2011. Submission to DECC. *Independent Review of UK Offshore Oil and Gas Regulation*. July. [Written submission in records of Review Panel].

<sup>96</sup> “...permits are not issued if sufficient ability to pay or insurance cover is not in place to cover first party costs – typically three times the cost of drilling the well.” KENNEDY Wendy DECC Director Offshore Environment and Decommissioning. 2011. Interviews on 18<sup>th</sup> May and 6<sup>th</sup> June and 2011. Aberdeen, UK. [Interview notes in records of Review Panel]

<sup>97</sup> UK. DEPARTMENT OF ENERGY AND CLIMATE CHANGE, 2011. *Oil & Gas Regulatory Review. Consideration Of The Findings From Investigations Into The Deepwater Horizon Incident. Submission from the Department of Energy and Climate Change*. July 2011. Internal Report [appended]

<sup>98</sup> UK. House of Commons. 2011. *UK Deepwater Drilling: Implications of the Gulf of Mexico Oil Spill (Second Report of Session 2010-11 - Volume I: Report, Together With Formal Minutes, Oral and Written Evidence)*. HM Stationery Office.

<sup>99</sup> UK. DEPARTMENT OF ENERGY AND CLIMATE CHANGE, 2011. *Oil & Gas Regulatory Review. Consideration Of The Findings From Investigations Into The Deepwater Horizon Incident. Submission from the Department of Energy and Climate Change*. July 2011. Internal Report [appended]

<sup>100</sup> “...the OPOL agreement creates a system of strict liability for certain types of offshore oil damage and a system aimed at efficient handling of claims, but is **severely limited by restrictive terms, absence of independent oversight, and lack of enforceability**. It does not provide a comprehensive mechanism for dealing with damage, including environmental damage, arising from an offshore oil spill. A **legally binding system enforceable in court is needed to provide certainty and transparency to claimants**. A mutual guarantee system such as operated under the OPOL agreement could potentially be useful as part of a legal framework governing financial security requirements for offshore operators.” CLIENT EARTH. 2011. Submission to DECC. *Notes on the limitations of OPOL*. June. [Written submission in records of Review Panel]

<sup>101</sup> UK. DEPARTMENT OF ENERGY AND CLIMATE CHANGE, 2011. *Oil & Gas Regulatory Review. Consideration Of The Findings From Investigations Into The Deepwater Horizon Incident. Submission from the Department of Energy and Climate Change*. July 2011. Internal Report [appended]

<sup>102</sup> UK. DEPARTMENT OF ENERGY AND CLIMATE CHANGE, 2011. *Oil & Gas Regulatory Review. Consideration Of The Findings From Investigations Into The Deepwater Horizon Incident. Submission from the Department of Energy and Climate Change*. July 2011. Internal Report [appended]

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<sup>103</sup> UK. DEPARTMENT OF ENERGY AND CLIMATE CHANGE, 2011. *Oil & Gas Regulatory Review. Consideration Of The Findings From Investigations Into The Deepwater Horizon Incident. Submission from the Department of Energy and Climate Change.* July 2011. Internal Report [appended]

<sup>104</sup> “...in the event of an oil spill, the Operator would administer the funding of all activities, including payment to contractors to control and clean-up; payment to local authorities for onshore response and clean-up and claims by third parties for compensation. If the operator defaults then OPOL would step in, collecting funds from its members and being responsible for payments.” UK. DEPARTMENT OF ENERGY AND CLIMATE CHANGE, 2011. *Oil & Gas Regulatory Review. Consideration Of The Findings From Investigations Into The Deepwater Horizon Incident. Submission from the Department of Energy and Climate Change.* July 2011. Internal Report [appended]

## **CHAPTER 9**

### **REGULATOR ISSUES**

#### **Introduction**

The Panel noted that the US National Commission and the Salazar Reports in particular were critical of a number of key aspects of the structure and operation of the regulatory authorities, principally the US Department of the Interior's Mineral Management Service (MMS). The clear perception was that the regulator was under-resourced, its staff was over-stretched and that, as an institution, it lacked the resolve either to ensure its capabilities kept pace with evolving regulatory standards or successfully to impose such higher standards in the face of powerful industry and political influences. Resultant recommendations included calls to:

- introduce mechanisms for the payment of regulatory fees to ensure adequate, stable and secure funding of the key regulatory agencies,
- establish clear career advancement paths so regulator staff were not reliant on “filling dead men's shoes”,
- ensure the provision of comprehensive, standardised and regularly updated training,
- restructure the institutional framework of regulation to separate the functions of regulation and economic promotion of the industry.

#### **Review Panel considerations:**

Recommendations in this area prompted the Panel to explore a number of themes with the individual UK regulatory authorities (and relevant stakeholders) to see if the apparently deep-rooted issues compromising the effectiveness of US regulation existed in the UK.

## Resourcing

A key message flowing from evidence the Panel heard from industry and the regulators alike, was the importance, particularly in the context of the UK's goal-setting safety model, of a competent and well-resourced regulator. The Review Panel also subscribes firmly to that view.

The Panel sought to verify that DECC, HSE and MCA had sufficient resources to allow each organisation to carry out its regulatory duties in an effective manner and to demonstrate resilience in the event of a significant incident on the UKCS. This includes having sufficient people of the right calibre to :

- review, refer back to and accept all documents in relation to safety cases, environmental impact assessments, OPEPs, permit applications, etc.,
- inspect rigs, equipment, practices, training, competence, safety and environmental management systems, etc.,
- address/investigate incidents and improve offshore practice.

DECC advised the Panel that, immediately after the Macondo incident, action had been taken to increase the number of environmental inspectors from seven to ten (nine inspectors and one senior inspector)<sup>105</sup>, enabling a doubling of the number of environmental inspections of mobile drilling rigs. On further analysis (and in line with recommendations from the Salazar report), it was subsequently determined that two-person inspections would be beneficial in relation to more complex drilling operations and, additionally, that it was appropriate to extend the assurance of more frequent inspection to all mobile and fixed installations.<sup>105</sup>

As a result, in January 2011, it was announced that a further eight environmental inspectors, one senior inspector and one senior investigator would be recruited. This will allow the number of annual inspections to increase from 60 to 150 once all inspectors are recruited and fully trained.<sup>105</sup> DECC also advised that in addition to Inspectorate staff, they have three senior environmental managers and seven environmental managers who are responsible for the review of environmental impact assessment of offshore oil and gas activities and for the

administration of environmental legislation. In order to assist with the increased checks required in relation to drilling consents, DECC has recruited two additional environmental managers.<sup>105</sup> In total, this will bring the number of technical and non-technical DECC staff covering environment regulation to 63.

Clearly, increases in resource within the important area of environmental regulation are welcomed and it is recognised that inspections will continue in line with existing risk assessment approaches until the full complement of new inspectors is in post. It is equally clear, however, that the external pool of suitably qualified and experienced individuals is limited.

In the health and safety sphere the Panel noted that, inspector headcount targets in HSE have not been increased following Macondo, although there has been a shift of emphasis within existing resources. HSE's Offshore Division has, for some time, had ongoing recruitment difficulties. HSE advised the Panel that there were currently 100 staff in the Offshore Division, but that vacancies were at present running at some 15%. The age profile of the existing cadre was also noted, with a significant number of staff approaching the ends of their careers.<sup>106</sup>

Since the fundamental causes of the Macondo spill appear to be associated with failings which in the UK come within the domain of HSE, the Panel is of the view that its capacity to review and scrutinise safety cases carefully and to carry out inspections should, if anything, be increasing rather than being in any way compromised by resourcing limitations or recruitment/retention difficulties.

It has to be recognised, however, that it presents an ongoing challenge for authorities to recruit and retain suitably qualified staff where, in most situations, they operate in the same market-place as industries capable of offering significantly higher remuneration levels. The Panel also recognises that in addition to pay there are other factors that affect recruitment and retention including career progression and advancement opportunities. These are challenges in this respect when management structures are relatively flat and where there is a requirement for staff to possess very specific knowledge and experience. A well-rewarded technical ladder is also essential to attract and retain the best people.

The Panel considers that to recruit good and effective regulators and retain them, remuneration and employment packages have to be competitive, using the oil and gas industry as the baseline rather than civil service norms. While there is clearly an attraction for some in the stability and work-life balance which regulatory employment can arguably provide, a degree of dispensation in respect of remuneration is essential to ensuring an effective, high-quality regulator. The regulatory charging mechanisms which already exist in the UK provide an opportunity to adjust the basis upon which the industry funds its own regulation.

It is important that authorities determine and justify what the regulatory footprint should be, now and into the future and produce resourcing, retention and career development plans appropriate to the aim of ensuring that the highest levels of safety and environmental practice are both planned and implemented within the framework of the UK offshore regulatory system.

### **Recommendation 9.1**

- **The Panel recommends that as a matter of priority the regulatory bodies or, where appropriate, their parent Departments, develop strategies to ensure that each authority is in a position to recruit and retain inspectors and managers of the right number, quality, experience and range of specialities. The strategies should also consider issues around age profile, plans for career progression through both technical and managerial routes and commit to an ongoing programme to market-test remuneration rates amongst relevant, specialist staff.**

### **Competency and Training**

The regulators have advised the Panel on their requirements, in terms of qualification and experience, for those personnel fulfilling important assessment, verification and inspection roles. It would appear to be the case that arrangements in this area are robust, e.g. both DECC and HSE set high standards for their inspectors, requiring an appropriate degree and oil and gas experience (preferably 5 years).<sup>107</sup>

The Panel was also reassured by the rigour with which the regulators monitor and assess the competence of such staff and by the structured training and development programmes which clearly exist to ensure that competence is refreshed and maintained.

Observations on the very specific training, competence and coordination between regulatory authorities required for the effective operation of the National Contingency Plan are covered in Chapter 3 of this report (Emergency Response). Otherwise, the Panel has no recommendations to make in this area.

### **Co-ordination Between Regulators**

The Panel considered the drivers behind the existing apportionment of responsibilities between the relevant regulatory authorities and how that apportionment was regarded by the authorities themselves and by relevant stakeholders. It was keen to explore whether different approaches might be more effective in their ability to achieve the goal of strategic, seamless and co-ordinated regulation of offshore hydrocarbon exploration and production activity.

The existing regulatory landscape emerged following the Piper Alpha disaster in July 1988 where, as a result of a gas explosion, 168 installation and rescue personnel had lost their lives. Still by some measure the most serious incident suffered by the UK oil and gas industry, Piper Alpha prompted a comprehensive examination of offshore safety. In his resultant report, Lord Cullen recommended not only the adoption of a “safety case” regime, but other fundamental changes to key aspects of regulatory oversight. Hitherto, responsibility for both licensing and health & safety regulation had lain with what was then the Department for Energy. Lord Cullen recommended, and the Government accepted, that responsibility for health and safety regulation of the offshore oil and gas sector should transfer to HSE, the organisation already responsible for the regulation of hazardous installations and other workplaces onshore. The clear logic was that safety in the oil and gas sector would have the opportunity to benefit from the cross-fertilisation of good practice in the safety arena already acquired through the HSE’s experience and expertise in other industries.

As successor to the Department of Energy, DECC continues to act as the licensing authority in respect of both offshore and onshore hydrocarbons and, in the offshore industry, regulates

environmental performance in accordance with a largely prescriptive suite of environmental legislation, reflecting the fact that this is in the main stems from European Directives which have developed alongside the goal-setting safety regime.

The Maritime and Coastguard Agency (MCA) is the third leg of the regulatory regime. It is custodian of the National Contingency Plan for Marine Pollution from Shipping and Offshore Installations (“the NCP”), designed as a major component of the UK’s international obligations to protect the marine environment, and it plays an important role in the consideration and approval of licensees’ Oil Pollution Emergency Plans.

In discussion with representatives of each of the regulatory authorities, the Panel was struck by the professionalism of the organisations and their clarity of purpose. Industry representatives echoed that finding and, aside from indicating that co-ordinated inspections and greater integration would be welcomed, confirmed their confidence in the manner in which the regulators operated.

At the same time, both DECC and HSE recognised that there was clear shared responsibility around their roles given that major accident risks jeopardised not only human health and safety but also the well-being of the environment. There was a recognition, shared by the Review Panel, that a high-level Memorandum of Understanding which had existed between the two organisations for many years was inadequate for the purposes of codifying the degree of interaction desirable to ensure that respective regulatory functions complemented each other and exploited the benefits of a co-operative approach. The Panel welcomes the fact that a strengthened and broadened Memorandum is now in place.<sup>108</sup>

The Review Panel reflected upon the contrasting regulatory regime for hazardous installations on the mainland. In that context, the explosion, in July 1976, of a reactor at a chemical plant in Seveso highlighted the weaknesses in regulation of industrial facilities with the potential to cause harm to life and the environment beyond the limited confines of the plant and its immediate surroundings. It spawned the adoption, in 1979, of new European environmental legislation which came to be known as the Seveso Directive.

Subsequently amended and updated through the Seveso II Directive, this European legislation is implemented in the UK by the Control of Major Accident Hazards Regulations 1999 (COMAH).

One of the main features of COMAH is the requirement for operators of what are known as “top-tier” sites to produce a safety report which, amongst other things, demonstrates that all necessary measures have been taken to prevent major accidents and to limit the consequences to people and the environment should such accidents occur.

Under COMAH, issues of health & safety and the environment are further integrated by the fact that the “competent authority” which enforces the regulations is itself the joint responsibility of two regulatory bodies: in England and Wales, the HSE and the Environment Agency (EA) and, in Scotland, the HSE and the Scottish Environment Protection Agency (SEPA). Operators of relevant onshore installations which fall under COMAH’s ambit effectively interface with one unified regulatory authority.

The Review Panel sees merit in consideration being given to whether the concept of a competent authority approach offshore, jointly supported by HSE, DECC and perhaps MCA, might enhance the overall efficiency and effectiveness of the regulatory effort. Inherent differences in the existing regulatory approaches to safety and the environment mean this would not be straightforward. The concept of a “competent authority” onshore is made possible for the very reason that it is tasked with the application of a specific regulation. Clearly that is not currently the framework which exists for offshore oil and gas exploitation, and major regulatory revision would be necessary to make it so.

The Panel is strongly of the view that strengthening the principles of co-operative working between the offshore regulators is a necessary and achievable goal. It, therefore, fully supports the steps which have already been taken by the UK regulators in light of the Macondo incident. The Panel commends, in particular, the fact that DECC and HSE now have coordinated sign-off procedures for new exploration and appraisal wells which ensure that both well design/construction and OPEPs are satisfactory prior to drilling consent being given. That ought, however, to be only a first step in embedding a more joined-up approach to regulation.

In making the following recommendation, the Review Panel recognises it is important that the closely related but specific goals of achieving safe operations and protecting the environment are still clearly addressed and that the differences in, and benefits of, the existing regulatory frameworks and processes are recognised and respected. It urges the two parties to capitalise on this opportunity to establish new working principles which will deliver lasting regulatory enhancement.

### **Recommendation 9.2**

- **More formal mechanisms should be established to ensure seamless, strategic and coordinated working between the regulatory authorities.**
- **The Panel's preferred option is the creation of a joint "Competent Authority" (JCA), similar to that currently operating on the mainland.**
- **As a less satisfactory, but easier to implement, alternative, the new Memorandum of Understanding (MoU) recently agreed between HSE and DECC should be developed further in order to capture the key benefits of the "Competent Authority" model.**
- **The MoU should form a binding agreement between HSE and DECC to operate in an integrated and coordinated manner and should provide for:**
  - **a 'Joint Regulatory Steering Board' comprising suitably senior officials from each regulator to meet at least annually to monitor and coordinate the operation of regulatory activity and report annually on actions taken to ensure continuous improvement of the regime,**
  - **specific mechanisms for ensuring coordinated and joint action and for sharing experience and best practice,**
  - **an assumption in favour of joint inspection wherever practical,**

- **agreement on a shared risk-assessment tool to aid prioritisation of joint activity.**
  
- **A senior representative of the MCA should participate in the meetings of the Steering Board, and other existing Memoranda of Understanding between the three organisations should be reviewed and, where appropriate, strengthened.**

## **NOTES**

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<sup>105</sup> UK. DEPARTMENT OF ENERGY AND CLIMATE CHANGE, 2011. *Oil & Gas Regulatory Review. Consideration Of The Findings From Investigations Into The Deepwater Horizon Incident. Submission from the Department of Energy and Climate Change.* July 2011. Internal Report [appended]

<sup>106</sup> WALKER Steve HSE Head of Offshore Division. 2011. *Interview on 16<sup>th</sup> June 2011. Aberdeen, UK.* [Interview notes in records of Review Panel]

<sup>107</sup> UK. DEPARTMENT OF ENERGY AND CLIMATE CHANGE, 2011. *Oil & Gas Regulatory Review. Consideration Of The Findings From Investigations Into The Deepwater Horizon Incident. Submission from the Department of Energy and Climate Change.* July 2011. Internal Report [appended]

<sup>108</sup> UK. DEPARTMENT OF ENERGY AND CLIMATE CHANGE 2011. *Memorandum of Understanding Between the Department of Energy & Climate Change and the Health and Safety Executive.* [ONLINE] Available at: <http://www.decc.gov.uk/assets/decc/11/meeting-energy-demand/oil-gas/3516-mou-decc-hse-ukcs.pdf>

## **CHAPTER 10**

### **THE EUROPEAN DIMENSION**

#### **Recent Developments**

In parallel with this Panel's review of the UK regulatory environment, the European Union (EU) has also been considering the incident in the Gulf of Mexico and determining whether the EU's regulatory frameworks and practices governing the protection of health, safety and environment in the exploration and production activities of the offshore and gas sector need to be reviewed. EU legislation already applies to some of these aspects, but other elements are covered by national legislation, which varies from one EU country to another.

In October 2010, the European Commission issued a Communication entitled "Facing the challenge of the safety of offshore oil and gas activities" which summarised their preliminary findings and responses on the matter. As pollution from offshore accidents do not respect any borders and many companies have cross-border operations, the EU considered that the differences between member states relating to health, safety and environmental laws and information on offshore operations should be reduced collectively. It is also considered that standards should be improved throughout the EU, in line with best practice, and that this could be done more effectively at EU level.

The Commission published draft proposals on 27<sup>th</sup> October 2011, i.e. towards the latter stages of the finalisation of this report. Having considered a range of policy options, it advocates an approach that would introduce a number of reforms which they believe would foster a more holistic and integrated approach to health, safety and environmental regulation. These proposals are framed as *regulations*, which would have direct, binding effect throughout the Union as opposed to a *directive* where member states have a measure of flexibility to dovetail European requirement with domestic legislation.

The Panel notes that key elements of the draft proposals reflect the design and philosophy of the UK legislative regime. Moreover, many of the proposals aimed at the broader regulatory regime resonate with findings and recommendations of this report, particularly with respect to the merits of greater integration of the various regulatory elements of the oil and gas

lifecycle, a more proactive role for regulators in promulgating best practice and greater transparency around information relating to the industry and its safety and environmental performance. Clearly, the publication of these proposals is very much the starting point of an iterative process of negotiation within the EU decision-making process .

### **Review Panel Considerations:**

While aware of activity at a European Union level in light of the Macondo spill, the Review Panel has very much focussed its attention on examining the regime as it stands at present in the UK. The Panel records, however, that its overall perception is of a UK system already embodying the key elements of a robust regulatory environment and one that, although mature, continues to evolve to keep pace with developments in the industry. This Panel's recommendations suggest the next steps to be taken as part of that continuous improvement process. **Particular care should be taken to ensure that any future changes at an EU level neither dilute the fundamental strengths of the UK system or undermine the authority of the relevant regulatory bodies within it nor, through the mechanism and process of their introduction, frustrate or delay the potential improvements highlighted elsewhere in this report.**

## **CHAPTER 11**

### **TECHNOLOGY DEVELOPMENT**

#### **Review Panel Considerations**

It is clear from the range of reports on the causes of the Macondo disaster that a major contributory factor was short-comings in current technology, either to guarantee well control in a fail-safe manner or to enable the rapid containment and capping of an uncontrolled oil spill in deepwater conditions. The failures in well control can all be attributed to poor implementation, equipment maintenance and decision making. Nevertheless, the availability of smarter diagnostic tools, for example to determine the integrity of the cement barrier or to combine the many weak early indicators of a gas kick into an unambiguous alert before the drilling fluid barrier was removed from the riser, would probably have enabled the correct decisions to have been made in time to avoid the blowout. Once the blowout and the subsequent rig collapse and riser rupture had occurred, the industry had no tools and devices capable of collecting and stemming the flow of oil and gas. These had to be designed and engineered in real time and it took 52 days before the well was capped.

Such devices were no more available in the North Sea than in the Gulf of Mexico. If such an accident had occurred on the UKCS, oil would have continued to flow for just as long, if not longer, given the more severe weather and sea conditions which would likely make remote seabed deployment of capping devices more difficult. Furthermore, the colder conditions and climate in the North Sea are less favourable to natural (biological and photochemical) degradation of the released oil, though the enhanced wave activity will probably aid natural dispersal and break-up. It is clear that there is an urgent need for better understanding of the use of chemical dispersants compared with relying on natural processes, and for improvements in their effectiveness, in the processes for their deployment and in the guidelines for their use in the North Sea environment, alongside the development of radical new alternative (e.g. biological) methods of oil spill treatment.

The Review Panel were encouraged that OGUK has taken a lead in the development of a capping device for deployment on the UKCS and that other global initiatives are leading to a

number of such devices being made available shortly. These should reduce significantly the time to cap an uncontrolled spill in future. However, encouraging as this response is, it is only the first stage in what is needed in terms of improved and new technology to reduce the risks of deepwater drilling and to minimise the timescales and consequences of any failures of well integrity. The industry must take responsibility for investing immediately in the R&D necessary to address these critical issues.

Amongst the technology areas identified by the Panel where new developments could make a significant impact on improving the management of major hazard risks and environmental response in offshore oil and gas operations are:

- Oil spill response technology and process, for example
  - Dispersant use and deployment
  - Dispersant biodegradability and low environmental impact
  - Mechanical separation and collection of spilled oil
  - Chemical degradation of spilled oil
- More highly monitored and instrumented BOPs and Marine Riser Assemblies, for example
  - Improved monitoring of the mechanical/electrical condition of BOPs and of the fluid conditions and flow regime inside to aid continuous assurance of BOP readiness; similarly for marine riser assemblies.
  - Adding fail-safe or additional capability e.g. sealant injection
- Improved control and tracking of released oil, for example
  - Fit-for-purpose oil plume modelling – real time dynamic modelling and verification
  - Monitoring flow rates and spill volumes of uncontrolled well releases in deepwater
- Enhanced decision support tools to improve diagnosis and prevention decision making for major safety hazards, for example
  - Data Management and Interpretation Systems

- e.g. Kick detection hydraulic models and alerts
  - Indicate combinations of parameters (e.g. pressures, pit gains, well flowrate) which separately are only a warning ('amber') but together indicate a critical condition ('red')
  - Links to decision tree for appropriate action
  
- Response action guidance tools, linking critical operational parameters to appropriate and clearly designated responses.

Immediate issues arising from the availability of well capping devices and the use of sub-sea dispersant injection are addressed in Chapter 2, Environmental Protection.

### **Recommendation 11.1**

- **The industry, through OGUK, IADC and other industry organisation, should work with the operating and service companies to:**
  - **identify potential technology solutions to lower the risks of deepwater drilling, to monitor compliance, to improve and aid implementation of best drilling practice, oil spill remediation and clean-up, with particular emphasis on the conditions and challenges of operating in the North Sea;**
  - **invest in R&D and bring new devices, tools and methodologies to market rapidly as a key part of future risk management of these operations**
  
- **The regulators should take a pro-active approach to new technology to guide and encourage the industry to develop and implement new technology addressing offshore drilling safety and environmental concerns. Examples of initiatives they might take are:**
  - **The JCA or Joint Steering Board to have a panel of technical expert(s) to identify and monitor new technology developments with significant offshore safety and environmental benefits.**

- **The Regulators pro-actively to encourage industry take-up, deployment and incorporation into guidelines and standards where appropriate.**
  
- **The same group should also be charged with identifying key offshore safety and environmental technology gaps and through the regulators encourage the industry to address these.**
  
- **The Government should make this a priority area for joint industry-government funding of projects through e.g. the Energy Technologies Institute (ETI), the Technology Strategy Board (TSB).**

## **CHAPTER 12**

### **RECOMMENDATION SUMMARY**

#### **WELL PLANNING AND CONTROL**

##### **Recommendation 1.1**

The Panel recommends that:

- The Well Life Cycle Practices Forum (WLCPF) remains in place permanently.
- Competent, authoritative representatives from industry and HSE meet regularly in the WLCPF to agree, review and continuously improve standards for good and best practice in well integrity and control for application in the UKCS.
- The standards take account of the Macondo blowout and encompass operating practices, adequacy and reliability of safety critical equipment (especially BOPs), hardware maintenance and testing; personnel training and competency; human and organisational factors.
- The standards are shared with international regulatory and industry partners and standard setting organisations.

##### **Recommendation 1.2**

In the light of Macondo, Bardolino and other examples provided to the Panel, it recommends that the WLCPF should also promptly consider:

- whether a change in well control standards is necessary to require at least two barriers to be in place (in addition to the BOP) when moving a well to an under-balanced situation with a producing zone open, and
- whether any change is necessary to require operators to give notice advising each time a situation is reached where the BOP plus one other barrier to a release is reached.

#### **ENVIRONMENTAL PROTECTION**

##### **Recommendation 2.1**

The Panel recommends that Industry and DECC should continue to work together to develop and adopt improvements such as:

- the “Environmental Assurance Plan” (EAP) concept, possibly using the Environmental Statement (ES)/Environmental Management System (EMS) as living tools to engender a goal-setting approach to environmental regulation aimed at continuous improvement, particularly in relation to low-frequency, high-impact incidents.
- the identification and unified treatment of generic aspects of environmental assurance documents, to allow more effort to be devoted to other more specific or localised areas of potential impact and risk, through more extensive use of online systems, etc.

#### Recommendation 2.2

- The Panel also challenges the industry to take greater ownership of existing environmental regulatory requirements, including review of contractual arrangements for preparing and updating the relevant documents, to make them into tools that drive improvements in environmental assessment and protection.
- The Panel recommends that the Regulator should continue to work with the industry to identify ways in which existing reporting requirements, especially regarding environmental compliance, might be simplified or rationalised, and that more might be done to demonstrate the need for, and consequent value of the detailed environmental assessments required of them, with a view to providing increased scope for innovative approaches to the improvement of environmental standards.

#### Recommendation 2.3

The Panel recommends that guidance documents relating to offshore environmental impact assessment, enforcement, regulatory activities, etc. should be regularly reviewed and revised, initially in the light of changes in procedures arising from Macondo and subsequently taking account of any other relevant incidents, to reinforce the UKCS continuous improvement culture and to ensure that operators are fully aware of current requirements and environmental best practice expectations.

#### Recommendation 2.4

The Panel recommends that a selection of approved ESs and Oil Pollution Emergency Plans (OPEPs), with a focus on high-risk wells, are periodically subjected to independent peer review by selected environmental experts (academics, independent consultants, members of the UK Environment Groups) to ensure that there can be continuing confidence that the identification and analysis of key issues is robust and evidence-grounded, incorporating the best scientific/ engineering practice, and that routine and unquestioned practice is challenged and lessons learned.

#### Recommendation 2.5

The Panel recommends that, where appropriate, DECC guidance for OPEPs should be updated to reflect the findings of OSPRAG’s oil-spill modelling review.

The Panel recommends that Oil Spill Response Forum (OSRF) explores and stimulates improved oil-spill modelling techniques both at surface and subsea.

### Recommendation 2.6

Given the wide diversity of circumstances and environments in which capping devices might be called upon, the Panel recommends regular testing of their deployment in a range of scenarios, including during the course of relevant offshore National Contingency Plan (NCP) exercises.

Because such devices are not part of an offshore installation, a mechanism needs to be developed to bring them under the jurisdiction of the regulatory regime.

Given the need to ensure that any stand-by capping device will perform its key function, we recommend that the Regulators and Industry should agree requirements for:

- their regular maintenance
- appropriate testing of their ability to operate on demand
- appropriate training for their deployment and operation.
- verification that these activities have been properly conducted.

### Recommendation 2.7

The research and development relating to subsea application of dispersants should continue, to better understand the potential benefits of this approach for different water-depths and oil release flow-rates, compared to surface spraying or natural dispersion.

The industry should define (through representative bodies such as the Oil Spill Response Forum) optimised dispersant systems and injection processes which give maximum benefits with low toxicity in accelerating dispersal and degradation to minimise the risks of oil reaching the shoreline or damaging bird and sea life.

The regulatory bodies should develop subsea application guidelines for dispersant and injection process selection.

There is a requirement for speedy clarification of the regulatory position and relevant competent authorities in relation to dispersant use in near-shore and offshore areas.

## **EMERGENCY RESPONSE**

### Recommendation 3.1

While the NCP provides an effective response procedure to be acted upon when there is a spill of national significance, the Panel recommends that the point at which command responsibility for the containment/clean-up operation should transfer from operator/contractor to the Secretary of State's Representative (SoSREP)/Government is clarified in the NCP. The roles and responsibilities of the various organisations and personnel involved following such a transition should also be clarified.

The Review Panel recommends that the NCP should clearly state who should assume overall command and control of all aspects of oil spill containment and response operations, including safety, regardless of location, should there be conflicting interests between cells.

### Recommendation 3.2

The Panel recommends the establishment of a communication function with authoritative and unambiguous responsibility to brief media and Government Ministers in the event of an incident of national significance.

### Recommendation 3.3

The Panel recommends that the MCA instigates a training programme for all potential members of the Marine Response Centre (MRC) and DECC maintains its training commitment for the Operations Control Unit (OCU). Particular attention should be paid to the numbers of support staff required to ensure that sufficient resilience is in place to maintain a qualified presence during a protracted incident.

The MCA training programme for local authority personnel should continue, thus ensuring a mechanism is in place to ensure non-statutory authorities have capability to conduct clean-up on the shore.

### Recommendation 3.4

The Panel considers that only through more frequent testing of the full range of response cells which would be mobilised in the event of a major incident can the requisite experience be gained by the key individuals involved. It does not consider that the present frequency is sufficient to ensure this, and therefore recommends that:

- the frequency of the NCP exercises involving an offshore installation should be increased to at least every three years to ensure a high level of response preparedness by all parties.
- a programme of smaller scale exercises should be initiated by the MCA in a similar manner to those conducted by DECC and the OCU, to aid the development of the MRC, to test the communications within the cell and its integration with Shoreline Response Centres, Environment Groups and the Maritime Rescue Co-ordination Centres (MRCC).

The Panel also suggests that the frequency of the DECC OCU exercises with operators should reflect the risk particular installations pose to the environment.

The current requirement of Tier 2/3 response contractors is to provide evidence to DECC every five years of their ability to respond and deploy mechanical equipment including aerial surveillance and spraying capability. The Panel recommend the frequency of the response demonstration is increased to align with the NCP exercises.

## **LEARNING FROM INCIDENTS AND BEST PRACTICE**

### Recommendation 4.1

Installation operators and licensees should review their safety and environmental management systems to ensure they take sufficient account of ambiguous or uncertain signals of process abnormality and their scope to have a compounding effect in critical aspects of major hazard risk control. The signals should be treated as indicators that an operation may be unstable or unsafe and prompt the necessary action to ensure that risk is kept under control.

### Recommendation 4.2

The industry should agree principles to ensure concerns about proprietary information and legal exposure do not prevent rapid sharing amongst operators of lessons which could help mitigate the risk of a serious incident. Regulators should use existing powers and influence to help ensure learning is shared on a timely basis.

The industry, under the auspices of Oil and Gas UK (OGUK), should develop and implement proposals to:

- measure the performance and effectiveness of industry arrangements for the timely (days-weeks rather than months-years) sharing and learning from incidents and near-misses,
- demonstrate that best practice is being identified and spread in an effective and transparent way and on an ongoing basis,
- routinely review industry performance to identify and resolve any issues that could hinder company to company sharing, learning and best practice implementation,
- secure a more strategically coordinated approach for the gathering and dissemination of lessons from incidents and standards of good/best practice within the UK regime and internationally.

Regulators should increase their level of scrutiny and monitoring of how companies learn from incidents and share experience rapidly, and take action to secure improvements, including the use of formal enforcement measures.

HSE should review and strengthen the guidance in its Loss of Containment manual, which emphasises the legal requirements under the Management of Health and Safety at Work Regulations to investigate the causes of accidents/incidents, learn appropriate lessons and implement appropriate remedial action and changes to future practice.

## **IMPLEMENTATION ASSURANCE**

### Recommendation 5.1

The Review Panel recommends that OGUK develop within six months (or as soon as possible thereafter) industry guidelines of best practice for implementation assurance, and that these are used by the regulators in their ongoing scrutiny of management control systems for prevention of, or dealing with, major incidents.

## **COMPETENCY AND TRAINING OF WORKFORCE**

### Recommendation 6.1

In regard to training and competency of personnel involved in drilling operations, the Review Panel recommends that:

- The regulators work with the industry (through Oil and Gas UK) to develop clear competency guidelines for different offshore job functions and develop appropriate audit processes to ensure their effective implementation.
- Operators of drilling installations ensure that emergency exercises cover realistic worst case major accident hazard scenarios, including events in which control of a well is lost and a blowout develops.
- The WLCPF undertakes research to learn from practices used in other high hazard industries for training and exercising crews for emergency scenarios and applies any resultant learning in standards and guidelines for UKCS best training practice.
- The WLCPF examines, and periodically reviews, standards of training and certification for personnel involved in drilling operations. The standards should be revised as necessary to ensure a common approach in the UK basin and should apply to all personnel involved in a drilling operation, including those provided by third-party companies.

## **WORKFORCE ENGAGEMENT**

### Recommendation 7.1

The Review Panel recommends that individual operators and industry organisations such as OGUK and the International Association of Drilling Contractors (IADC) continue to develop management systems and best practices for rig crew engagement which drive a continuously improving culture of safety and environmental protection within their workforce.

### Recommendation 7.2

The Panel recommends that operating companies take steps to ensure that safety representatives:

- remain freely and fairly elected and candidates are committed and capable to undertake the requirements of the role;
- are provided with appropriate access to training over and above the statutory minimum requirements to develop competence in the identification of major risk hazards and communication skills, in addition to occupational safety matters;
- are appropriately involved in the preparation and maintenance of safety cases,
- are encouraged to exercise their powers to report process safety concerns, inspect installations and investigate incidents, as part of their normal duties and without any fear of recrimination.

The Panel also recommends that operating companies expand the scope of existing, non-statutory workforce involvement in environmental roles to include offshore environmental protection issues, particularly the development, maintenance and implementation of OPEPs.

## **LIABILITY AND INSURANCE ISSUES**

### Recommendation 8.1

Given the importance of ensuring that companies have sufficient funds to meet first party costs in the event of an incident, the Panel strongly recommends that independent third party verification by an insurance expert of both the estimated costs and the ability to pay, including suitability of the insurance cover to meet them, should be submitted to DECC prior to consent being given to drill a well.

### Recommendation 8.2

The Panel recommends that the Indemnity and Insurance Review Group (IIRG) should conclude their findings with urgency and that DECC should ensure that these inform new procedures and guidelines, which should also include a requirement for independent verification that insurance/indemnity cover is sufficient to meet third party costs.

The Panel also recommends that third party costs for high-risk deepwater wells should be revised upwards. Despite the availability of caps, the costs should cover a 90 day release, which would reflect the typical time required to drill a relief well and so plug the original well at source.

### Recommendation 8.3

The Panel recommends that DECC should discuss the issue of damage to the ecosystem/biodiversity with industry (OGUK) with a view to introducing provision to cover this aspect. The Panel recognises that quantifying these costs can be challenging and suggest that the provision might take the form of a charge in the event of an incident (essentially a fine or payment of ‘damages’) to provide a further incentive to avoid any release of oil during Exploration and Production operations. Such damages should be used to fund long-term remedial work required to restore the area to its original environmental condition.

### Recommendation 8.4

The Panel recommends that liability and insurance issues should be taken forward as a matter of urgency by OGUK and a clear claims and compensation procedure adopted by all operators in the UKCS, taking into account the evaluation that is to be carried out of the Gulf Coast Claims Facility once all claims in relation to Macondo have been paid out.

## **REGULATOR ISSUES**

### Recommendation 9.1

The Panel recommends that as a matter of priority the regulatory bodies or, where appropriate, their parent Departments, develop strategies to ensure that each authority is in a position to recruit and retain inspectors and managers of the right number, quality, experience and range of specialities. The strategies should also consider issues around age profile plans for career progression through both technical and managerial routes and commit to an ongoing programme to market-test remuneration rates amongst relevant, specialist staff.

### Recommendation 9.2

More formal mechanisms should be established to ensure seamless, strategic and coordinated working between the regulatory authorities.

The Panel’s preferred option is the creation of a joint “Competent Authority”, similar to that currently operating on the mainland.

As a less satisfactory, but easier to implement, alternative, the new Memorandum of Understanding (MoU) recently agreed between HSE and DECC should be developed further in order to capture the key benefits of the “Competent Authority” model.

The MoU should form a binding agreement between HSE and DECC to operate in an integrated and coordinated manner and should provide for:

- a ‘Joint Regulatory Steering Board’ comprising suitably senior officials from each regulator to meet at least annually to monitor and coordinate the operation of regulatory activity and report annually on actions taken to ensure continuous improvement of the regime,

- specific mechanisms for ensuring coordinated and joint action and for sharing experience and best practice,
- an assumption in favour of joint inspection wherever practical,
- agreement on a shared risk-assessment tool to aid prioritisation of joint activity.

A senior representative of the MCA should participate in the meetings of the Steering Board, and other existing Memoranda of Understanding between the three organisations should be reviewed and, where appropriate, strengthened.

## **THE EUROPEAN DIMENSION**

Particular care should be taken to ensure that any future changes at an EU level neither dilute the fundamental strengths of the UK system or undermine the authority of the relevant regulatory bodies within it nor, through the mechanism and process of their introduction, frustrate or delay the potential improvements highlighted elsewhere in this report.

## **TECHNOLOGY DEVELOPMENT**

### Recommendation 11.1

The industry, through OGUK, IADC and other industry organisation, should work with the operating and service companies to:

- identify potential technology solutions to lower the risks of deepwater drilling, to monitor compliance, to improve and aid implementation of best drilling practice, oil spill remediation and clean-up, with particular emphasis on the conditions and challenges of operating in the North Sea;
- invest in R&D and bring new devices, tools and methodologies to market rapidly as a key part of future risk management of these operations

The Regulators should take a pro-active approach to new technology to guide and encourage the industry to develop and implement new technology addressing offshore drilling safety and environmental concerns. Examples of initiatives they might take are:

- The JCA or Joint Steering Board to have a panel of technical expert(s) to identify and monitor new technology developments with significant offshore safety and environmental benefits.
- The Regulators to pro-actively encourage industry take-up, deployment and incorporation into guidelines and standards where appropriate.

The same group should also be charged with identifying key offshore safety and environmental technology gaps and through the regulators encourage the industry to address these.

The Government should make this a priority area for joint industry-government funding of projects through e.g. the Energy Technologies Institute (ETI), the Technology Strategy Board (TSB).

## **REVIEW PANEL COMPOSITION**

The Review Panel comprised three independent members:

- Professor Geoffrey Maitland (Chair)
- Mr Mick Temple
- Professor John Shepherd

Representing the three bodies with interests in the regulatory regime for offshore oil and gas exploration, the Panel also included:

- Mr Jim Campbell (DECC)
- Mr Kevin Myers (HSE)
- Mr Philip Naylor (MCA)

There follow brief biographical notes on each of the Panel members:

### Geoff Maitland

Geoffrey Maitland is Professor of Energy Engineering at Imperial College London. His career has straddled academia and the oil and gas industry. He studied Chemistry at Oxford University where he also obtained his doctorate in Physical Chemistry. After a period as an ICI Research Fellow at Bristol University, he was appointed to a lectureship in Chemical Engineering at Imperial College in 1974. He spent a secondment with ICI Plastics Division from 1979-81 and became a senior lecturer in 1983. In 1986 he moved to the oil and gas industry with Schlumberger, where he carried out research and product development in oilfield fluids engineering for well construction, reservoir stimulation and production enhancement. He held a number of senior technical and research management positions in Cambridge and Paris, most recently as a Research Director. He rejoined Imperial College in September 2005 as Professor of Energy Engineering and his current research covers clean and efficient fossil fuel production with particular emphasis on carbon dioxide mitigation processes, methane hydrate production and energy-related reactor engineering. Geoff was awarded the Hutchison Medal by the Institution of Chemical Engineers in 1998 and recently received the IChemE Chemical Engineering Envoy Award for 2010. He served as President

of the British Society of Rheology from 2002-2005 and was elected a Fellow of the Royal Academy of Engineering in 2006. He has extensive experience of working with industry, government bodies and academia on energy-related, particularly oilfield, issues.

### Mick Temple

Mick Temple studied chemical engineering at Sheffield University and joined Esso UK in 1975. He spent 23 years with Esso in upstream and downstream sectors, in the UK and the US. In that time he was manager of Fawley refinery near Southampton, and of Esso UK's shipping, pipeline and supply departments and, as part of his induction into the exploration and production sector, as drilling and production manager for sectors of Exxon's Gulf of Mexico interests. Later, as Gas Business Development Manager for the international arm of Exxon, he had extensive overseas business interactions. In 1998 he joined BAA, first as Development Director and then MD for Heathrow from 2001 to 2005. He was then elected to the BAA plc board with responsibility for Heathrow airport, Corporate CSR and Capital construction, and Heathrow Express. He retired on leaving BAA in 2006 after the Ferrovial takeover, and is at present non-executive director to two small companies and a Member of the Faculty of Sustainability Leadership at the University of Cambridge

### John Shepherd

John Shepherd is a Professorial Research Fellow in Earth System Science in the National Oceanography Centre at the University of Southampton. A physicist by training, he has worked on a wide range of environmental issues, including the transport and deposition of atmospheric sulphur dioxide, the dispersion of tracers in the deep ocean, the assessment and control of radioactive waste disposal in the sea, and the assessment and management of marine fish stocks. His current research interests are in climate change and the natural variability of the climate system over long time-scales. From 1989-94 he was Deputy Director of the MAFF Fisheries Laboratory at Lowestoft and the principal scientific adviser to the UK Government on marine fisheries management. He was Director of the Southampton Oceanography Centre 1994-1999, and from 2001-10 was a Deputy Director of the Tyndall Centre for Climate Change Research. He was elected a Fellow of the Royal Society in 1999 and awarded a CBE in 2010. He has chaired several Independent Review Groups for off-shore decommissioning projects, and the Royal Society study on Geoengineering the Climate, and is currently Chair of DECC's Science Advisory Group.

### Jim Campbell

Jim Campbell joined the Department of Energy in 1979 as a Research Assessor on the initiation and formulation of R & D proposals. He became responsible for Industry and Exports issues within the Infrastructure and Energy Projects Group of British Trade International. He subsequently became Head of the Oil and Gas Industry Development Directorate, responsible for formation of, and running, the Oil and Gas Task Force (now called PILOT). He is currently head of the Department's Energy Development Unit (EDU) which is responsible for UKCS oil and gas licensing, environmental and decommissioning regulation, electricity development consents (transmission system, pipelines, power generation); and for the coal industry, and for health and other liabilities associated with the coal sector, British Shipbuilders and the National Dock Labour Board.

### Kevin Myers

Kevin Myers joined the Health and Safety Executive (HSE) in London in 1976 after graduating in Biochemistry and Environmental Biology. In his career he has held a range of operational posts in HSE as a front line Inspector and manager regulating a broad range of industries as well as various policy and strategy postings - including a three year secondment to the European Commission in Brussels working on EU policy in respect of major hazards and environmental management. More recently, from 2000-2005 he was HSE's Chief Inspector of Construction. From May 2005 until October 2008 he was Director of HSE's Hazardous Installations Directorate with responsibility for HSE's regulation of various 'major hazard' sectors including the onshore chemical industry, offshore oil and gas, high pressure gas storage and distribution, explosives, mining and biological agents. He has been HSE's Deputy Chief Executive since October 2008. In this role he is primarily responsible for oversight of HSE's regulatory activities in Great Britain including the non-nuclear major hazard industries, manufacturing, services, construction and agriculture.

### Philip Naylor

After secondary and pre-sea education at the London Nautical School Philip went to sea as a deck cadet trainee navigating officer and studied at Warsash Nautical College for his foreign-going Master Mariner's certificate. In addition to his seafarer's qualifications Philip has a law degree and a MBA. Philip joined the cruise industry in 1986 working as General Manager for Fleet Marine and Shore Operations for Carnival UK. Here he was responsible for the worldwide operation of 12 cruise ships, as well as major developments ashore in the Port of

Southampton. He has also led Carnival's emergency response organisation. Philip joined the MCA in April 2009. In his post he is responsible for ensuring the safety and quality of seafarers and ships under the Red Ensign and delivering emergency response, survey and inspections services.

## **OIL AND GAS REGULATORY REVIEW**

### **1. Terms of Reference**

1.1 The proposed Terms of Reference are:

“To carry out a review of the UK Oil and gas regulatory regime against the issues and recommendations emerging from the key investigations into the Deepwater Horizon incident in the Gulf of Mexico and other relevant reviews. To make any recommendations for improvement to the UK regime in the light of that review”.

### **2. Process of Review**

2.1 The review will be overseen by a review board chaired by an independent member, comprising senior representatives from DECC, HSE and MCA and independent member(s). The Review will be undertaken and managed by a Review Manager (RM) from DECC and a joint DECC/HSE/MCA Review team.

2.2 The role of the Review Board will be:

- To secure resources and inputs to the Review from DECC, HSE and MCA
- To monitor the progress of the Review via regular reports from the RM on progress and outcomes
- To provide assurance as to the adequacy and thoroughness of the Review and the appropriateness of any recommendations
- To agree a final report on its findings.

2.3 The role of the Review Manager (RM) will be to:

- prepare detailed plans for the Review;
- brief and manage the Review team;
- conduct the Review according to the terms of reference and arrangements agreed;

- ensure that key actions, evidence and decisions are recorded;
- seek and receive advice and challenge from the Review Board;
- prepare and present the Review findings for agreement by the Board;

### **3. The Review Workstreams**

3.1 The Review will take into account any work which has already been undertaken by Government and industry to reflect early learning from the incident including as a minimum (depending on Review Board consideration):

- Individual DECC/HSE/MCA Departmental reviews already undertaken/in progress
- Evidence submitted to, and the findings of, the Energy and Climate Change Select Committee
- The work of Oil Spill Prevention and Response Advisory Group (OSPRAG)
- Wider work which impinges on the legislative regime in UK - e.g. G20, OGP, etc
- The recent European Commission Communication and subsequent developments

3.2 The Review will consider issues from a “cradle to grave” perspective. Although the detailed workstream development will be the responsibility of the RM (and agreed by the Review Board), the prime workstreams are considered to be:

- Licensing and initial “approval/consent” processes
- The preventative regime, both for process integrity and environmental protection
- Preparedness and response regimes and practises
- Liability issues
- Liaison between regulators
- Coordination of, and division of responsibility between, all parties involved in a drilling activity
- Adequacy of industry response

- 3.3 In its considerations the Review should take account of the different underlying legal philosophies in GB and the US.
- 3.4 It is expected that the Review Board will need to meet at least monthly to provide oversight of the work of the Review.

## **SUMMARY OF LICENSING AND REGULATION OF HYDROCARBON EXPLORATION ACTIVITIES IN THE UK**

The Petroleum Act 1998 (“**the 1998 Act**”) vests all rights to the UK’s petroleum resources in the Crown, and provides, amongst other things, for licences for exploration and production in territorial waters and the United Kingdom Continental Shelf (“**UKCS**”) to be granted by the Secretary of State for Energy and Climate Change. Government’s aim through the use of the Act’s powers is to secure the fullest economic exploitation of the nation’s resources of hydrocarbons consistent with safety and environmental requirements.

### **The Grant of Licences**

For licensing purposes the Government divides UK waters into blocks. A licence is granted in respect of one or more blocks or part-blocks. Since the 1960s, the Government has held a succession of “licensing rounds” in which it has invited applications for licences.

Article 3 of Council Directive 94/22/EC (“**the Hydrocarbons Licensing Directive**”, implemented in the UK by the Hydrocarbons Licensing Directive Regulations 1995 (SI 1995/1434)) prescribes a range of procedures by which applications may be submitted for licences – the UK’s licensing rounds (as well as “out-of-round” opportunities) fall within the range of permissible procedures.

The decision to hold a licensing round is acknowledged as the adoption of a “plan or programme” requiring the preparation of a Strategic Environmental Assessment (“**SEA**”) under Council Directive (2001/42/EC) (“**the SEA Directive**”). The SEA Directive is implemented in the UK by the Environmental Assessment of Plans and Programmes Regulations 2004 (SI 2004/1633) (“**the SEA Regulations**”).

Where the Secretary of State considers that the grant of any prospective licence is likely to have a significant effect on a Special Protected Area (“**SPA**”) or a Special Area of Conservation (“**SAC**”), he is required under the Offshore Petroleum Activities (Conservation of Habitats) Regulations 2001 (SI 2001/1754) (“**Offshore Habitats Regulations**”) to undertake a Habitats Regulations Assessment (“**HRA**”) for that area. The Offshore Habitats Regulations implement Council Directive 92/43/EEC (“**the Habitats Directive**”) and Council Directive 2009/147/EC (“**the Birds Directive**”).

Licences issued under the 1998 Act grant a right to “search and bore for, and get, petroleum” in the area covered by the licence. However, the grant of a licence does not, in itself, entitle the licensee to carry out drilling. The real value of a licence is that it gives the holder exclusivity to prospect for oil or gas in the relevant area.

In practice, no activity can be carried out under the licence without some further consent being required. Even non-invasive exploration such as seismic survey requires a further consent from the Department (under regulation 4 of the Offshore Habitats Regulations), so that the environmental implications, including impacts on fish and marine mammals, can be properly considered. The Petroleum Licensing (Production) (Seaward Areas) Regulations

2008 (SI 2008/223) (“**the 2008 Regulations**”) prescribe model clauses (“**the Model Clauses**”) which, pursuant to s. 4(1)(e) of the Act, must be incorporated in all licences granted by the Secretary of State unless he thinks fit to modify or exclude them in any particular case.

### **The UK Regulatory Regime**

The UK regulatory regime is the product of a long history of offshore hydrocarbon exploration on the UKCS. The most significant changes to the regime were implemented following the *Torrey Canyon* disaster in 1967 and following the *Piper Alpha* disaster in 1988.

The current system of regulation in the UK has three limbs.

- It is the responsibility of the Health and Safety Executive (“**HSE**”), an executive non-departmental public body of the Department for Work and Pensions, to assess and regulate the integrity and safety of offshore installations in the UK via the Health and Safety at Work Etc Act 1974 and the offshore specific suite of regulations.
- The Energy Development Unit (“**EDU**”) of the Department of Energy and Climate Change is responsible for licensing UK oil and gas activities, developing the environmental regulatory framework for the UKCS, and for administering and ensuring compliance with that regime in relation to offshore oil and gas exploration, production and decommissioning, including the approval of Oil Pollution Emergency Plans (“**OPEPS**”).
- The Maritime and Coastguard Agency (“**MCA**”), an Executive Agency of the Department for Transport is responsible, if required, for deploying any counter pollution measures to minimise a pollution incident.

### **Environmental Regulation - Summary**

As set out above, before granting a licence the Secretary of State is required to consider whether to carry out an HRA pursuant to the Offshore Habitats Regulations. He must subsequently consider at the stage of giving consent for any activities intended under the licence whether it is necessary to conduct another HRA in accordance with the Habitats Directive and regulation 5(1) of the Offshore Habitats Regulations.

The Secretary of State will not grant consent for drilling until the operator has carried out an environmental impact assessment under the Offshore Petroleum Production and Pipe-lines (Assessment of Environmental Effects) Regulations 1999 (SI 1999/360) (“**Offshore EIA Regulations**”), which implement Council Directive 85/337/EEC (“**the EIA Directive**”). Addressing the detailed impact of specific activities at a specific place, this is a assessment quite distinct from the SEA, which addresses the impact of the plan or programme. As the plan or programme in question is necessarily generic in nature at the time when the SEA is carried out – in particular, it does not attempt to identify specific places at which the activities contemplated will be carried out – the SEA is necessarily unspecific as to effects in particular areas or at particular locations.

In addition:

- A chemical permit must be obtained under the Offshore Chemical Regulations 2002 (SI 2002/1355) as amended by the Offshore Chemical (Amendment) Regulations 2011 (SI 2001/982).
- If the operation involves any planned discharge of hydrocarbons, for example the potential discharge of drill cuttings contaminated with reservoir hydrocarbons, an oil discharge permit must be obtained under the Offshore Petroleum Activities (Oil Pollution Prevention and Control) Regulations 2005 (SI 2005/2055) as amended by the Offshore Petroleum Activities (Oil Pollution Prevention and Control) (Amendment) Regulations 2011 (SI 2011/983).
- If the well is being drilled using a Mobile Drilling Unit, in most cases a “consent to locate” must be obtained under s. 34 of the Coast Protection Act 1949.<sup>1</sup>

### **Safety Regulation - Summary**

Prior to the commencement of operations, a safety case must be prepared under the Offshore Installations (Safety Case) Regulations 2005 (SI 2005/3117) demonstrating that all major accident risks have been assessed and adequate control and mitigation measures put in place. The case must be submitted to and accepted by the HSE before offshore operations can commence. The HSE has power to order a review of any safety case, and ultimately prohibit work activities associated with an offshore installation.

A series of further safety regulations apply to offshore installations once they are operational:

- Requirements for the safe management of offshore installations are set out in the Offshore Installations and Pipeline Works (Management and Administration) Regulations 1995 (SI 1995/738).
- Requirements for protecting personnel from fire and explosions, and securing an effective emergency response, are set out in the Offshore Installations (Prevention of Fire and Explosion, and Emergency Response) Regulations 1995 (SI 1995/743).
- Requirements for integrity in design and construction of installations are set out in the Offshore Installations and Wells (Design and Construction, etc) Regulations 1996 (SI 1996/913).
- Requirements for the managers of offshore installations to consult with workers on safety requirements are set out in the Offshore Installations (Safety Representatives and Safety Committees) Regulations 1989 (SI 1989/971).

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<sup>1</sup> On 6 April 2011, s 34 was repealed and replaced by the requirement for a licence under Part 4 of the Marine and Coastal Access Act 2009 and, as appropriate, Part 4 of the Marine (Scotland) Act 2010.

Following the commencement of operations, the HSE monitors compliance with health and safety requirements, and undertakes inspections of offshore installations and investigation of incidents and accidents.

### **Response to Oil Pollution Emergencies**

As a party to the United Nations Convention on the Law of the Sea (“**UNCLOS**”), the United Kingdom has an obligation to protect and preserve the marine environment. The institution of a National Contingency Plan for Marine Pollution from Shipping and Offshore Installations (“**NCP**”) is one of the measures the UK has taken to meet this obligation. The MCA is the custodian of the NCP.

The NCP’s purpose is to ensure there is a timely and measured response to an oil pollution incident. The plan sets out the circumstances in which the MCA deploys the UK national assets in response to a marine pollution incident to protect the overriding public interest and how these resources are managed. The plan deals with a variety of issues, including:

- establishing the level of response;
- setting up the national response units; and
- at sea response and shoreline/onshore responses.

The NCP supports and underpins an operator's individual OPEP (described below).

To test the effectiveness of the NCP, and its interaction with other major incident plans, including OPEPs submitted by operators of offshore installations, a major oil pollution exercise involving a shipping casualty is held annually and an offshore installation exercise is held every five years.

The exercise's main objectives are to:

- Test the NCP for marine pollution as it effects offshore installations;
- Test the effectiveness of the operator's OPEPs;
- Ensure an integrated approach is achieved between the DECC, MCA and other stakeholders; and
- Test the powers of intervention of the Secretary of State’s Representative (described below).

Prior to the commencement of any operations, an Oil Pollution Emergency Plan (“**OPEP**”) must be prepared that meets the requirements of the Merchant Shipping (Oil Pollution Preparedness, Response and Co-operation Convention) Regulations 1998 (SI 1998/1056) (“**OPEP Regulations**”), and is compatible with the UK NCP. The OPEP must be approved by DECC, taking account of any comments received from the MCA. Operators must be able to respond to any pollution incident, and the Regulations provide for the Department to direct

that an OPEP be amended if it is not considered appropriate for dealing with any particular incident.

The Offshore Installations (Emergency Pollution Control) Regulations 2002 give the Secretary of State for Energy and Climate Change the powers to intervene in an incident involving an offshore installation where there is, or there may be a risk of significant pollution. The UK created the role of the Secretary of State's Representative for Maritime Salvage and Intervention (“**SOSREP**”) in 1999, following a recommendation contained in Lord Donaldson’s Review of Salvage and Intervention and their Command and Control.

The SOSREP acts as the single representative on behalf of the Secretaries of State for the Department for Transport (in relation to ships) and for the Department of Energy and Climate Change (in relation to offshore installations). Once oil, from a ship or an offshore oil and gas installation, enters the water the MCA lead any Government response to clean-up the spill.

The SOSREP will monitor the operator’s response to a pollution incident and, if he deems it necessary, has the powers to give directions and to take such other actions as may be required to prevent or minimise pollution or the threat of pollution. The SOSREP is empowered to make crucial and often time-critical decisions, without delay and without recourse to higher authority, where such decisions are in the overriding UK public interest.

Operators must have facilities and personnel available to work alongside their existing Emergency Response Centre to accommodate the SOSREP and his associated team in the Operations Control Unit, which may be set up as a result of a pollution incident. It is also a requirement of the legislation that every five years each operator must conduct an exercise to test the OPEP and the involvement of the SOSREP.

**REVIEW PANEL MEETINGS**

Meetings of the Review Panel were convened on the following dates in 2011:

- 7 April
- 30 June
- 14 July
- 29 July
- 9 September
- 5 October
- 31 October
- 9 November



# Deepwater Horizon Incident Review Group

## Interim Summary Report

October 2011

# Offshore Division Hazardous Installations Directorate Health and Safety Executive

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## **1. Introduction**

1.1. On 20 April 2010 an explosion on the Deepwater Horizon drilling rig in the Gulf of Mexico killed eleven workers and led to the loss of the rig and an environmental disaster. The incident attracted world-wide attention and has prompted several investigations in the United States.

1.2. The Deepwater Horizon Incident Review Group (DHIRG) was set up by HSE's Offshore Division (OSD) to review the findings from significant investigations into the Deepwater Horizon incident and the similar, but unrelated, Montara blowout. The aim of the group is to share information which is relevant to the work of HSE and to make recommendations regarding the control of wells and the safety of the exploitation of offshore oil and gas in the UK. Environmental issues have not been considered. In particular the group was asked:

- To review significant Deepwater Horizon reports and recommendations from US Government sources and the emerging findings from OSPRAG, and benchmark them against current UK health and safety requirements
- To review the Montara blowout report and recommendations and benchmark them against current UK health and safety requirements
- To come to a view on the significance of Deepwater and Montara safety proposals where the recommendations go beyond current UK requirements.
- To maintain a record of the documents which have been considered and the conclusions reached
- To consider relevant OSD inspection findings and provide information to inspectors as required
- To present options and make recommendations where it appears that there would be a health and safety benefit in making changes to the UK requirements.
- To consider the need for any directed inspection project in the UK sector and make recommendations to Offshore Division's Divisional Management Team.
- To share information and cooperate with regulatory colleagues such as DECC, other North Sea and international regulators, and groups such as the International Regulators' Forum and the North Sea Offshore Authorities Forum.

1.3. The technical membership of DHIRG comprised of offshore specialist inspectors from HSE across a range of disciplines who reported their findings across six workstreams:

- Well Design
- Well Control Equipment
- Integrity Management (comprising mechanical and electrical/instrument disciplines)
- Human and Organisational Factors
- Emergency Response and Mitigation
- Regulatory Oversight

1.4. DHIRG has reviewed seven authoritative documents in detail and has also considered a range of other material (see Appendix 3). The documents reviewed so far have contained extensive information on the technical and to some extent managerial failures which ultimately led to the disaster, although analysis of the contribution of human and organisational factors is not so detailed. Some further work is still outstanding in fully reviewing the technical aspects of the latest US report. There is still one significant investigation yet to report (US Chemical Safety Board).

1.5. This report summarises the work of DHIRG as of October 2011.

## **2. Emerging findings and the UK response**

### **2.1. Well engineering and operations**

2.1.1. The failures in the management, engineering and control of the Macondo and Montara wells are well documented in the various reports, and many of the issues are already been addressed by the UK regulatory regime:-

- The need for 2 tested barriers to well flow is an established UK standard
- The UK Wells Examination Scheme provides an independent check on the quality of the wells engineering.
- The UK's requirement for additional 3<sup>rd</sup> party verification of the testing and examination of safety critical well control equipment provides an additional oversight.
- Operators must notify HSE of aspects of well design 21 days before drilling commences and must provide weekly drilling reports to specialist wells inspectors within HSE

2.1.2. HSE was already undertaking a detailed audit of Well Examiners and has made recommendations based on these findings in a published document (SPC/TECH/OSD/43).

2.1.3. Since Macondo, a variety of other work is being performed to take forward some of the well engineering/operations lessons:-

- Additional aspects of well control and competency are being dealt with by the WLCPPF WGs as part of the initiatives of OSPRAG.
- Scenario based well control training is being looked at in detail by the NSOAF Wells Working Group.
- An inspection template and questionnaire has been developed to enable all offshore inspectors to inspect well control arrangements. The structured information gathered is reviewed by specialist wells inspectors to identify if an intervention is required.
- HSE's KP3 and subsequent KP4 projects have and are addressing and regulating the ongoing issues of integrity through a planned targeted intervention program both offshore and onshore
- OSD is aware of the trend for BOP control systems becoming more complex with increasing reliance on software based systems. This introduces challenges to both initial and in service integrity management and an Information Sheet highlighting Control and Instrumentation issues is currently in preparation.

### **2.2. Blowout prevention equipment**

2.2.1. Much has been made of the failures surrounding the blow out preventer on Deepwater Horizon. the shear rams attempted to close either when the Auto Mode Function (deadman) operated or much later by the ROV, but because the well flow rates had escalated to uncontrollable levels, the shear rams failed to effectively cut the pipe and seal the well. OSD is aware of BOP reliability issues and do not regard the BOP as a fail-safe device. A written scheme of verification as applied to well control safety critical equipment is critical to ensuring that BOPs operate effectively on demand. OSD has developed an inspection tool consisting of a set of questionnaires following the successful model of the well examination inspection and has started well control equipment verification inspections of mobile drilling contractors' installations in the first half of 2011.

2.2.2. There have been calls for consideration of the need for two sets of shear rams to be installed on blowout preventers (BOP) along with the installation of a secondary means of activating them, e.g. by a Remotely Operated Vehicle (ROV). HSE has now asked the Well Life Cycle Practices Forum to assess the practicability of these proposals for use in UKCS. This work is ongoing.

2.2.3. There are technical challenges in testing blowout prevention equipment (BOPE) functions with the result that some functions are not always tested, for example autoshear; deadman (loss of power and / or communications); and emergency disconnect. The current industry guidance (API RP 53) on BOPE testing does not address the testing of these functions. BOP maintenance assurance routines are not always sufficiently robust to identify and remedy failures of single line components. DHIRG considered there was a need to challenge the robustness of BOP maintenance and test regimes - one way to achieve this being to encourage the industry to supplement the limited requirements of API RP 53 by adopting an Integrity Management System with the aim of:

- reducing the likelihood of failures of single line components going undetected; Ensuring redundant and diverse parts of the BOPE control system are adequately inspected, maintained and tested; and
- Ensuring that safety critical BOP functions are indeed tested.

OSD will monitor developments with respect to emerging guidance (e.g. API) to address the testing of BOPE functions

2.2.4. OSD is developing its expectations for an effective BOPE integrity management system covering both initial and in-service integrity in the light of recommendations that failures of BOPE and other well control equipment to operate on demand should be reported and investigated. These expectations are likely to include requirements for:

- The BOP manufacturer to provide the user with adequate instructions for inspection, maintenance and test of BOPE. These instructions should be based on a structured engineering approach such as Failure Mode and Effects Analysis (FMEA) to identify single line components and explain how to inspect, maintain and test redundant and diverse parts of the BOPE control system
- A periodic review by the user of the effectiveness of their maintenance activities in the light of practical experience from the 'as found condition' and number and nature of any failed BOP tests,
- Ensuring that the acceptance criteria defined in the maintenance routines for Safety Critical Elements (SCEs) reflect their relevant verification performance standard, and Reporting of failures on demand of SCEs and BOP<sup>2</sup> in the form of Key Performance Indicators (KPIs) for the attention of senior management and the verifier's Independent Competent Person.

OSD will develop question sets for a number of regulatory inspections to assess compliance with the integrity management expectations described above for use in its intervention programme

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<sup>2</sup> In addition the failure of any safety critical element on a well (such as a BOP) must be reported to HSE (RIDDOR Schedule 2, Part 1, paragraph 13)

### **2.3. Ignition Prevention and Move off**

2.3.1. The various reports identified that there was a delay in activating the emergency disconnect system and, when the emergency disconnect system was eventually initiated, it failed to operate. Consequently Deepwater Horizon was not able to move off and away from the gas cloud and it is likely that the engines provided a source of ignition.

2.3.2. To date, HSE has accepted the philosophy of disconnect and emergency move off location, with the provision that such systems are the very last line in defence, and that the action to disconnect and then move off will be initiated at the earliest indication of a blow out. However, given a sufficiently large blowout, a dynamically positioned (DP) installation which requires main power to drive the thrusters is likely to have gas at the engine air intakes. This might result in shut-down of the engines, or at worst a major explosion and so stop main power generation and halt or prevent move-off. The learnings from deepwater horizon indicate that HSE should:

- Challenge DP Mobile Drilling Unit (MODU) operators in new safety cases and thorough reviews to demonstrate that emergency disconnect and emergency move off location is a reliable barrier for loss of well control.
- Challenge DP Mobile Drilling Unit (MODU) operators in new safety cases and thorough reviews to demonstrate the effectiveness of the arrangements for preventing the engines providing a source of ignition
- Inspect DP MODU operators as to the reliability of their arrangements for preventing the engines providing a source of ignition
- Inspect moored MODU operators as to the reliability of their emergency mooring release systems, the testing regimes that are in place, and the distance the installation will move especially in shallow water and benign environmental conditions.
- Inspect moored MODU operators as to their systems for deciding which mooring lines are to be released in the event of blowout. The lines to be released will vary over time as the predominant environmental forces and directions (wind, current) change
- Inspect how the duty holder has established the maximum angle at which the Lower Marine Riser Package (LMRP) can be released, and if this been proven through a verification activity.
- Determine, for drift off and mooring release scenarios, whether the dutyholder has established a mechanism to release the marine riser or established a force that will physically break the marine riser.

### **2.4. Emergency Response and Evacuation**

2.4.1. Emergency response drills did take place on the DWH, but these did not include scenarios in which control of the well was lost and high pressure gas release occurred. There appeared to be no effective rehearsal of when to operate high level emergency shut downs such as shear rams, riser disconnect and engine shutdown. Staff apparently delayed operating a range of emergency controls in time for them to be effective.

2.4.2. Whilst realistic training is a requirement of UK legislation, OSD is reviewing how to inspect the realism of emergency scenarios and what would constitute verification during an inspection. OSD already inspects competence and training on these issues and will re-emphasise the importance of realistic training and rehearsal and is currently looking at Crew Resource Management training as one way of achieving improvements. HSE will use the forum of the Evacuation, Escape, and Rescue Technical Advisory Committee (EERTAG) to discuss with the offshore industry whether UK duty holders need to be reminded to include some very severe accidents in their exercise scenarios.

2.4.3. The abandonment of DWH did not go particularly well with some workers jumping whilst lifeboats were still being loaded, problems with stretcher handling and issues with cutting life raft painters. UK arrangements to maintain control of abandonment include emergency training and exercises, prior assignment of persons to take control at lifeboat embarkation points, and regular PA announcements and instructions throughout an emergency. However, HSE will discuss with the industry whether anything further needs to be done to improve control of abandonment.

## **2.5. Human and Organisational Factors**

2.5.1. There have been several catastrophic loss of well control incidents over the years from the loss of the Ocean Odyssey in the UK in 1988, to the more recent Tamsah, Snorre and Montara blow outs. Learning from incidents and retention of corporate memory are a continuing challenge for the industry and HSE are active through the trade associations, Step Change and OIAC in the UK and through NSOAF and IRF internationally in cascading as widely as possible both lessons learnt and examples of good practice.

2.5.2. Over the days and hours prior to the disaster the evidence<sup>3</sup> is that information being monitored was ambiguous or contained elements of uncertainty (well cement condition, negative pressure readings etc). In every case these weak signals of potential failure were not pursued to the point of certainty. When uncertainties were recognised, the reported discussions centred on why the situation should be considered safe, not what precautions should be put in place as a matter of urgency in the event that it was unsafe.

2.5.3. As the situation deteriorated over the hours prior to the event there were many occasions where staff referred to the procedures to determine what action they should take. The evidence is (BP internal investigation) that the procedures were of little or no use as they did not specify in detail when to act, what to do and who to turn to for advice or approval. This left staff discussing what to do or who should do it at a time when urgent action was needed. Decision support aids, for example Trigger Action Response Plans (TARP), could have been in place that specified exactly what critical parameter outputs must result in executive action and what action should be taken by whom.

2.5.4. DHIRG considered that the existence of effective worker involvement arrangements will contribute significantly to encouraging staff to raise concerns. During 2010 OSD ran an inspection project which looked specifically at these issues, identifying areas of good practice and where there was a need for improvement, with enforcement action being taken where necessary. As a matter of routine HSE inspectors always meet with safety representatives to discuss any concerns on all offshore visits and this will continue.

2.5.5. An Offshore information Sheet has been drafted on the issue of decision support and Trigger Action Response Plans (TARPs). HSE is reviewing the science base for moving away from risk assessment towards check-lists and Standard Operating Procedures (SOP). The evidence is that greater emphasis should be placed on check-lists and SOPs and less on risk assessment. Industry should consider how decision aids may be put in place, verified and practiced for escalating scenarios.

The Human and Organisational factors which contributed to the disaster are to be addressed through the multi-national audit to be carried out by a special NSOAF project team, chaired by HSE, and reporting to the NSOAF Plenary.

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<sup>3</sup> Deepwater Horizon – Accident Investigation Report, BP

## **2.6. Managerial and organisational arrangements**

2.6.1 The reports identified confusion as to who had overall control of the MH risks on Deepwater Horizon and the potential conflict between the Offshore Installations Manager (OIM) and the Captain. In the UKCS, the OIM unequivocally has overall control.

2.6.2. Proposals for a Safety Management System (SMS) for offshore drilling operations in the Gulf of Mexico are already incorporated within the UK permissioning regime and forms part of the safety case which must be assessed and accepted by HSE before drilling can commence.

2.6.3. The issue of senior managers on the rig at the time focussing on occupational risk rather than MAH was identified. In the UK, Step Change and Oil and Gas UK had already considered this issue following on from the HSE KP3 several years ago, providing training for senior managers in major hazard barrier awareness and systems for monitoring appropriate parameters for MH risk control measures.

2.6.4. Management of change (MoC), both technical and organisational, was also found as a major contributory factor leading to the Macondo blowout. Again, MoC issues arrangements are outlined in the UK Safety Case and verified offshore by proactive inspection. The verifier also has a controlling role in this process and should be consulted if any organisational or engineering change can affect the MH risk profile.

2.6.5. The lack of a Safety Management System interface document did not seem to be in place for the Deepwater operation leading to mixed understanding of responsibilities. HSE do inspect and assess Combined Operations safety cases and Simultaneous Operations Documents so that there is a clear understanding as to where specific responsibility lies, particularly in emergencies.

2.6.6. The audit and review aspects of the management systems were not robust enough to identify weaknesses in MoC, Combined Ops arrangements and interfacing of SMSs. HSE have a strong focus in their proactive inspections on audit and review arrangements ( 7 improvement notices have been served since 2008 on audit and review arrangements).

## **2.7. The regulatory environment**

2.7.1 The overarching permissioning regime, which focuses on the control and mitigation of MH risk through the assessment and acceptance (or not) of a safety case before an installation can operate in the UKCS, is the keystone of the UK regulatory system. This is underpinned by goal setting regulations which promote and encourage continuous improvement, learning and adoption of best practice. The UK framework has additional unique features:-

- The requirement for a Well Examination scheme
- The requirement to submit wells notifications before drilling commences
- The verification scheme which requires independent third party checks that safety critical barriers have appropriate performance standards and they are being met as part of the verification scheme.

2.7.2. DHIRG considered that the legislative framework currently in force in the UK is fit for purpose. Having provided evidence to the Parliamentary Select Committee, and continuing

to provide input to the deliberations of the European Commission, OSD is also working with our international partners through NSOAF and IRF to identify any regulatory gaps which need to be addressed.

2.7.3 Since DWH, DHIRG acknowledged that there has been much closer cooperation with our equivalents in other government agencies, particularly DECC and MCA

### **3. Conclusions**

3.1 DHIRG has formally reviewed seven significant reports and has taken into account other sources of information. The benchmarking of recommendations against UK legal requirements and practice has not revealed any critical gaps but has resulted in renewed focus on wells related safety critical elements and Human Factors.

3.2 Deepwater Horizon revitalised attention on the controls which are already in place on the UKCS and has prompted both HSE and the industry to re-examine whether existing controls do ensure that risks are reduced as low as is reasonably practicable.

3.2. OSD has undertaken a number of initiatives designed to improve the assurance that risks from wells are being properly controlled including:

- Extending the coverage of the inspection of wells operations. Non-wells specialists have been undertaking wells operations inspections to a structured format designed to convey good quality information to wells specialists and alert them to areas of potential risk.
- Continuing the planned inspections of operators' well examination schemes
- Continuing inspections which test the effectiveness of operators' verification schemes.
- Developing an inspection tool to test an operator's written scheme of verification for well control equipment. Inspections are due to commence during the first half of 2011.
- Involvement with the OSPRAG Technical Review Group and the Well Life Cycle Practices Forum.
- Involvement with the NSOAF Wells Working Group

3.3. In addition a work is progressing in a number of areas including:

- The development of OSD expectations for an effective BOPE integrity management system, to be followed by structured inspections to test compliance.
- Challenging industry to demonstrate the effectiveness of disconnect and move-off, and arrangements for preventing the engines providing an ignition source, as mitigation factors when there is a large hydrocarbon release
- Ensuring that very severe accidents are included in emergency exercise scenarios.
- Project leading a NSOAF Multi-National Audit on Well Control with particular emphasis on Human Factors

3.4. The review has reinforced the need for the industry to:

- Ensure the engagement of the workforce to build a climate of trust so that information from safety related matters such as a potential for confusion, near misses or small deviations from the norm are brought to the attention of the operator and subsequently reviewed.

- Ensure that there is sufficient emphasis on the monitoring and audit aspect of the SMS.
- Ensure that investigations arrive at the root causes of incidents; and that the industry learns from those conclusions.

This report remains work in progress and this group will continue to examine any new evidence or findings which may emerge with a likely conclusion the publication and subsequent assessment of the CSB investigation report.

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HSE Offshore Division

## **Appendix 1 - List of Acronyms**

API	American Petroleum Institute
BOP	Blowout Preventer
BOPE	Blowout Prevention Equipment
BOEMRE	Bureau of Ocean Energy Management, Regulation & Enforcement
CRM	Crew Resource Management
DECC	Department of Energy and Climate Change
DHIRG	Deepwater Horizon Incident Review Group
DP	Dynamic Positioning
DWH	Deepwater Horizon
EERTAG	Evacuation, Escape, and Rescue Technical Advisory Committee
FMEA	Failure Mode and Effects Analysis
HAZOP	Hazard and Operability Study
HSE	Health and Safety Executive
IMT	Inspection Management Team (HSE)
IRF	International Regulators Forum
KPI	Key Performance Indicators
LMRP	Lower Marine Riser Package
MAH	Major Accident Hazard
MCA	Maritime and Coastguard Agency
MMS	Minerals Management Service
MoC	Management of Change
MODU	Mobile Drilling Unit
NSOAF	North Sea Offshore Authorities Forum
OSD	Offshore Division (HSE)
OSPRAG	Oil Spill Prevention and Response Advisory Group
RIDDOR	Reporting of Injuries Diseases and Dangerous Occurrences Regulations 1995
ROV	Remotely Operated Vehicle
SCE	Safety Critical Elements
SMS	Safety Management System
SPC	Semi-Permanent Circular (HSE)
TARP	Trigger Action Response Plan
UKCS	UK Continental Shelf
WLCPF	Well Life Cycle Practices Forum

## ***Appendix 2 – Terms of reference***

### **Deepwater Horizon Incident Review Group - Terms of reference**

#### **Aims**

To review the findings from the investigations into the Deepwater Horizon incident and the Montara blowout; to share information which is relevant to the work of HSE; and to make recommendations as necessary with regard to the control of wells and the safety of the exploitation of offshore oil and gas in the UK.

#### **Responsibilities**

- To review significant Deepwater Horizon reports and recommendations from US Government sources and the emerging findings from OSPRAG, and benchmark them against current UK health and safety requirements.
- To review the Montara blowout report and recommendations and benchmark them against current UK health and safety requirements.
- To come to a view on the significance of Deepwater and Montara safety proposals where the recommendations go beyond current UK requirements.
- To maintain a record of the documents which have been considered and the conclusions reached.
- To consider relevant OSD inspection findings and provide information to inspectors as required.
- To present options and make recommendations where it appears that there would be a health and safety benefit in making changes to the UK requirements.
- To consider the need for any directed inspection project in the UK sector and make recommendations to the Divisional Management Team.
- To share information and cooperate with regulatory colleagues such as DECC, other North Sea and international regulators, and groups such as the International Regulators' Forum and the North Sea Offshore Authorities Forum.

#### **Working and Reporting arrangements**

The group will meet on a monthly basis initially and will report to the Divisional Management Team.

### Appendix 3 – Bibliography

<b><i>Reports formally considered by the Deepwater Horizon Review Group</i></b>					
<b><i>Report ID no.</i></b>	<b><i>Source</i></b>	<b><i>Author</i></b>	<b><i>Title</i></b>	<b><i>Date</i></b>	<b><i>TRIM</i></b>
1	US Department of Interior	Salazar	Increased safety measures for energy development on the outer continental shelf	27-May-10	2010/293181
2	U.S. Department of the Interior	Wilma A Lewis	Outer Continental Shelf Safety Oversight Board - Report to Secretary of the Interior Ken Salazar	01-Sep-10	2010/505906
3	BP	BP	Deepwater Horizon - Accident Investigation report	08-Sep-10	2010/507253
4	Australian Government	Australian Government	Montara Commission of Inquiry Report - Australian Government Response	24-Nov-10	2010/583352
5	House of Commons Energy and Climate Change Committee	Tim Yeo, MP	UK Deepwater Drilling—Implications of the Gulf of Mexico Oil Spill	06-Jan-11	2011/21486
6	National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling	Senator Bob Graham and William K Reilly	Recommendations of the National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling	11-Jan-11	2011/28466
7	United States Coast Guard (USCG) and the Bureau of Ocean Energy Management, Regulation and Enforcement (BOEM),	USCG/BOEMRE	Deepwater Horizon Joint Investigation (Introduction, Vol. 1 & Vol. 2)	14-Sept-11	2011/0538604 2011/0538608 2011/0538612
<b><i>Forthcoming reports for formal consideration</i></b>					
	U.S. Chemical Safety Board		Root causes of the BP Deepwater Horizon Blowout	Investigation ongoing	

**Other reports and supplementary information**

<b>Source</b>	<b>Author</b>	<b>Title</b>	<b>Date</b>	<b>TRIM</b>
National Academy of engineering	Donald C. Winter	Interim Report on Causes of the Deepwater Horizon Oil Rig Blowout and Ways to Prevent Such Events	16-Nov-10	2010/595970
HSE commissioned report	IDM engineering	BOP Control systems	09/09/2002	2007/229867
US Joint Industry Task Force		Joint Industry Task Force to Address Offshore Operating Procedures - Draft Industry Recommendations	17-May-10	
US Congress		Blowout Prevention Act of 2010	29-Jun-10	2010/286945
OSPRAG Technical Review Group	OSPRAG	Interim Report to DECC	01-Sep-10	2010/527555
US Joint Industry Task Force		Joint Industry Task Force to Address Subsea Well Control and Containment - Draft Industry Recommendations	03-Sep-10	
Australian Government	David Borthwick	Montara Commission of Inquiry Report	24-Nov-10	2010/583360
National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling	Senator Bob Graham and William K Reilley	Report of the National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling	11-Jan-11	2011/28455
National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling	Fred Bartlit, Commission's Chief Counsel	Chief Counsel's Report	17/02/2011	
RB Falcon FMECA study		TRO Deepwater Horizon BOP Assurance Analysis		2010/385322

**OIL & GAS REGULATORY REVIEW**

**CONSIDERATION OF THE FINDINGS FROM  
INVESTIGATIONS INTO THE DEEPWATER HORIZON  
INCIDENT**

**SUBMISSION FROM THE DEPARTMENT OF ENERGY AND  
CLIMATE CHANGE**

**JULY 2011<sup>1</sup>**

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<sup>1</sup> Updated November 2011

## 1. INTRODUCTION

- 1.1 On 20 April 2010 an explosion on the Deepwater Horizon drilling rig in the Gulf of Mexico led to the deaths of eleven personnel and the loss of 4.9 million barrels of oil to the sea. A number of investigations have been carried out into this tragedy and the Department of Energy and Climate Change (DECC) has reviewed the resulting reports to determine whether they have relevance to the UK's oil and gas environmental regime.
- 1.2 This submission relates only to environmental issues. Safety falls within the remit of the Health and Safety Executive (HSE). HSE established a Deepwater Horizon Incident Review Group to review the various investigation findings and the similar, but unrelated, Montara Blowout in Australia. The Group issued an interim draft report in March 2011, updated in October 2011, which has been submitted to the HSE/MCA/DECC Review Group for their consideration.
- 1.3 Like HSE, DECC have also reviewed six authoritative documents in detail (which are listed at Annex 1). Some of the recommendations of these reports read across to the way that the UK environmental regime currently works, whilst others are not directly applicable. DECC have considered all of the recommendations to see whether action should be taken to further enhance the UK regime.
- 1.4 This submission includes a number of references to the Oil Spill Prevention and Response Advisory Group and for clarity the composition and remit of this group is explained below.
- 1.5 Immediately following the Macondo incident, Oil and Gas UK, the industry's representative body, launched a joint industry and Government Group called the Oil Spill Prevention and Response Advisory Group (OSPRAG) to review the UK's ability to prevent and respond to oil spills. OSPRAG was formed of senior representatives from all parts of the oil and gas industry, from the relevant regulatory authorities (DECC, HSE and the Maritime and Coastguard Agency) and from trade unions. The EU Commission had observer status and sent a representative to attend the OSPRAG meetings.
- 1.6 OSPRAG established four specialist review groups whose remit was to focus on:
  - Technical issues including first response for protection of personnel, the well examination process and an inventory of blowout preventers and remotely operated vehicles currently employed in the UKCS;
  - Oil spill response capability and remediation including national emergency response measures;
  - Indemnity and insurance requirements;
  - European Issues (pan-North Sea regulations/response mechanisms)
- 1.7 By participating in OSPRAG, the regulators benefited from the sharing of information and ideas across the industry. We also had the opportunity to

ensure that the groups were fully addressing issues where we are seeking information and reassurance.

OSPRAG's work is documented in its final report which was launched at the OSPRAG Summit in September 2011.  
(<http://www.oilandgasuk.co.uk/knowledgecentre/OSPRAG.cfm>).

## **2. ASSESSMENT OF EMERGING DEEPWATER HORIZON INVESTIGATION FINDINGS AND SELECT COMMITTEE RECOMMENDATIONS**

### **2.1 LICENSING AND INITIAL APPROVAL/CONSENT PROCESS**

#### **2.1.1 Managerial and organisational arrangements**

The US Department of Interior Report of 27 May 2010 (known as the 'Salazar Report') recommends that operators should develop a robust environmental management system for offshore drilling operations.

The UK already requires all operators of installations to have an independently verified Environmental Management System (EMS) which satisfies the requirements of OSPAR Recommendation 2003/5 ([https://www.og.decc.gov.uk/environment/ospar\\_index.htm](https://www.og.decc.gov.uk/environment/ospar_index.htm)). An EMS is designed to achieve the prevention and elimination of pollution from offshore sources and to deliver and manage compliance with environmental laws and regulations on an ongoing basis. As part of the DECC EMS requirements, operators must also produce an annual public statement providing an overview of their offshore operations and environmental performance. The public statements are available via the DECC website ([https://www.og.decc.gov.uk/environment/ospar\\_eems\\_recomm\\_opsers.htm](https://www.og.decc.gov.uk/environment/ospar_eems_recomm_opsers.htm)).

#### **2.1.2 Environmental Experience on Oil Company Boards**

The UK's Energy Select Committee considered that oil company boards lack members with environmental experience. Whilst recognising that this was an industry issue, it was recommended that the Government should encourage industry to take this forward.

Section 172 of the Companies Act 2006 requires all directors to have regard to factors which reflect wider expectations of responsible business behaviour in promoting the success of the company (on the basis that they will not be able to promote long-term sustainable success unless they do so). The list of factors to which they must have regard includes the impact of the company's operations on the community and the environment.

The UK Corporate Governance Code (which is owned by the Financial Reporting Council) includes the following principles:

- Every company should be headed by an effective board which is collectively responsible for the long-term success of the company.
- The board and its committees should have the appropriate balance of skills, experience, independence and knowledge of the company to enable them to discharge their respective duties and responsibilities effectively.

The Listing Rules require listed companies to apply the Principles and report to shareholders on how they have done so.

Post Macondo, DECC would expect those in industry to review their boards taking full consideration of the Companies Act and their obligations to have regard to the impact of company operations on the community and the environment. This can be tested by DECC as part of the oil and gas licensing process, where operators already have to demonstrate that they have an environmental professional nominated to deal with relevant legislation and issues, and that the appointed person has a direct line of contact to senior management staff.

In addition, at the licensing stage, operators must demonstrate a commitment to putting in place a comprehensive independently verified EMS (as detailed in para 2.1.1 above) and this must be implemented before any offshore activities are carried out.

### **2.1.3 Consideration of High Consequence, Low Probability Events**

The Energy Select Committee concluded that the environmental impacts of a sub-sea well blowout need to be understood and taken into account when a drilling licence is issued. They urged the Government to ensure that the licensing regime takes full account of high consequence, low probability events.

A key element of the environmental regime in the UK is that there are regulatory “hold points” at various stages prior to prospecting, exploration and production operations to ensure that activities cannot commence until risks have been considered and assessed and the regulator has confidence that the operator has the capacity and capability to implement appropriate environmental control.

Following the incident in the Gulf of Mexico, the consenting of all wells continues to be carried out on a case by case basis, now taking full account of the information that has emerged from Macondo. The Operators are required to detail their policies and practices for conducting drilling operations generally. For deepwater drilling operations and other complex wells, such as High Pressure, High Temperature wells, this includes rigorous testing against the findings of the reports into the causes of the Deepwater Horizon accident. In particular operators must demonstrate how they plan for and mitigate the risks highlighted in the various reports and recommendations from the Macondo incident as they apply to their specific operation. This includes the effective demonstration of coordination between the Operator and its contractors involved in drilling the well, and between the Operator, its contractors and relevant Government agencies. The effectiveness of these arrangements forms part of pre-spud checks onshore and/or offshore prior to consent.

On 23 December 2010, DECC wrote to all of the licensees appointed as operators on the UKCS, updating its existing guidance in relation to environmental submissions, to take account of the Department's ongoing consideration of information relating to the *Deepwater Horizon* incident. This clarified the requirements in relation to the preparation of Environmental Impact Assessments (EIAs), applications for chemicals permits and Oil Pollution Emergency Plans (OPEPs). As part of the process of continual development and improvement of the regulatory process this was further updated by DECC on 21<sup>st</sup> July & 20<sup>th</sup> September 2011 – a summary of the guidance updates is attached at Annex 2.

In relation to drilling operations, operators are required to assess the potential impact of the worst-case scenario, which is now formulated in terms of an uncontrolled release where all containment barriers have failed resulting in a blow out, irrespective of the extremely low risk of such an occurrence. All of the relevant application reviews (including OPEPs, Chemical Permits and EIAs) must be complete and satisfactory before a coordinated approval is given.

Although it has always been the case that an Operator could not commence drilling without acceptance of the well plan by HSE, DECC now seek formal confirmation that HSE are satisfied with the proposed well design and construction prior to issuing the drilling consent.

#### **2.1.4 Availability of Environmental Information**

Certain projects cannot be approved by the Secretary of State unless accompanied by an Environmental Impact Assessment (EIA), which can take the form of a formal Environmental Statement (ES) or a request for a Direction from the Secretary of State confirming that an ES is not required. Details of these requirements are set out in the Offshore Petroleum Production and Pipe-lines (Assessment of Environmental Effects) Regulations 1999 (S.I. 1999/360) (as amended). All ES's are subject to public consultation with the decision letters reproduced on our website. EIAs seeking Direction that an ES is not required, submitted & approved OPEPs, are not subject to public consultation, but are listed on our website and are made available to the public on request (<https://www.og.decc.gov.uk/environment/arp.htm>).

Although EIAs seeking Direction that an ES is not required are not subject to public consultation, they are sent to the Statutory Nature Conservation Bodies (such as the Joint Nature Conservation Committee, Scottish Natural Heritage, English Nature, if appropriate, relevant Environmental Agencies and local authorities) for comment. OPEPs are reviewed by DECC, MCA and relevant environmental consultees, such as the Marine Management Organisation or relevant Devolved Authority, the Joint Nature Conservation Committee and the relevant inshore statutory nature conservation body, for example, Scottish Natural Heritage. Any concerns that are raised in relation to either document are considered and a resolution found before approvals are given.

In 2007, the University of Manchester carried out a Quality Review of Environmental Statements for Offshore Petroleum Production and Pipeline Developments for DECC.

The review recommended that DECC Guidance notes be amended to highlight areas for improvement including: more information on the project purpose, specification and design; specific examination of existing baseline information and critical judgment as to its sufficiency; detailed coverage of assessment methods and approaches used; clear distinction between the magnitude of impacts which should be predicted in relation to the baseline, and the significance of impacts which should be evaluated using standards and values; justification of alternatives on environmental grounds; effectiveness of mitigation measures and any residual impacts and linkage of monitoring of impacts and mitigation measures to existing company EMS.

As a result of this independent review DECC's Guidance Notes were revised, taking account of these recommendations, and are available on the website (<https://www.og.decc.gov.uk/environment/EIAGuidanceNote.pdf>).

Review of guidance notes is an iterative and continuing process to ensure that account is taken of any new requirements, legislation, applicable new OSPAR decisions and other relevant information. The Guidance has recently been updated to take account of, alongside other new guidance; the latest Departmental requirements post Macondo.

## **2.2. EMERGENCY RESPONSE PLANNING AND MITIGATION**

A number of the reports<sup>2</sup> focus on the need to ensure that worst-case scenarios are anticipated and that the oil and gas industry should be planning for high-consequence, low probability events.

The UK Select Committee also made the following recommendations:

- to ensure that there is not a culture of copying-and-pasting, oil spill response plans should be re-examined to ensure that they are site specific, recognise the drilling environment and the risk of high consequence, low-probability events.
- the development of capping/containment devices should be designed to take full account of the harsh and challenging environment West of Shetland.
- guidelines should be drawn up on the sub-sea use of dispersants in tackling oil spills, based on the best available evidence of both their effectiveness and their environmental impact.

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- *Increased safety measures for energy development on the outer continental shelf* – Salazar, US Department of Interior May 2010;
  - *Outer Continental Shelf Safety Oversight Board - Report to Secretary of the Interior, Sept 2010;*
  - *UK Deepwater Drilling—Implications of the Gulf of Mexico Oil Spill*, Energy Select Committee, Jan 2011;
- Recommendations of the National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling*, Jan 2011

### **2.2.1 Oil Pollution Emergency Plans (OPEPs)**

Guidance regarding the completion of OPEPs is available on DECC's oil and gas website (<https://www.og.decc.gov.uk/environment/msr1998.htm>). Following the Macondo incident, on 23<sup>rd</sup> December 2010 DECC wrote to all operators to clarify the scope of the worst-case scenario to aid response planning. The supplementary guidance was prepared in conjunction with the MCA and was introduced with immediate effect. This means that all OPEPs associated with exploration, appraisal and development (production) drilling operations or work-over and intervention operations on hydrocarbon producing wells, must assess and provide for an effective response to an identified worst-case scenario where all containment barriers have failed resulting in a blowout. This would normally require use a capping device &/or the drilling of a relief well (see Appendix 2). Of particular note is the requirement for the following:

- Identification of the worst-case scenarios in relation to potential releases of hydrocarbons, including releases of both installation inventories and reservoir hydrocarbons.
- In cases where a cap would be effective in stopping the flow of oil in a blow out scenario, an OPEP will not be approved unless it contains details of access to and procedures for deploying a cap in the event of a release.
- Where appropriate, details of plans to implement the drilling of a relief well, to demonstrate that there is adequate provision in place for this eventuality.

### **2.2.2 Capping and Containment Devices**

Like many other oil and gas basins around the world, prior to Macondo, the UK did not have any dedicated capping/containment devices. Experience from the Macondo incident, however, showed that the availability of capping and containment devices would significantly reduce the environmental impact of a well blowout.

Containment devices from the Gulf of Mexico are now located in the UK at Southampton.

OSPRAG also identified the need for a more generally deployable capping device applicable for a variety of wells (not just those in deepwater) to mitigate and capture oil flows in the event of a loss of containment such as occurred in Gulf of Mexico. The ability to deploy such a device was successfully tested in July 2011 and is now available for use, located in Aberdeen and managed by Oil Spill Response (OSR) as part of industry contract (see 2.2.4).

In addition Chevron has developed a dedicated capping device for the Stena Carron drilling rig that they currently use for their West of Shetland drilling programme. This system consists of three blind shear rams that can be deployed from a rig or light intervention vessel (LIV) and installed on top of the BOP stack of a flowing well at the

sea floor to seal off the flow. The capping device is located in Aberdeen and ready for immediate deployment.

Commercially available capping devices are also available. Wild Well Control Inc the primary responder to more than 80% of all well blowouts globally (including extinguishing and capping the Macondo well) have made Aberdeen the global base for its Total Deepwater Solution (TDS) dedicated subsea containment and emergency response equipment, available for immediate deployment to respond to major subsea blowouts anywhere in the world.

### **2.2.3 Maintenance of capping devices and training for staff in their usage**

It is recognised that to be effective, the capping devices must be maintained and staff must be trained to use them. The Cap has been stored and maintained by Cameron at its Aberdeen facility since delivery in early September.

Investigations are also ongoing to determine if current regulatory powers could be utilised to ensure that capping devices are maintained and tested – this is an issue for the HSE.

### **2.2.4 Oil Pollution Emergency Plans**

OPEPs submitted to DECC are site specific and are prepared, submitted, reviewed, assessed and approved on a case by case basis – DECC would reject a document if the text was not site-specific and/or inappropriate to the risk associated with a particular operation. However, there are some elements of commonality in relation to response strategies given that they must all feed into the National Contingency Plan. A further area of commonality relates to the provision of oil spill response - UK operators are all members of Oil Spill Response, which is an internationally industry-funded oil spill service provider – and again this means that necessarily there will be some similarities contained with the OPEPs. It is also the case that the majority of oil installations are located in the Northern North Sea and those which are in relatively close proximity should show similarities of detail reflecting that they are exposed to similar issues and environmental effects.

### **2.2.5 Modelling**

Oil spill modelling studies have also been the subject of comment in relation to the time periods which the computer simulations cover and the extent to which they reflect seasonal weather variations.

To facilitate appropriate contingency planning modelling is designed to provide an indication of where oil might beach onshore and the time factors involved for this to occur. Thus in the event of an incident the relevant response strategy can be implemented to provide early and effective intervention to prevent or mitigate the impact of the spill. Where modelling is carried out over extended periods, the results will inevitably become conjectural. In any event longer duration simulations would not significantly change or enhance the response strategy which is conditioned by where and when beaching may occur which is available from the current analytical packages.

To provide generic benchmarks, under the auspices of the OSPRAG Group, a review of oil spill modelling of several scenarios across the UKCS, including an uncontrolled release of hydrocarbons to the west of the Shetland Isles has been completed and is being peer reviewed. On completion the findings of this work will be taken forward by the OSPRAG Indemnity and Insurance Review Group (IIRG) and the newly constituted Oil Spill Response Forum (OSRF)<sup>3</sup>, as applicable.

It has also been mentioned that the modelling does not currently reflect the changing weather conditions over the course of the year. Modelling cannot accurately reflect the changing weather conditions that will occur during the course of any activity. But for ongoing production activities, the modelling in the OPEP uses annual recorded wind data, whereas for shorter duration activities such as drilling, annual or relevant seasonal weather conditions can be used to provide a more realistic picture of where oil could be transported by the prevailing conditions but both approaches provide an indication of where and when any oil could come ashore. It should be noted that the models are only indicative and should an incident occur, the modelling would be run using the weather conditions as they exist at the time to inform the response.

### 2.2.6 Dispersant Use

The effectiveness of dispersants; their impact on the environment and their use subsea has been raised by a number of reports<sup>4</sup>.

Use of chemical dispersants to enhance the natural dispersal process has proved to be effective for surface spills, providing the oil is amenable to dispersant treatment – for example as part of the response to the Sea Empress incident in Milford Haven.

The UK already has a robust protocol for the licensing and control of use of oil treatment products. No product can be used if it does not pass a strict test of efficacy and no product can be used if, in combination with the oil present, it results in more toxicity to the marine ecosystem than the oil alone. Those protocols were developed with all UK stakeholders representing nature conservation and fisheries. The terms of use strictly control where, when and in which circumstances they may be used, the objective being to achieve a net environmental benefit or a least worst outcome given the challenge of the incident.

At present, subsea dispersants are not approved for use on the UKCS. However, the potential use and effect and regulation of subsea dispersants are currently being

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<sup>3</sup> OSPRAG recommended a new forum under the governance of Oil & Gas UK, to take forward projects initiated under OSPRAG and to maintain a proactive industry position on oil spill response. The stated objective of the OSRF is: "To further develop and maintain an effective, robust and sustainable oil spill response capability for upstream operations on the UKCS". Members: O&GUK members; regulators, spill response organisations and Local Authority umbrella organisations.

<sup>4</sup>

- *Increased safety measures for energy development on the outer continental shelf* – Salazar, US Department of Interior May 2010;
- *UK Deepwater Drilling—Implications of the Gulf of Mexico Oil Spill*, Energy Select Committee, Jan 2011;

*Recommendations of the National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling*, Jan 2011

investigated by the Marine Management Organisation (MMO) (which administer the testing and approval of products for the UK), Marine Scotland (which approve the use of products in Scottish waters) DECC (which would be the relevant licensing authority for use in connection with oil and gas activities) and industry, through an OSRF workgroup.. A review to identify the gaps in current knowledge and determine how these might be addressed is underway – this includes the development of subsea dispersal injection equipment. The review is taking account of Gulf of Mexico monitoring and the outcome of the review will be taken into consideration in the development of Government policy and guidance.

There are also separate approval processes for the use of dispersant near shore and offshore and discussions are currently taking place with relevant licensing authorities and environmental consultees to determine how these will operate.

## **2.3 REGULATORY ENVIRONMENT**

### **2.3.1. US Response**

The US Presidential Report initially appeared to recommend that a single body should be established to enforce safety and environmental regulations. However, the responsibilities have been apportioned between two organisations viz. the Bureau of Ocean Energy Management (BOEM) and the Bureau of Safety and Environmental Enforcement (BSEE). BOEM will be responsible for managing development of America's offshore resources in an environmentally and economically responsible way. Functions will include among other things: Leasing, Plan Administration, Environmental Studies and National Environmental Policy Act Analysis. BSEE will enforce safety and environmental regulations. Functions will include: All field operations including Permitting and Research, Inspections, Offshore Regulatory Programs, Oil Spill Response, and newly formed Training and Environmental Compliance functions (<http://www.boemre.gov/reorganization.htm>).

### **2.3.2 UK Position**

This is different from the position in the UK where safety is dealt with by the HSE and the environment falls within DECC's remit. The UK regime was established following the Piper Alpha tragedy in 1988. At that time both safety and operational issues were dealt with by the then Department of Energy. After the incident, although Lord Cullen concluded that there had not been a conflict of interests within the Department, responsibility for safety should be transferred to HSE to enable safety regulation to benefit fully from the greater expertise and more specialised internal resources there (see Lord Cullen report extract - Annex 3).

Comments have been made about whether it is appropriate for the Department which is responsible for the promotion of oil and gas to also have responsibility for environmental regulation. DECC derives no benefit from licence revenue, which goes directly to the Treasury and there are no targets in relation to licensing. The aim of maximising the economic potential of the UKCS is inherently linked with the requirement to minimise the impact of oil and gas activities on the environment,

which ensures that the appropriate checks and balances are in place ahead of the licence award.

Environmental issues play a key role in the life cycle of an oil and gas development from the pre-licensing requirement for a Strategic Environmental Assessment, through environmental controls on various activities to the environmental impact assessment for decommissioning work. Within DECC, licensing and environment are separate and distinct units and environmental concerns take priority over licensing and development.

There are a number of strengths in the separation of the environmental and safety regimes in the UK:

- a) Safety and the environment have different regulatory regimes. The European Hydrocarbon Licensing Directive and the Strategic Environmental Assessment (SEA) Directive both ensure that there is a legislative process for the environment on the UKCS from the outset. SEAs have resulted in areas being withheld from licensing (for example, the most recent SEA, which has just completed the public consultation phase recommends withholding blocks west of 14 degrees west from licensing. This recommendation also applies to the deepest parts of the Southwest Approaches and is based on the paucity of information on many potentially vulnerable components of the marine environment at this time).
- b) Both Departments act independently. HSE have the ability to stop operations due to health and safety concerns and DECC have the ability to stop operations in relation to environmental concerns.
- c) Clearly, safety on board an installation would take priority in the event of a serious incident. However, if the two functions were combined, the independent consideration which is currently given to environmental issues would risk being compromised.
- d) DECC operates under a permitting and consenting regime whilst HSE have a safety case regime. The main difference in these two regimes is that DECC must give approval before activities are undertaken whereas HSE accept a safety case, but effectively responsibility remains with the Industry. DECC are increasingly adopting a preventative regime, working with the industry to ensure that best practice is adopted.

### **2.3.3 Norwegian Position**

It is been noted that Norway recently combined some elements of environmental protection with safety regulation (preventative measures to avoid acute pollution from offshore installations), which are enforced by the Norwegian Petroleum Directorate, which is also responsible for the regulation of offshore major accident hazards.

However, Klif (The Climate and Pollution Agency), which reports to the Norwegian Ministry of the Environment retains a significant role in environmental protection in

relation to offshore oil and gas (<http://www.klif.no/no/english/english/About-Us/>). Klif regulates:

- operational discharges to air, sea and underground
- waste management
- measures to detect acute discharges
- emergency preparedness measures against acute discharges (environmental risk assessments, emergency response analyses and contingency plans)

This, largely, mirrors the responsibilities of DECC Offshore Environmental Inspectorate.

It should also be noted that Klif will be responsible for providing environmental information to the Petroleum Safety Authority in relation to major offshore accident hazards.

### **2.3.4 Closer working between HSE and DECC**

Although there has always been regular contact between HSE and DECC regarding their respective regulatory areas of responsibility, communication has increased following the Gulf of Mexico incident. DECC and HSE now have a coordinated sign-off procedure for all new exploration and appraisal wells - HSE needs to have accepted that the well design and construction are satisfactory and DECC needs to be satisfied that emergency plans for all wells represent best practice before DECC will give consent for drilling operations to commence.

It has also been agreed that DECC and HSE will carry out joint environmental and safety inspections if, and when, appropriate; the first joint offshore visit took place in July in relation to an investigation. Joint visits have already been made to onshore premises.

DECC and HSE have agreed and signed a revised Memorandum of Understanding <http://www.decc.gov.uk/publications/DirectoryListing.aspx?tags=95> to formalise the way in which HSE and DECC officials work together and exchange information.

## **2.4 COMPLIANCE AND INSPECTION**

The reports from the Gulf of Mexico and in particular the Salazar Report, raised significant concerns about resources, recruitment, training, succession planning and support within their regulatory organisation.

### **2.4.1 Environmental Inspections**

Most oil and gas activities are controlled by the issue of activity specific permits, consents or authorisations containing legally binding terms and conditions. DECC actively ensures that industry is complying with the conditions included in environmental approvals by reviewing permit compliance returns and undertaking a series of prioritised environmental inspections using a risk based approach undertaken by suitably qualified and experienced inspectors.

DECC inspectors visit offshore installations and onshore offices to:

- inspect records and management systems;
- conduct interviews; and
- observe site conditions, standards and practices.

This allows for a comprehensive assessment of environmental legislative compliance and best practice as regards pollution prevention and incident response measures. Where applicable enforcement action is taken in accordance with the DECC Enforcement Policy<sup>5</sup> to ensure that those who have duties under the law take preventative or remedial measures to prevent pollution; put in place measures to achieve compliance; and are held to account when failures to comply occur.

It is recognised that due to changes in procedures since Macondo both DECC's Enforcement Policy and its Regulatory Activities Manual, which provide guidance on the procedures when dealing with Environmental Inspectorate activity, along with Oil Pollution Emergency Plan and Environmental Management System guidance, need to be reviewed and revised, as soon as possible, to ensure that all changes are incorporated and fully documented.

DECC has a risk based environmental inspection strategy, which takes into account all the activities being conducted, the companies undertaking those activities, risk to the environment and regulatory controls.

#### **2.4.2 Experience and Credentials of Environmental Inspectors**

Offshore Inspectors in the UK are required to have a relevant degree (environmental law, environmental management, environmental science, chemistry, biochemistry, biology/biosciences, marine biology, micro biology, zoology, geology, geophysics, petroleum engineering or engineering) and oil and gas industry experience (preferably 5 years).

DECC have been able to draw staff from a wide variety of backgrounds which allows the sharing of advice and information on a range of issues. At present, DECC's inspectors come from various disciplines including: offshore chemists, offshore drilling, offshore engineering, environmental regulatory professionals, health and safety, environmental audit and production and process.

Immediately after Macondo, DECC took action to double the number of annual environmental inspections by DECC of mobile drilling rigs. This led to the appointment of 3 additional inspectors, who have been recruited and are currently completing their training programme. This increased the total number of inspectors from 7 to 10 (9 inspectors and one senior inspector).

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<sup>5</sup> DECC's enforcement policy, which is publicly available, sets out the general principles that inspectors shall follow to ensure that any enforcement action taken is proportional, consistent, transparent and targeted. [https://www.og.decc.gov.uk/environment/EIE\\_Policy.pdf](https://www.og.decc.gov.uk/environment/EIE_Policy.pdf)

Post Gulf of Mexico, it became clear, in line with recommendations from the *Outer Continental Shelf Safety Oversight Board's Report to Secretary of the Interior*, in September 2010 on the Macondo incident, that dual manning inspections, i.e. inspections carried out by 2 inspectors, were required for more complex drilling operations to further enhance assurance that oil and gas operators are undertaking activities in compliance with regulatory requirements and to prevent environmental incidents. Having increased the level of oversight of deepwater drilling rigs, DECC determined it was appropriate to provide this assurance on both mobile and fixed installations.

As a result, in January 2011, it was announced that a further 8 environmental inspectors in addition to 1 senior environmental inspector and 1 senior investigator would be recruited. This will allow the number of annual inspections to increase from 60 to 150 annually once all inspectors are recruited and fully trained. In order to recruit staff with suitable qualifications and experience more than one recruitment exercise has been undertaken. So far four new inspectors have taken up posts with a further one due to join shortly, subject to pre-employment checks. Recruitment will recommence early in 2012 with the intention of having the total number of additional staff in place by the Spring/early summer ,.

DECC are currently working to the ratio of 1 inspector to 30 installations (both fixed and drilling rigs) with this moving to circa 1 inspector to 15 installations once the new inspectors are in place and fully trained.

### **2.4.3 Experience and Credentials of Environmental Permitting/Consenting Managers**

DECC's regulatory process encompasses the general oversight of offshore activity through permitting and consenting which is undertaken prior to the activity being agreed. DECC's Offshore Environment and Decommissioning Unit currently has three senior environmental managers and nine environmental managers, who are responsible for the review of environmental impact assessment of offshore oil and gas activities, and for the administration of environmental legislation. The Environmental Managers are also required to have a degree and industry experience. In order to assist with the increased checks required in relation to drilling consent.

### **2.4.4 Succession Planning**

Unlike the former Minerals Management Service (MMS) in the US, DECC does not have a significant proportion of inspectors/consenting staff close to retirement age. However, as in the US career advancement can be an issue as there are limited numbers of senior posts in these disciplines. Staff are however given opportunities to develop their skills by working on projects/policy issues.

### **2.4.5 Retention of Staff**

Like HSE, DECC has found that it can be difficult to attract candidates of the required calibre and experience and retain them when competing with the industry for staff. It is noted that the Presidential Commission recommend that mechanisms

for the payment of regulatory fees should be introduced for adequate, stable and secure funding to the key regulatory agencies. In the UK Legislation is in place which allows the costs associated with environmental assessment and inspections to be recovered from applicants, and this has been implemented. Pay rates must still be in line with civil service rules but allowances are in place for specialist staff such as environmental inspectors and managers.

#### **2.4.6 Support for Inspection Staff**

DECC inspectors do not consider that they are placed under pressure from offshore personnel to refrain from issuing notices of Non-Compliance.

The legislation that inspectors enforce imposes strict liabilities upon Permit Holders and Licensed Operators. The Enforcement Policy details the broad principles that are used to aid the direction of the enforcement effort. Inspectors form an opinion on the seriousness of contraventions based on a number of factors. These include, but are not limited to: mitigating circumstances or statutory defences, quantity and type of discharge/emission, location and impact, or likely impact on the environment, lack of preventative measures, operator history, previous advice etc. The Enforcement Policy describes an escalating tariff of enforcement based on a number of factors and has been issued to industry. Ultimately, DECC inspectors have the power to shut down an installation and this power has been exercised.

DECC has 2 senior investigation officers who provide oversight of and support to, the inspectors as regards investigations. These are specialist posts and holders must have 5 years experience in criminal investigation, which includes interviewing witnesses and preparing reports and evidence for use in court. All investigations are currently reviewed by a Senior Officer not involved in the original incident and signed off by the Head of the Offshore Environment Unit.

#### **2.4.7 Inspections of Mobile Offshore Drilling Units (MODUs)**

Although not a recommendation contained within the reports, DECC determined that it should review its inspection policy in respect of MODUs following the Gulf of Mexico Incident to ensure it was in alignment with the recommendations resulting from the various Macondo related reports.

MODUs undertake drilling operations across the UKCS area and as a result MODU drilling operations are assessed on a case-by-case basis taking into account the specific circumstances of the activity. These include, but are not limited to: operational experience and practices, location, field condition and environmental conditions.

Following Macondo, it was recognised that the approach being taken should explicitly recognise the possibility of an uncontrolled release resulting from drilling operations – in particular for oil wells with the potential to free-flow, those in deepwater, environmentally sensitive areas (such as West of Shetland and close to

shore) and/or High Pressure/ High Temperature reservoirs<sup>6</sup> – and should address the hazards and risks potentially arising from such operations.

In summary, all MODU drilling operations are assessed to determine whether an inspection of the MODU is required and the timeframe for inspection. Inspections may consist of an onshore operational and regulatory review and/or an offshore inspection. Inspections will review relevant documentation with the operator and contractors and confirm that satisfactory policies, procedures and practices are in place, taking into account the recommendations from the various Macondo reports as they apply to their specific plans, and examine what arrangements are in place in order to conduct the drilling operation in a manner which prevents significant environmental risk. All deepwater drilling operations are subject to an onshore operational and regulatory review and an offshore pre-spud inspection prior to the commencement of operations. In addition if a MODU has not been subject to a previous offshore inspection then an offshore pre-spud inspection is conducted prior to the commencement of operations.

## **2.5 NATIONAL CONTINGENCY PLAN**

A number of the recommendations and in particular those from the Montara report relate to National Oil Spill Planning and response in the event of an incident.

### **2.5.1 UK National Contingency Plan and Testing**

As a party to the United Nations Convention on the Law of the Sea, the United Kingdom has an obligation to protect and preserve the marine environment. The National Contingency Plan for Marine Pollution from Shipping and Offshore Installations (NCP) is one of the measures the UK has taken to meet this obligation and the Department of Transport's Maritime Coastguard Agency (MCA) is the custodian of the Plan.

The NCP's purpose is to ensure there is a timely and measured response to an oil pollution incident. The plan sets out the circumstances in which the MCA deploys the UK national assets in response to a marine pollution incident to protect the overriding public interest and how these resources are managed. The plan deals with a variety of issues, including:

- establishing the level of response;
- setting up the national response units;
- at sea response and shoreline/ onshore responses.

The NCP supports and underpins an operator's individual Oil Pollution Emergency Plan – see below.

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<sup>6</sup> with the possible exception of gas wells which may pose little risk to the marine and/or coastal environment.

To test the effectiveness of the NCP, and its interaction with other major incident plans, including OPEPs submitted by operators of offshore installations, a major oil pollution exercise involving a shipping casualty is held annually and an offshore installation exercise is held every five years. The previous such exercise involving the offshore industry prior to Macondo was Exercise Unicorn, held on 10 June 2008, involving BP as the operator.

The next national exercise involving an offshore asset was not due until 2013, but this was brought forward to 18 and 19 May 2011 as a direct response to Macondo.

Exercise Sula was a live multi-agency Emergency Response Exercise designed to demonstrate that both the UK's National and the offshore industry's preparedness response and counter pollution measures were appropriate and capable of effectively dealing with an incident similar to that experienced in the Gulf of Mexico.

The focus of the incident was in the vicinity of an offshore oil and gas facility in the West of Shetland area and a number of onshore locations were also involved.

The Exercise was successfully completed and a report of the exercise with recommendations was published in September ([http://www.dft.gov.uk/mca/exercise\\_sula\\_-\\_18-19\\_may\\_2011\\_-\\_final\\_report.pdf](http://www.dft.gov.uk/mca/exercise_sula_-_18-19_may_2011_-_final_report.pdf)). A small team co-ordinated by the MCA and including DECC is working with all parties to implement the recommendations.

DECC and MCA are currently considering the frequency of future oil pollution exercises and initial views are that such exercises should be held every 3 years in future.

## **2.6 LIABILITY ISSUES**

A number of the reports focus on the ability of industry to meet the costs associated with an oil spill – this ranges from the drilling of relief wells to compensation for those affected by the oil spill to restitution of the environment.

Licensees on the UKCS are jointly and severally liable for all costs associated with oil and gas activities. Unlike the United States, there is no statutory limitation on any aspect of that liability. Should a serious incident occur, all of the licensees would be responsible for meeting the costs that arose from that incident and should one (or more) of the licensees default, the remaining licensees would be required to meet the defaulter's share of the costs.

Operators on the UKCS maintain insurance or make other provisions to cover drilling and other operational risks together with the legal liabilities associated with clean-up or other remediation measures. However, in addition to their own provisions, all operators on the UKCS have Offshore Pollution Liability Association Ltd (OPOL) cover as described below.

### **2.6.1 Financial Checks on licensees**

At the licensing application stage, financial viability and financial capacity assessments are carried out to ensure that companies applying to undertake activity have the financial ability to meet the actual costs that may reasonably be expected to arise from the proposed work programme. In the UK, the licence sets no limits to the licensee's liabilities and the licensee must demonstrate at the time of the licence application that they have sufficient funds or indemnity provisions to meet expected commitments, liabilities and obligations.

DECC recognise that financial checks in the past have focused on industry's ability to carry out the agreed work programme rather than to pay for unforeseen events. In December 2010, DECC wrote to operators advising that we may now, as part of the OPEP approval process, require explicit confirmation that sufficient finance or insurance/indemnity provision is available to cover the drilling of relief wells. This is determined on a case-by-case basis, depending on circumstances e.g. strength of balance sheet, details of activity being undertaken etc. This requirement was reiterated in a further letter to industry issued in July 2011 (see summary of guidance - Appendix 2.) The amount of cover is currently determined by the companies based on the specific features of the well. However, it is recognised that this process could benefit from independent, third party verification both of the cost and the sufficiency of the provision.

### **2.6.2 The Offshore Pollution Liability Association Limited (OPOL)**

To search for and extract petroleum requires a licence issued by DECC under the Petroleum Act 1998. Licensees are, among other things, required to comply with instructions from DECC to ensure sufficient funds are available to discharge any liability for damage attributable to any oil pollution incident.

There is no limit on companies' liability for clean-up and compensation. Operators on the UKCS maintain insurance or make other provisions to cover drilling and other operational risks together with the legal liabilities associated with clean-up or other remediation measures.

All offshore operators currently active in exploration and production on the UKCS are also party to a voluntary compensation agreement known as the Offshore Pollution Liability Association Ltd (OPOL), which came into being on 1 May 1975.

The agreement provides for each operator to provide an orderly means for compensating and reimbursing any person who sustains pollution damage and any public authority which incurs costs for taking remedial measures (clean-up) as the result of a discharge of oil from any offshore installation. As part of the process, OPOL requires every operator to provide satisfactory evidence of its ability to meet any liability under the Agreement. OPOL provides for the mutual agreement from all of its members for the settlement of claims up to US\$ 250 million per incident in the event of a default by an operator (Industry agreed to increase the limit for the settlement of claims from US\$120 to US\$250 million following the Gulf of Mexico incident). This liability is based on worst case scenario planning. The OPOL regime, which is unique to the North Sea, already provides for compensation on a

basis of strict liability. That is to say, anyone affected by an oil spill can put a claim directly to the operator without having to take court action. There has been no call on OPOL in over 30 years of UKCS operations.

As part of its work following the Deepwater Horizon incident OSPRAG set up an Indemnity and Insurance Review Group (IIRG) to review the provisions of OPOL and the financial and cross-indemnity arrangements behind the current mutual co-operative industry mechanism (Offshore Cooperative Emergency Services).

IIRG commissioned a review of the potential for beaching of oil from a well blowout situation at five chosen indicative sites around the UKCS. Feedback indicates that for many of the central/northern North Sea wells it is unlikely that a landing will happen for a well where a capping device can be utilised. For a productive well in the West of Shetland area, however, the prevailing winds and tides could cause landings on Shetland, Orkney and possibly North of the mainland. This conclusion is still being assessed in terms of clean-up and third party compensation costs, to compare against the new OPOL limit. We will then be informed as to what instances may require further consideration but until that is complete we will continue to check that insurance cover/financial ability is sufficient to cover any major incident.

It is also noted that the European Commission have looked at this issue and aim to extend the Environmental Liability Directive.

### **2.6.3 Abandoned and Suspended Wells**

In addition to the issues raised by the Macondo investigations, DECC has been considering the issues of ongoing monitoring and liability for abandoned and suspended wells.

In relation to monitoring, the Marine Licensing process under the Marine and Coastal Access Act gives DECC the powers to insert permit conditions for monitoring and this will be the case from now on. But no such legal powers exist to retrospectively insist on monitoring although liability for those that were part of a formal decommissioning programme continues indefinitely.

However, DECC is continuing to proactively scrutinise the industry's suspended (or 'temporarily abandoned') wells with the aim of ensuring that only wells with a real prospect of re-use remain suspended - recent experience shows that wells that have been suspended for more than five or six years have a much reduced likelihood of re-use. To aid the scrutiny process, DECC wrote to all operators on 5<sup>th</sup> July to ensure that the information held on all suspended wells was up-to-date and to determine what the future plans for these wells were, with the aim of considering the need for these wells to remain suspended. DECC has now written to OGUK to initiate an scheme to fully abandon the large majority of these wells which have little or no prospect of further use.

Whilst historic abandoned wells are not subject to ongoing monitoring, regular aerial and satellite surveillance is carried out over the UKCS and any surface sheens are investigated, which would allow any leaking wells to be detected.

## **2.7 CONCLUSION**

DECC has and is continuing to take account of the findings from the Macondo incident. Whilst it is considered that the UK has a robust environmental regime, we have nevertheless taken steps to further enhance that regime where appropriate.

We are continuing to work closely with OSPRAG and would anticipate further enhancements following the publication of their final findings.

## ANNEX 1

Reports formally considered by the Deepwater Horizon Review Group

<i>Report ID no.</i>	<i>Doc Ref</i>	<i>Source</i>	<i>Author</i>	<i>Title</i>	<i>Date</i>	<i>URL</i>
1	<i>Salazar, 27 May 2010</i>	US Department of Interior	Salazar	Increased safety measures for energy development on the outer continental shelf	27-May-10	<a href="#">Increased safety measures for energy development on the outer continental shelf</a>
2	<i>OCSOB - Report - 1 Sep 2010</i>	U.S. Department of the Interior	Wilma A Lewis	Outer Continental Shelf Safety Oversight Board - Report to Secretary of the Interior Ken Salazar	01-Sep-10	<a href="#">Outer Continental Shelf Safety Oversight Board - Report to Secretary of the Interior Ken Salazar</a>
3	<i>BP Investigation - 8 Sep 2010</i>	BP	BP	Deepwater Horizon - Accident Investigation report	08-Sep-10	<a href="#">Deepwater Horizon Accident Investigation Report.pdf</a>
4	<i>Montara report</i>	Australian Government	Australian Government	Montara Commission of Inquiry Report - Australian Government Response	24-Nov-10	<a href="http://www.ret.gov.au/montarainquiryresponse">www.ret.gov.au/montarainquiryresponse</a>
5	<i>Energy Select Committee</i>	House of Commons Energy and Climate Change Committee	Tim Yeo, MP	UK Deepwater Drilling— Implications of the Gulf of Mexico Oil Spill	06-Jan-11	<a href="http://www.publications.parliament.uk/pa/cm201011/cmselect/cmenergy/450/45002.htm">http://www.publications.parliament.uk/pa/cm201011/cmselect/cmenergy/450/45002.htm</a>
6	<i>Commission on BP DWH Oil Spill</i>	National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling	Senator Bob Graham and William K Reilley	Recommendations of the National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling	11-Jan-11	<a href="http://www.oilspillcommission.gov/">http://www.oilspillcommission.gov/</a>
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## **ANNEX 2 – SUMMARY OF DECC GUIDANCE**

### **CLARIFICATION OF DECC GUIDANCE RELATING TO ENVIRONMENTAL ASPECTS OF DRILLING, WELL INTERVENTION AND WELL ABANDONMENT OPERATIONS**

The attached documents collate the additional information communicated to oil and gas operators and/or Mobile Drilling Unit (MoDU) operators after the *Deepwater Horizon* accident. Guidance is provided in relation to four aspects, Environmental Statements and Direction Applications; Other Environmental Application Submissions; Oil Pollution Emergency Plans; and Environmental Reviews and Inspections. It is strongly recommended that operators should study all four documents to develop an overall picture of the environmental requirements.

Department of Energy and Climate Change (DECC)  
Energy Development Unit (EDU)  
Offshore Environment and Decommissioning (OED)  
Atholl House  
Aberdeen

## **Guidance Relating to Environmental Statements and Direction Applications**

This supplementary guidance should be read in conjunction with the Department of Energy and Climate Change (DECC) Guidance Notes relating to the Offshore Petroleum Production and Pipelines (Assessment of Environmental Effects) Regulations 1999 (as amended), commonly referred to as the Environment Impact Assessment or EIA Regulations. Issues that have been identified as requiring particular attention following the *Deepwater Horizon* accident are summarised in the following sections. Operators are reminded that reliable, consistent and complete information is needed by DECC to develop an assessment of the potential risks associated with an activity, and that failure to provide the necessary information will cause delay and may lead to an Environmental Statement (ES) or application for a Direction being refused.

### **1. Period of Notice**

Environmental Statements are subject to Public Notice, and there is no set timetable for approval, but DECC will endeavour to determine the submissions within three months of their receipt. In the case of proposals that are the subject of a number of representations, or proposals that require an Appropriate Assessment under the Offshore Petroleum Activities (Conservation of Habitats) Regulations 2001 (as amended), or where it is necessary to request additional information from the applicant, it could take considerably longer. In the case of applications for Directions, operators must provide sufficient notice of the proposed operations, as it will not always be possible to determine all of the necessary approvals within the minimum recommended notice period (28 days). A longer period of notice may be required if there are implications under the Offshore Petroleum Activities (Conservation of Habitats) Regulations 2001 (as amended), including a requirement for a Survey Consent for a Vertical Seismic Profile (VSP). A longer period of notice will also be required for some well operations undertaken using MoDUs, for example wells located to the west and north of the Shetland Isles, the Moray Firth or the Irish Sea, and all High Pressure and High Temperature (HP/HT) wells.

### **2. Commencement Date**

Environmental Statements will normally consider the potential impacts during the likely period of the activity, or they may consider potential impacts at any time of the year if the timing of the proposed activity has still to be confirmed. There is no requirement to confirm the commencement date of the proposed activity. In contrast, applications for Directions must confirm the commencement date of the proposed activity, as this will be reflected in any approval. Whilst it is appreciated that operators will wish to obtain early approval of their submissions, the provision of speculative and unrealistic commencement (or spud) dates, or dates that conflict with other activities being undertaken using the same vessel or MoDU, serves no useful purpose. It is acknowledged that there may be cases where batch drilling will justify the use of the same spud date for a number of wells, and this can be explained in the Justification section (Section C) of the relevant applications for Directions. In all cases, the commencement dates provided should be realistic, and should be updated regularly to reflect any delays to allow DECC to effectively prioritise the workload and ensure that determinations are completed in advance of

the operators' requirements. Updates can be notified by e-mail (via [emt@decc.gsi.gov.uk](mailto:emt@decc.gsi.gov.uk)), but when the commencement date is confirmed it will be necessary to additionally update the application submitted via the UK Oil Portal.. Operators should also notify DECC, using the same e-mail address, as soon as possible following commencement and completion of the activity, to enable DECC to effectively plan its inspection activity.

### **3. Well Name and/or Number**

Environmental Statements usually refer to wells using the UKCS Block Number, or using the name of a particular prospect or field. This is acceptable. Applications for Directions made via the Portal must include a WONS well number. In the case of new wells, this number can be generated in the application for the Direction, and prior to completion and submission of the application for well consent. The WONS well number should then be used for all related environmental submissions, including those that are not mediated via the Portal. If the WONS well number is not used to provide a clear linkage between the application for a Direction and related environmental submissions, e.g. the Oil Pollution Emergency Plan (OPEP), operators will be required to submit an update or updates to correct or include the information in relevant submissions, which could delay the determination of one or more applications. If there is a relevant prospect or field name, it should also be referred to in the Justification section (Section C) of the application for a Direction. It is also acceptable to include reference to the operator's well designation, but the key linkage must be provided via the WONS well number.

### **4. Multiple Wells**

Environmental Statements may cover more than one well, but separate applications for Directions are required for individual wells. The OPEP, can also cover more than one well, but it is essential that all the relevant WONS well numbers are detailed in the submission. If, for example, an OPEP only identifies one well, but it is a three-well programme, it may be assumed that there is an outstanding OPEP submission for the other wells and DECC may with-hold determination of the application for a Direction for those wells (and/or the determination of other related environmental submissions). If the intention is to update the OPEP to cover additional wells, this should be referred to in the Justification section (Section C) of the application for a Direction to avoid a delay. (Consent to Locate applications for MoDU operations are unlikely to be delayed, as the navigational assessment will be based upon the duration of the location, and would be unaffected by the approval process for subsequent wells).

### **5. Well Type**

Environmental Statements should confirm whether the subject well, or wells, are exploration, appraisal or development wells. Operators must also correctly identify the well type in the Justification and Well Information sections (Sections C and D1) of the application for a Direction. If contradictory, or incomplete, information is provided, the application for a Direction may be refused or, at best, operators will be required to submit an update to correct or include the information which could delay the determination.

## **6. Hydrocarbon Type**

Environmental Statements should indicate the anticipated hydrocarbon, i.e. whether it is oil, condensate or gas, or a combination of those hydrocarbons. Operators must also identify the hydrocarbon type in the Justification section (Sections C) of the application for a Direction, and do so consistently in all related environmental submissions. For appraisal and development wells, the information should also be aligned with the flow rate information included in the Development Information section (Section D2) of the application for a Direction (see below). If inconsistent or contradictory information is provided, one or more of the applications may be refused or, at best, operators will be required to submit an update or updates to correct or include the information in the relevant submissions which could delay the determination of one or more applications. Having identified the hydrocarbon type, it is also important to ensure that the text of the ES or the application for a Direction is consistent. It is also important to use consistent terminology in the application, as use of the term “oil spill” to cover condensate spills (or diesel fuel spills) has been misinterpreted by lay readers to indicate that there is the potential for a crude oil spill.

## **7. Hydrocarbon Flow Rates**

The anticipated hydrocarbon flow rate, or rates for mixed production, should be included in Environmental Statements and in the Justification section (Sections C) of the application for a Direction, so that this can be related to the flow rate or rates used to develop the OPEP. If there are significant differences between the rates included in the discussion of the well characteristics and the discussion of the spill response, this should be explained. For appraisal and development wells, operators must also indicate the anticipated flow rate or rates, and any anticipated flare rate or rates, in the Development Information section (Section D2) of the application for a Direction. This information must be consistent with the hydrocarbon type information (see above), and an explanation should be provided in the Justification section (Section C) of the application for a Direction if there are significant differences between any of the data provided. If inconsistent or contradictory information is provided in an ES, operators will be required to provide an explanation, and this could be deemed to be material to our determination and therefore necessitate a further period of Public Notice. If inconsistent or contradictory information is provided in an application for a Direction, the application may be refused or, at best, operators will be required to submit an update to correct or include the information which could delay the determination.

## **8. Accidental Events**

Environmental Statements must include a detailed discussion of accidental events that could give rise to a hydrocarbon release, broadly based upon the OPEP requirements but including significant additional detail in relation to the mitigation measures in place to prevent a release, the likely fate of the release, the proposed response measures and the potential environmental impacts of a release. The discussion must include consideration of worst-case scenarios, including a well blowout where all containment barriers have failed, and the total loss of the liquid hydrocarbon fuel inventory on the installation, MoDU or vessel undertaking the

activity. The hydrocarbon type and potential release rate in the event of a blowout should be relevant to the subject well, or an explanation provided if a different approach has been taken (for example, when drilling an exploration well, it is acceptable to use a hydrocarbon type and release rate relevant to a similar well that has already been drilled to the same strata in the same general area). The selected release should then be modelled to determine the likely fate of the release, including any potential beaching locations, and the modelling results should be used to develop the proposed response measures and to assess the potential environmental impacts of the release. The discussion should also draw upon the conclusions and recommendations detailed in the various reports relating to the *Deepwater Horizon* accident, and any relevant reports of other blowout events, to confirm that appropriate measures have been taken into consideration during the development of the management plan for the proposed activity. It is recommended that the discussion of accidental events is included as a separate section in the ES, or as an annex to the ES, so that it can be retained as a separate document and updated as necessary to form part of the OPEP justification document (see Sections 4.3 and 13 of the DECC Guidance Notes to Operators of UK Offshore Oil and Gas Installations - the OPEP Guidance). Where a proposed activity has not been the subject of an ES, or the ES pre-dates the most recent EIA Guidance in relation to the consideration of accidental events, operators should mirror the ES requirements in a separate OPEP justification document. Irrespective of whether the document is developed from the ES or prepared as a separate document, it is necessary to ensure that the content of the justification document is aligned with the scope of the OPEP.

Applications for Directions do not have to include a detailed discussion of the mitigation measures in place to prevent a release; the likely fate of the release; the proposed response measures; or the potential environmental impacts of a release. However, it is necessary to provide a brief summary of that information, including the output of the worst-case release modelling undertaken to identify the fate of the release and the potential environmental impact. An explanation should be provided if the modelling is not based on the hydrocarbon type(s) and flow rate(s) detailed elsewhere in the application for a Direction, or if any of the information provided in the summary differs from the information included in the OPEP, the OPEP justification or any relevant ES. All documents relevant to the summary should also be referenced in the application for a Direction. Operators are also required to include confirmation that they have considered the conclusions and recommendations detailed in the various reports relating to the *Deepwater Horizon* accident, and any relevant reports of other blowout events, and to confirm that appropriate measures have been taken into consideration during the development of the management plan for the proposed activity. It is unnecessary to discuss those measures in the application for a Direction, but the operators of specific wells may be contacted and asked to separately provide additional information in relation to the conclusions and recommendations of the reports and the proposed management measures.

## **9. Other Risk Factors**

Environmental Statements and applications for Directions should identify any risk factors that are pertinent to the impact assessment, such as abnormal reservoir temperature or pressure (particularly if the reservoir is High Pressure and High

Temperature (HP/HT)), whether it is a particularly deep reservoir or whether there are shallow gas deposits in the area, in addition to the detail currently provided in relation to environmental sensitivities, risks and potential impacts. Acknowledging the risks and confirming that appropriate mitigation is in place is likely to speed up, rather than delay, the determination, as it will avoid the requirement to seek confirmation from the applicant or third parties.

## **10. Quality Control**

DECC must receive reliable, consistent and complete submissions, and receive sufficient notice, to complete the determinations to meet the operators' requirements. It is therefore essential that operators undertake quality control checks, and provide as much notice as possible. Operators are reminded that Environmental Statements are subject to Public Notice, and that copies of applications for Directions can be obtained upon request to DECC. The general public therefore has an opportunity to review submissions, and many complaints following the *Deepwater Horizon* accident have related to the quality of the submission rather than the information provided, and all complaints can result in a delay.

## **Guidance Relating to Other Environmental Application Submissions**

Drilling operations are subject to a number of environmental controls administered by Department of Energy and Climate Change (DECC). In addition to requiring approval under the EIA Regulations, it will be necessary to apply for a Chemical Permit. It may also be necessary to apply for an Oil Discharge Permit if there are any planned discharges of reservoir hydrocarbons, a Consent to Locate if the activity is being undertaken using a Mobile Drilling Unit (MoDU), and a Survey Consent if the activity includes a Vertical Seismic Profile (VSP). Well intervention and abandonment operations are not covered by the EIA Regulations, but the nature of the activities means that virtually all operations will be the subject of an application for a Chemical Permit, and there may also be requirements for an Oil Discharge Permit and a Consent to Locate for the vessel or MoDU undertaking the activity. In the case of well abandonment operations there may also be a requirement to obtain approval under the licensing provisions of the Marine and Coastal Access Act (MCAA) to remove elements of the well from the seabed. All drilling, well intervention and well abandonment operations also have to be covered by an Oil Pollution Emergency Plan (OPEP), and separate supplementary guidance has been prepared to cover OPEP submissions and procedures.

As well intervention and abandonment operations are not covered by the EIA Regulations, it is unlikely that they would be the subject of an Environmental Statement (ES), unless they are part of a larger project. For example, well intervention operations could be part of a project to increase production from a field, and the level of the increase could exceed the EIA Directive threshold and require an ES. Operators could therefore decide to include the well intervention activities in the ES. Similarly, well abandonment operations could be part of an application for a MCAA licence to cover a range of activities included in the field Decommissioning Programme, and an ES would be required to support that programme and the related application for a MCAA licence. Similarly, some well intervention and abandonment operations may form part of an activity that requires an application for a Direction under the EIA Regulations, such as a well intervention that would be followed by an Extended Well Test (EWT), or a well abandonment that was planned as part of a drilling operation. In cases where well intervention or well abandonment operations form part of an ES or an application for a Direction, the supplementary guidance relating to Environmental Statements and Direction Applications will apply. Where there is no requirement to provide an ES or an application for a Direction under the EIA Regulations or to provide an ES under the licensing provisions of the MCAA, there will still be a requirement to provide an assessment of the potential impacts of the activity. This will usually be biased in terms of the nature of the application, for example applications for a Chemical Permit will concentrate on the proposed use and discharge of offshore chemicals; applications for an Oil Discharge Permit will concentrate on the oil discharges; and applications for a Consent to Locate will concentrate on the navigational issues. In the case of applications for a MCAA licence that are not supported by an ES, the impact assessment will be more general and similar to an application for a Direction under the EIA Regulations. In all cases, if there are implications under the Offshore Petroleum Activities (Conservation of Habitats) Regulations 2001 (as amended), the relevant assessment will also have to address any potential impacts on protected habitats or species. For example, it would be necessary to address potential impacts on European Protected

Species in the application for a MCAA licence to abandon a well if the abandonment operations included explosive severance to remove elements of the well from the seabed.

Where there is no requirement for an ES or an application for a Direction, the impact assessment that is provided in at least one of the environmental submissions should include a section dealing with accidental events, summarising the mitigation measures in place to prevent any release of hydrocarbons and the worst-case release scenarios that have been identified in the OPEP, as well as confirming that the potential environmental impacts associated with those scenarios have been assessed to underpin the OPEP process. Any documents relevant to the summary assessment, such as the OPEP, the OPEP justification document (see Sections 4.3 and 13 of the DECC Guidance Notes to Operators of UK Offshore Oil and Gas Installations - the OPEP Guidance) or any recent ES or application for a Direction that is relevant to the subject well or wells, should also be referenced in the assessment.

As virtually all well intervention and abandonment operations will be the subject of an application for a Chemical Permit, it is recommended that the assessment of accidental events is normally included in the application for a Chemical Permit. As these applications are submitted via the UK Oil Portal, the application must also include confirmation that the proposed operation is covered by an approved OPEP, or a current OPEP application. Where approval of the OPEP is still outstanding at the time of the application for a Chemical Permit, it will also be necessary to submit an update or variation of the application to provide confirmation that the OPEP has been approved. If a Chemical Permit is not required, the assessment of accidental events can be included in the application for a MCAA licence. If a MCAA licence is not required, it can be included in the application for an Oil Discharge Permit. If a number of environmental applications are required, there is no requirement to duplicate the assessment of accidental events, providing the application containing the assessment is referenced in the other applications. In the extremely unlikely event that none of these applications are required, DECC may require the operator to submit the OPEP justification document to support the OPEP for the proposed operations.

The majority of the guidance provided in relation to applications for Directions will also be relevant when preparing other environmental submissions. Applicants undertaking well intervention and abandonment operations are therefore advised to consult that supplementary guidance, to ensure that DECC has access to reliable, consistent and complete information and can develop an appropriate assessment of the potential risks associated with an activity, and to ensure that determinations do not result in any unnecessary delay.

## **Guidance Relating to Oil Pollution Emergency Plans**

Oil Pollution Emergency Plans (OPEPs) must be prepared in accordance with the requirements of the Merchant Shipping (Oil Pollution Preparedness, Response and Co-operation Convention) Regulations (OPRC) 1998 and the Offshore Installations (Emergency Pollution Control) Regulations (EPC) 2002. OPEPs must be approved by the Department of Energy and Climate Change (DECC), and should set out the “arrangements for responding to incidents which cause or may cause marine pollution by oil, with a view to preventing such pollution or reducing or minimising its effect”. The primary purpose of the OPEP is to inform the operator, so that they can implement a robust, effective and tested emergency response procedure. It is the operator’s responsibility to ensure that the OPEP clearly identifies the potential release scenarios, the potential environmental impacts, and how they would respond to mitigate those impacts. This supplementary guidance should be read in conjunction with the DECC Guidance Notes to Operators of UK Offshore Oil and Gas Installations (the OPEP Guidance). Issues that have been identified as requiring particular attention following the *Deepwater Horizon* accident are summarised in the following sections.

### **1. Overall Function and Scope**

Operators are responsible for, and must be able to respond to, pollution incidents relating to their installations or infrastructure. The OPEP Guidance requires operators to produce a fit-for-purpose, operational document, that clearly sets out the procedures for responding to offshore oil pollution incidents in an effective and efficient manner, and in co-ordination with the UK’s National Contingency Plan. The scope of an OPEP will cover many different activities and functions. When developing the OPEP, it is therefore essential that a multi-disciplinary team approach is used to capture operational, response and environmental requirements. Team members may include, but not be limited to, senior management, offshore and onshore operational personnel (including relevant contractors), offshore and onshore response personnel (including relevant contractors), Health, Safety and Environment (HS&E) advisors, insurance advisors etc. If contractors or environmental consultants are employed to develop and write the OPEP, relevant information must be provided and reviewed by appropriate personnel employed by the operator, to ensure that a robust and fit-for-purpose document is produced.

### **2. Installations / Infrastructure Requiring an OPEP**

All installations, infrastructure and activities that could give rise to an oil pollution event on the UKCS must be covered by an OPEP. Details are provided in the OPEP Guidance (Section 3), and the requirement applies to fixed and floating installations, including MoDUs; gas, condensate and oil pipelines; and subsea facilities, including any connected third party infrastructure that is not the subject of a separate OPEP. If there is any doubt as to whether an OPEP is required, operators should contact the DECC Offshore Environmental Inspectorate.

OPEPs are therefore required for all exploration, appraisal and development drilling operations, and for all well intervention and abandonment operations, undertaken on the UKCS, and the OPEP Guidance details specific requirements for OPEPs relating to exploration, appraisal and development wells drilled from fixed installations and

MoDUs. If an OPEP covers a number of wells, for example if there is a three-well drilling programme, all the wells must be identified in the submission. If only one of the wells is identified in the OPEP, DECC will assume that there is an outstanding submission for the other wells, even if the OPEP mentions a multiple-well drilling programme, and this will inevitably delay the determination of the OPEP, and could delay the determinations of other related environmental submissions.

Offshore oil and gas operators, MoDU operators and Well Intervention Vessel operators should note that a Shipboard Oil Pollution Emergency Plan (SOPEP) covers floating production facilities, MoDUs and well intervention vessels when they are in transit, but are not relevant once the vessels are engaged in oil and gas activities authorised by DECC. When undertaking such activities, an OPEP that has been approved by DECC must therefore be in place before the activities commence. The facilities and activities covered by the OPEP must be clearly stated in the submission, and be consistent throughout the document. Where appropriate, a schematic should be included to identify the infrastructure covered by the submission, supported by the data in a table format.

### **3. Assessments of Worst-Case Scenarios**

Section 4.2 of the OPEP Guidance specifies that operators must identify potential scenarios which could give rise to a pollution incident, including the worst-case scenarios. All OPEPs associated with exploration, appraisal and development (production) drilling operations, or work-over and intervention operations on hydrocarbon producing wells, that are undertaken on the UKCS must assess and provide for an effective response to an identified worst-case scenario where all containment barriers have failed resulting in a blowout, that would normally require the drilling of a relief well, in addition to considering the worst-case scenario relating to the total loss of the installation's hydrocarbon inventory.

The following information must therefore be taken into consideration when preparing the OPEP submission:

Well and reservoir information relevant to the scale of potential releases of hydrocarbons, including information relating to the nature of the hydrocarbons and the well flow characteristics; the potential daily release rate; and the total quantity of hydrocarbons that could be released during the maximum time that it could take to stop the release. If there are reservoir characteristics relevant to this information, such as High Pressure and High Temperature (HP/HT) conditions, this information must be included.

Identification of the worst-case scenario in relation to the potential release of reservoir hydrocarbons. For all operations relating to exploration, appraisal and development wells (i.e. drilling, well intervention, and well abandonment) the worst-case scenario will be the quantity of reservoir hydrocarbons that could potentially be released if all containment barriers failed, i.e. a well blowout with total loss of containment. The scenario should be directly related to the particular circumstances of the installation, the proposed activities, and the reservoir characteristics, and should be consistent with the information used by other operational departments, e.g. well engineering. For example, if the operation involves the drilling of a dry gas well, and no oil or condensate is expected; or there is insufficient reservoir pressure

for a well to flow unaided; or if the flow rate is likely to reduce significantly during the period of any release, this should be reflected in the OPEP as it is likely that will affect the pollution response strategy and the assessment of any potential environmental impact. If the OPEP covers a number of wells, the highest flow rate well should be used to identify the worst-case scenario, and this should be explained in the OPEP and related environmental submissions as it may conflict with the information provided in applications relating to the other wells.

Identification of the worst-case scenario in relation to the potential release of the installation hydrocarbon inventory, which will normally be the total diesel fuel inventory, although other inventories such as drilling fluid base oil may be relevant.

The measures that would be taken to stop the worst-case release of liquid hydrocarbons from the reservoir, and an estimate of the maximum duration of the release. The latter could be a function of natural cessation related to the nature of the hydrocarbons and well flow characteristics, but will normally be the time taken to implement appropriate measures to stop or control the release (e.g. use of a capping or containment device), and the time taken to drill a relief well.

Where appropriate, details of plans to implement the capping of a well and the drilling of a relief well to totally isolate the original well, to demonstrate that there is adequate planning or provision in place for these eventualities.

Modelling data relevant to the worst-case release of liquid hydrocarbons, to meet the requirements specified in Section 5.2 of the OPEP Guidance and thereby identify the potential fate and spatial impact of the release. This should include the identification of the areas that could be impacted as a result of any release, including potential UK beaching locations, and the waters and potential beaching locations of adjacent States, and the likely time-frames for hydrocarbons to beach or cross a median line.

A brief summary of the predicted environmental and socio-economic impacts of the worst-case release of liquid hydrocarbons, taking account of the results of the modelling undertaken to identify the areas that could be impacted as a result of any liquid hydrocarbon release and sensitivity data relevant to those areas.

Details of the response strategy to conduct an effective and early intervention to protect the environment in the event of any liquid hydrocarbon release, including robust and location-specific arrangements based on the outcome of the modelling and the predicted environmental and socio-economic impacts. The information provided should include details of the pollution prevention and response equipment that the operator maintains or intends to access for deployment in the event of a release, or a potential release, and the time that it would take to deploy that equipment.

Although it is not relevant for well operations, the worst-case assessment of pipeline releases should be based on the total volume of liquid hydrocarbons present in the isolated pipeline and, in the case of major trunk lines, the modelling should assess three potential release locations, at the offshore installation; at the mid-point; and at a location as close to the landfall location as can be accommodated by the model.

Although the OPEP must always address the worst-case scenarios, operators are reminded that comparatively small releases of certain types of oil, or small releases in sensitive areas, or small releases in certain circumstances, have the potential to result in a significant environmental impact and may therefore require a substantial response.

#### **4. Well Flow Rates**

The worst-case scenario well flow-rate should be specific to the well that is the subject of the OPEP or OPEP Addendum, or the well with the maximum flow rate if the submission covers more than one well. The flow rate should be based on information relating to the particular installation, activity and reservoir, and should be provided in cubic metres per day or hour and the units clearly stated. The flow rate should be consistent with information included in the PON15 and any other relevant regulatory submissions, or any discrepancy should be explained. The selected flow rate should be used to calculate the predicted total loss of hydrocarbons during the period covered by the modelling, and during the estimated time taken to stop the release, and the calculated volumes should be clearly stated.

#### **5. Modelling**

Modelling should be carried out for the worst-case release scenarios to determine the fate of the released liquid hydrocarbons and the likely areas and extent of any potential impacts, including beaching locations and the potential for spills to cross any median line and beach on the coastline of adjacent States. The output should be considered alongside relevant environmental sensitivities, to inform the response strategy.

Stochastic models to determine the areas that could be impacted should use data that is relevant to the hydrocarbon types and the estimated uncontrolled flow rate. If the depth of the release beneath the sea surface could significantly affect the dispersion and fate of the released hydrocarbons, this should be taken into consideration in the study if it is a feature of the selected model, as it is likely to be relevant to the environmental impact assessment. However, the deepwater release assessment cannot be relied upon for the purpose of developing a robust response strategy that accommodates all release scenarios, so it would also be necessary to separately model an equivalent surface release.

The models must be run for a period of time that is sufficient to identify the potential directions of travel and the areas likely to be at risk. As a minimum, the models must be run for a period of 10 days under worst-case liquid hydrocarbon release conditions, or until there are no released hydrocarbons remaining on the sea surface (i.e. until they have evaporated, dissipated or beached). If the minimum 10-day modelling period does not clearly identify the potential areas at risk, then the modelling period must be extended.

Trajectory modelling must use the same inputs as the stochastic modelling, and in accordance with Section 5.2 of the OPEP Guidance.

In all cases, the modelling must be undertaken using relevant weather, current and temperature data obtained from scientifically-validated historic data sources, and the origin of this information must be fully referenced.

DECC has determined that currently-available models are capable of meeting the above requirements, to enable operators to develop a competent response strategy that adequately addresses all potential release scenarios.

## **6. Oil Spill Counter Pollution Response**

The initial response to any release should only be based on the available response resources. Any that are not immediately available to the operator, such as additional dispersant spraying capacity, spill containment and recovery equipment, well capping and containment devices or MoDUs and equipment that may be required to drill a relief well, but can be accessed if required, should be clearly identified and a timescale provided for provision of the relevant resources.

## **7. Dispersants**

Operators must satisfy themselves that the reservoir hydrocarbons are likely to be amenable to dispersant treatment, if the latter is identified as a component of the response strategy. Where prior testing of dispersant efficacy is possible, it should be undertaken in accordance with the Marine Management Organisation (MMO) guidance.

If dispersant treatment is identified as a potential component of the initial response, the OPEP should confirm the type and quantity of dispersant held onboard the stand-by vessel. If the type of dispersant is critical, because of the nature of the reservoir hydrocarbons, this should be clearly stated and available sources identified in case the stocks need to be replenished or the standby vessel has to be relocated for any reason. If the stand-by vessel is replaced, provision must be made to maintain the dispersant response capability detailed in the OPEP.

## **8. Capping Devices**

Where the use of a capping device is identified as a potential control option, operators must have suitable arrangements in place to implement such a response. The capping device must be suitable for the subject well, i.e. it can be deployed to attach to the well structure and can be used under the expected well pressure, and the source must be confirmed, including details of the nature of any contractual arrangements in place and relevant contractor contact details. The OPEP should also include relevant operator contact details, confirming who is responsible for securing the device and implementing the necessary arrangements for deployment in the event of an incident. Where operators and/or their contractors have specific source control plans relating to the use of capping devices, these should be referenced in the OPEP.

The OPEP should provide a clear breakdown of the anticipated timetable to take delivery of the equipment; to transport it to the well site; and to assemble; test and deploy the equipment to stop the flow from the well. This will inform the interim response and allow assessment of potential impacts during that period pending cessation of the release.

## **9. Relief Wells**

Where drilling a relief well is identified as a potential control option, operators must provide details of their plans to initiate the management of such an operation, including details of the operator contacts responsible for initiating the relief well plan, and contact details of any contractor involved in the operation. Where relevant, confirmation should be provided of any communication or contracts with third party providers, so that the response personnel are aware of the equipment and personnel that may be available and how to proceed to access those resources.

It should be noted that DECC does not expect operators to have a contract in place for the provision of an alternative drilling unit, but there should be a plan in place to source a MoDU if one is required. The OPEP should therefore include details of any MoDUs or potential sources that have been identified, and confirm whether a specific type of MoDU would be required to drill the relief well. Again, where relevant, confirmation should be provided of any communication or contacts with third party providers, so that the response personnel know how to proceed to access an appropriate MoDU.

In the event of an incident requiring a relief well, operators must demonstrate that a relief well could be drilled in a timely manner. It will therefore be necessary to confirm that sufficient finance or insurance / indemnity provision is available to cover the eventuality; that consideration has been given to relief well design; that procedures are in place to implement a relief well management plan, supported by relevant specialist personnel; and that consideration has been given to sourcing a rig in the event that the facility drilling the primary well is not available. The OPEP should also provide a clear breakdown of the timetable to source a MoDU (including provision for suspension of any current operations), to relocate the MoDU to the relief well site, and to drill the relief well and kill the original well.

## **10. Environmentally Sensitive Areas**

Details of environmentally sensitive areas that could be impacted by a release should be obtained from appropriate contacts, such as the relevant fisheries authorities, e.g. the MMO or Devolved Authority; the relevant inshore pollution authorities, e.g. the Environment Agency or the Scottish Environment Protection Agency; and the relevant Statutory Nature Conservation Agencies, e.g. the Joint Nature Conservation Committee (JNCC), and Natural England or Scottish Natural Heritage.

Where required, a Shoreline Protection Plan must be prepared and submitted to DECC in accordance with the OPEP Guidance, and the relevant local authorities should be contacted in addition to the bodies detailed above to ensure that comprehensive and up-to-date environmental information is included in the plan.

## **11. Socio-economic Impacts**

Any significant potential socio-economic impacts that could have a bearing on the response strategy should be summarised in the OPEP. For example, in certain areas, it may be important to ensure that fishermen and/or fish farmers are regularly

advised of the location and direction of movement of a spill; or it may be important to avoid using dispersants in areas where there would be a possibility of dispersed oil contaminating harvested or farmed shellfish stocks; or it may be necessary to take specific measures to prevent oil coming ashore in areas with a high amenity value. It is not necessary to try to quantify the economic impact, but any significant potential impacts should be identified and clearly linked to the response strategy.

## **12. Areas of Potential Impact Outwith UK Waters**

Where the modelling indicates that a hydrocarbon release could impact areas outwith UK waters, the OPEP should provide details of the pollution control authorities in the relevant State or States, and any relevant international response agreements, such as the Norbrit Agreement. The OPEP should also provide details of where the operator would intend to obtain access to relevant information to assess the potential environmental and socio-economic impacts, including reference to any communication with the relevant bodies.

## **13. Operations Control Unit Requirements**

The proposed location of the SoSREP Operations Control Unit (OCU) must be identified in the OPEP. Only one OCU location should be identified, as the SoSREP and his team require clear instructions about where to convene in the event of an incident. If an operator considers that it necessary to include alternative locations, prior approval must be sought from DECC. If an operator wishes to relocate the OCU, or amend the facilities provided, following submission of the review draft of the OPEP to DECC, the Offshore Environmental Inspectorate must be contacted at the earliest opportunity. If the alternative proposals are acceptable, the operator will subsequently be required to submit an update of the OPEP prior to EPC approval. OPEPs must identify the Emergency Operations Manager (EOM) and the Operator's Representative (or Representatives) who would attend the OCU (it should be noted that the same person cannot fulfil both roles in an active OCU). Details of the personnel positions and, if considered necessary, the personnel names should be included, as it is insufficient to state "a senior member of the company or similar will undertake the role". The personnel must nevertheless be sufficiently senior to make decisions on behalf of the company.

For certain operations, such as drilling undertaken using a MoDU, the response arrangements may necessitate that the EOM and Operator's Representative (or Representatives) are employees of the MoDU drilling contractor, and this must be clearly stated in the OPEP.

The EOM and the Operator's Representative (or Representatives), and other relevant response personnel, must be suitably trained, as detailed in the OPEP Guidance, and be aware of the expectations and requirements when participating in or supporting the OCU.

## **14. Training and Exercise Requirements**

Details of the operator's training and exercise commitments must be included in the OPEP, highlighting the levels of training required for the response personnel and the

refresher course intervals, and the frequency and scope of the OPEP exercises. The exercise requirements must be specific to the subject OPEP, and previous exercises in relation to other OPEPs will not be taken into consideration. This will be particularly relevant in the case of MoDU operations, where the exercise requirement must be related to a specific OPEP and a specific well. In all cases, operators must have systems and procedures in place to ensure that appropriate training is provided and maintained, and that the required exercises are completed.

## **15. OPEP Justification Document**

OPEPs should be supported by an OPEP justification document (see Sections 4.3 and 13 of the OPEP Guidance), which can be developed from the Environmental Statement for a proposed activity or can be a separate stand-alone document. The content of the OPEP justification document must be aligned with the scope of the OPEP, and details of the assumptions, calculations, models and impact assessments that have been used to develop the OPEP can be included in the justification document, so that only summary information directly pertinent to the response strategy is included in the OPEP. In all cases, operators must ensure that the information provided in the OPEP and associated justification document is consistent with related documentation, such as well design / engineering plans, safety risk assessments and relevant environmental applications.

## **16. Quality Control Checks**

The final draft of the OPEP must be reviewed by senior operator personnel involved in the proposed activity, before it is submitted to DECC for review. Operators can informally approach DECC to seek regulatory guidance on the development of an OPEP, but once the review draft is submitted to DECC it will be listed on the DECC Oil & Gas website and copies will be released to enquirers upon request. Quality control checks are therefore essential to ensure that the content is accurate and that the OPEP is relevant to the nature of the installation, the proposed operations, the environmental sensitivities, the potential environmental impacts and the proposed response arrangements. Information within different sections of the OPEP must be consistent, and it must also be consistent with other environmental submissions relating to the same activity, e.g. with respect to well names and numbers, infrastructure details, worst-case well blowout flow rates etc. It is unacceptable to provide submissions that have not been subject to a quality control check, and poor quality submissions will inevitably lead to a delay in the determination, and may lead to approval being withheld. If a submission is of such poor quality that it is rejected, any re-submission may also be subject to a further two month review period. OPEPs should be produced on a case-by-case basis. Some information may overlap between OPEPs, but it is unacceptable to “cut and paste” information between OPEPs if the information is not relevant or specific to the nature of the installation, the proposed operations, the environmental sensitivities, the potential environmental impacts and the proposed response arrangements. This can lead to errors when responding to incidents or to operators taking responsibility for actions and procedures that do not reflect their operations. If abbreviations are used, there should be a glossary of abbreviations appended to the submission, and if figures or tables are included, they should be legible, intelligible and clearly titled. Figures will normally be included to display the modelling results and, where appropriate, figures

and accompanying tables are also recommended to clearly identify the infrastructure covered by the scope of the OPEP.

## 17. Consultation Process

The final review drafts of the OPEP must be submitted to DECC as a ring-bound hard copy, for ease of review; and in an electronic format (by e-mail to [offshore.inspectorate@decc.gsi.gov.uk](mailto:offshore.inspectorate@decc.gsi.gov.uk) or on a CD), so that redacted copies can be provided in response to requests from interested parties. The OPEP must be accompanied by a completed submission cover sheet, which provides basic information on the scope of the submission and is used by DECC to assess any additional requirements prior to sign-off, including any inspection requirements. The cover sheet can be down-loaded from the DECC Oil and Gas website using the following link <https://www.og.decc.gov.uk/environment/msr1998.htm>.

Review copies should also be sent by e-mail to the following consultees:

All OPEPs:

Maritime and Coastguard Agency (MCA) - [meor.meor@mcga.gov.uk](mailto:meor.meor@mcga.gov.uk); and  
JNCC - [jnccadvicetodti@jncc.gov.uk](mailto:jnccadvicetodti@jncc.gov.uk);

Waters adjacent to England and Wales:

MMO - [dispersants@marinemanagement.org.uk](mailto:dispersants@marinemanagement.org.uk).

Waters adjacent to Scotland:

Marine Scotland (MS) - [spillresponse@scotland.gsi.gov.uk](mailto:spillresponse@scotland.gsi.gov.uk).

If transmission isn't possible because of the document size, copies should be provided on a CD.

Where the OPEP Guidance indicates that additional consultees are appropriate, copies should also be forwarded to the appropriate bodies, and details of the additional consultation should be included in the OPEP.

All the consultees provided with a copy of the OPEP should be advised to forward their comments to DECC, so that they can be taken into consideration during the review.

OPEPs are subject to a two-month consultation period, but it may be necessary to provide additional information or revise the draft, and the Offshore Environmental Inspectorate may wish to undertake an offshore inspection before specific approvals are issued for the proposed activity. Operators should, therefore, submit review drafts at least two months before the proposed commencement date, and are encouraged to submit the drafts as early as possible.

## 18. Comments on Review Drafts

OPEPs are reviewed and assessed on a case-by-case basis, taking account of the nature of the installation, the proposed operations, the environmental sensitivities the potential environmental impacts and the proposed response arrangements, and taking account of the comments received from consultees. The DECC response to

the submission will therefore be specific to the subject OPEP, although some advice and comments, and clarification of the guidance or policy, may be relevant to other OPEPs already submitted for review or the preparation of future submissions. Operators should therefore have systems and procedures in place to ensure that there is effective dissemination of relevant comments.

DECC comments on submissions must be addressed by the operator, and it is not acceptable to ignore the comments, or to re-submit applications where specific comments have not been addressed. Both will inevitably delay completion of the review process. However, if there are valid reasons for not addressing a particular comment, this should be explained in correspondence covering the re-submission, or discussed with DECC as soon as possible. Operators should also ensure that they fully understand the comments received, rather than basing a re-submission on assumptions or only partially addressing the comments. All communications relating to the comments on an OPEP submission should be submitted by e-mail to [offshore.inspectorate@decc.gsi.gov.uk](mailto:offshore.inspectorate@decc.gsi.gov.uk).

## **19. OPEP Approval**

Once any comments have been satisfactorily addressed, operators will be notified of approval under the OPRC and EPC Regulations. Following approval, a hard-copy (paper) and electronic copy (pdf format) of the OPEP, the “Controlled Copies”, must be submitted to DECC for retention by the Offshore Environmental Inspectorate.

Controlled Copies must also be forwarded to:

All OPEPs:

MCA – the MRCC station nearest to the location of the proposed operations; and  
JNCC - [jnccadvicetodti@jncc.gov.uk](mailto:jnccadvicetodti@jncc.gov.uk).

Waters adjacent to England and Wales:

MMO - [dispersants@marinemanagement.org.uk](mailto:dispersants@marinemanagement.org.uk).

Waters adjacent to Scotland:

Marine Scotland (MS) - [spillresponse@scotland.gsi.gov.uk](mailto:spillresponse@scotland.gsi.gov.uk).

The MRCC copy should be on a CD (preferred) or as a hard copy, as the local stations cannot accept Controlled Copies via e-mail. The other copies should be sent by e-mail or, if transmission isn't possible because of the document size, on a CD. Where requested, copies should also be forwarded to any additional consultees.

Operators are reminded that DECC and other Controlled Copy holders must be advised when there is cessation of the operations covered by the OPEP and it is no longer required. This allows them to dispose of the redundant OPEP, and prevents unnecessary auditing of completed operations.

## 20. OPEP Maintenance

Section 14.4.1 of the OPEP Guidance details the requirement to regularly review OPEPs, and Section 15 of the guidance details the action that should be taken following approval of the OPEP.

OPEP's are "living documents" and should be reviewed on a regular basis to ensure they remain current and applicable to the installation, the proposed operations, the environmental sensitivities, the potential environmental impacts and the proposed response arrangements. Where appropriate, they will also need to be updated to take account of any changes relating to the operator. If the changes are significant, such as a new operator or the addition of a new activity, the revised OPEP will normally be subject to a two-month consultation period prior to any acceptance of the changes. However, if the changes relate to the strengthening of the response arrangements, it is unlikely that it would be considered necessary to insist upon formal consultation, although DECC may still wish to comment on the changes and enter into a dialogue with the operator or specific consultees.

When reviewing an OPEP, operators must take full account of the Regulations, the OPEP Guidance and best practice. When reviewing an OPEP to include new exploration, appraisal and development (production) drilling operations, or new intervention or abandonment operations relating to hydrocarbon producing wells, the requirements detailed in this supplementary guidance should also be taken into consideration.

In addition to *ad hoc* operator reviews, all OPEP's are subject to a formal review that must be undertaken at least every five years after the date of initial submission. If the operator is still carrying out operations covered by the OPEP, it must be revised to take account of any new or amended guidance and re-submitted to DECC and the relevant consultees at least two-months prior to the date of "expiry" of the five-year validity period. Although the OPEP must be reviewed every five years, operators can submit a revised document for formal review at any time during that period. Following approval, the amended submission must be forwarded to all Controlled Copy holders in a timely manner.

## **Guidance Relating to Environmental Reviews and Inspections**

The Department of Energy and Climate Change (DECC) does not restrict its consideration of environmental issues to the assessment of applications for regulatory approval, and may require additional information, onshore and offshore reviews and onshore and offshore inspections to provide the necessary level of assurance that:

- All necessary measures have been taken to manage the activities, the environmental impacts and compliance with the environmental regulations and related approvals;
- Appropriate action has been taken to mitigate the risk of environmental incidents; and
- Appropriate pollution control and response arrangements are in place in the event of an environmental incident.

Proposed activities are assessed on a case-by-case basis, and additional assurance will normally be sought for drilling operations that fall into the following categories:

- Operations involving new operators and/or drilling contractors;
- Operations involving MoDUs that have not undertaken recent work on the UKCS;
- Exploration, appraisal and development wells that are located:
  - In deepwater (>300 metres water depth); and/or
  - To the west and north of Shetland, or in the Moray Firth or Irish Sea; and
  - All High Pressure / High Temperature (HP/HT) wells.

Additional assurance may also be sought for other wells, but this will be the exception rather than the rule.

Potential requirements are summarised below.

### **1. Environmental Management System (EMS)**

Licensed operators must have an independently verified EMS, in accordance with OSPAR Recommendation 2003/5 and the requirements detailed in DECC guidance. Operators may therefore be required to confirm that they have a verified EMS, or to confirm the verification status if this is due for renewal. They may also be required to provide a review of any actions being progressed to demonstrate implementation of the EMS and/or strengthen the environmental management.

Where contractors (including sub-contractors) are employed to carry out operations on behalf of the operator, it is recommended that they should also have an EMS that is compatible with a recognised standard. The operator may therefore be required to confirm that the contractors have an appropriate EMS, and to provide a copy of relevant interface documents detailing how the licensed operator's EMS interfaces with the contractor's EMS. Where a contractor does not have an EMS, the operator must be able to demonstrate how the requirements of the operator's EMS will be implemented by the contractor during the proposed operations, and what actions will be taken to ensure compliance with those requirements.

## **2. OPOL and Indemnity Arrangements**

Operators may be required to provide proof of OPOL membership, and that it covers the proposed activity, and to provide confirmation that their insurance indemnity provision includes the following:

- Operations to stop or control the release of hydrocarbons in the event of a well blowout, such as the deployment of a capping device and the drilling of a relief well;
- Clean-up costs associated with any spill, including a worst-case well blowout; and
- Remediation of pollution damage, including liability to third parties.

Confirmation of suitable insurance indemnity provision will normally entail the provision of a copy of the insurance policy, together with a summary of the level of insurance cover and an explanation of the process undertaken to determine the risks and the level of cover required to cater for those risks.

## **3. Environmentally Critical Equipment**

Operators of drilling and production installations must identify Environmentally Critical Equipment (ECE), and ensure that is included in their Maintenance Management Systems (MMS). The planned maintenance of ECE must then be implemented to ensure integrity and proper functioning. Operators may therefore be required to confirm that appropriate ECE has been identified, and to provide details of any planned or completed maintenance and tests undertaken to ensure integrity and proper functioning, particularly in relation to equipment for the prevention of, and response to, incidents with the potential to have a significant impact on the environment. For example, this could include details of the planned testing programme for the BOP, and for the provision and testing of a suitably-certified ROV or other intervention equipment in the event of an incident.

## **4. Internal and External Audits**

Operators may be required to provide details of any audits (both internal and external) that have been undertaken by the operator or contractors to provide assurance that the MoDU and drilling operation management systems and the procedures developed to prevent environmental incidents are robust. This should include a summary of any key audit findings, an outline of how audit findings are recorded, tracked and closed-out, and details of the frequency and scope of any audits planned during the proposed operations.

## **5. DECC Inspections and Instructions**

Where relevant, operators may be required to provide confirmation of progression or close-out of any outstanding actions relating to previous DECC environmental inspections, or relating to previous communications with the operator or drilling contractor.

## **6. Major Spill Reports**

Operators may be required to provide confirmation, usually in the form of a written statement, that they have considered and taken account of the conclusions and recommendations contained in reports into the *Deepwater Horizon* and *Montara* accidents, where those conclusions and recommendations are relevant to the planned activity. The level of details required will be related to the planned activity, as many of the conclusions and recommendations are specifically related to deepwater drilling operations. The list of reports provided to support the additional guidance communicated to oil and gas operators and/or Mobile Drilling Unit (MoDU) operators is appended to this document, but it is not exhaustive and it should be noted that further reports have now been published in relation to the *Deepwater Horizon* accident.

## **7. Competency, Training and Exercises**

Operators and their contractors may be required to provide details of the procedures implemented to ensure the competency and effective training of personnel undertaking the operations. This will include demonstration that standards are set for competency at all levels, which are specific to the personnel positions and tasks, and that there is appropriate assessment of the training to ensure that it is proportionate to the hazards and risks associated with the tasks. Operators are therefore advised to discuss these requirements with their contractors as early as possible, to ensure that all parties are fully aware of the relevant competencies and training for specific roles and responsibilities and to confirm that the standards meet the operator's expectations.

Where relevant procedures are not currently in place, operators and/or contractors will be required to provide a detailed time resourced plan, and confirmation of how this will be implemented, to demonstrate how they intend to meet the competency and training requirements.

Operators may also be required to organise and undertake an onshore desktop emergency response exercise, witnessed by the Offshore Environmental Inspectorate, to assess competency and the adequacy of the onshore arrangements.

## **8. Operational Procedures**

Operators may be required to provide confirmation of specific aspects of planned or current activities, particularly in relation to the timings, the working methods, the roles and responsibilities, and the plans and procedures in place to ensure that the activities are undertaken in accordance with the relevant management systems and commitments detailed in the regulatory submissions (e.g. the Environmental Statement, the application for Direction, the applications for Chemical and Oil Discharge permit and the Oil Pollution Emergency Plan). This should include reference to the management of contractors and relevant interface documents; clarification of the respective roles and responsibilities, and the competency and training of the relevant personnel; details of the management of change procedures; and reference to any relevant audits undertaken to demonstrate that the procedures are robust.

Operators should therefore ensure that plans and procedures are developed at an early stage; that they are subjected to a robust review process involving personnel with relevant technical expertise; and that they can be clearly understood and effectively implemented. Where appropriate, for example for safety or /environmentally critical tasks, for complex tasks or for tasks that are only infrequently performed, the procedures should include step-by-step instructions so that the tasks can be carried out safely and prevent or minimise any environmental impact. The procedures should be specific to the installation and the equipment on board, rather than generic documents, and there should be systems in place to ensure that they are followed by the operator and contractor personnel undertaking the tasks, and that they are regularly maintained.

Where tasks have the potential for a significant environmental impact, operators should also provide a detailed description of the activities and the mitigation procedures in the relevant environmental regulatory submissions.

## **9. Additional Considerations**

Following receipt of the environmental regulatory submissions, DECC will undertake an internal review to determine whether any or all of the additional requirements detailed above are appropriate for the proposed activities. DECC will then advise the operator of their requirements, and what action should be taken to satisfy those requirements. In some cases written submissions will be reviewed prior to the approval of regulatory submissions. In other cases the reviews may follow approval. Where there are significant concerns in relation to the regulatory submissions and/or the written submissions, DECC may also request an onshore regulatory review meeting with the operator and relevant contractors, prior to the issue of any approvals, which may take place at DECC or the operator's premises.

As it is possible that a review of written submissions, or a full regulatory review meeting, will be required prior to the approval of regulatory submissions, failure to consider these additional requirements in advance could significantly delay the proposed operations. DECC may also require the amendment of unsatisfactory submissions, and/or another meeting with the operator and relevant contractors, which could exacerbate the delay. Operators are therefore advised to take these potential requirements into consideration when preparing their regulatory submissions, and to ensure that those submissions, particularly where they relate to the drilling operations that fall into the categories detailed in the introduction to this environmental review and inspection guidance, are submitted well in advance of the proposed spud date, to accommodate potential requests for additional information. Depending upon the nature of the activities, and the outcome of the review of written submissions or any meetings, DECC will assess the environmental inspection requirements, which could involve one or more of the following:

- Pre-spud installation inspection - the approval of regulatory submissions may be delayed until any significant issues identified during the inspection have been satisfactorily addressed;
- Inspection during drilling operations, before drilling reaches the hydrocarbon bearing reservoir;

- Inspection during drilling operations within the hydrocarbon bearing reservoir, or during other specific operations; and
- Inspection during any stage of the drilling operations, as determined by DECC's inspection programme.

Whether to undertake an environmental inspection will also take account of any recent inspection of the installation, and the outcome of that inspection.

To avoid any unnecessary delays relating to the provision of additional information or a pre-spud inspection, operators intending to undertake drilling operations that fall into the categories detailed in the introduction to this environmental review and inspection guidance are strongly advised to contact the Offshore Environmental Inspectorate prior to the preparation of regulatory submissions. The timing of this contact should be sufficiently in advance of the proposed activities to ensure that there is sufficient time to accommodate any DECC requirements.

Published Deepwater Horizon and Montara Reports – at November 2011

<i>Doc Ref</i>	<i>Source</i>	<i>Author</i>	<i>Title</i>	<i>Date</i>	<i>URL</i>
<i>Salazar, 27 May 2010</i>	US Department of the Interior	Salazar	Increased safety measures for energy development on the outer continental shelf	27-May-10	<a href="http://www.doi.gov/deepwaterhorizon/loader.cfm?csModule=security/getfile&amp;PageID=33598">http://www.doi.gov/deepwaterhorizon/loader.cfm?csModule=security/getfile&amp;PageID=33598</a>
<i>OCSOB - Report – 1 Sep 2010</i>	US Department of the Interior	Wilma A Lewis	Outer Continental Shelf Safety Oversight Board - Report to Secretary of the Interior Ken Salazar	01-Sep-10	<a href="http://www.doi.gov/news/pressreleases/loader.cfm?csModule=security/getfile&amp;PageID=43677">http://www.doi.gov/news/pressreleases/loader.cfm?csModule=security/getfile&amp;PageID=43677</a>
<i>BP Investigation – 8 Sep 2010</i>	BP	BP	Deepwater Horizon - Accident Investigation report	08-Sep-10	<a href="http://www.bp.com/liveassets/bp_internet/globalbp/globalbp_uk_english/incident_response/STAGING/local_assets/downloads_pdfs/Deepwater_Horizon_Accident_Investigation_Report.pdf">http://www.bp.com/liveassets/bp_internet/globalbp/globalbp_uk_english/incident_response/STAGING/local_assets/downloads_pdfs/Deepwater_Horizon_Accident_Investigation_Report.pdf</a>
<i>Montara report</i>	Australian Government	Australian Govt.	Montara Commission of Inquiry Report - Australian Government Response	24-Nov-10	<a href="http://www.ret.gov.au/montara inquiryresponse">www.ret.gov.au/montara inquiryresponse</a>
<i>Energy Select Committee</i>	House of Commons Energy and Climate Change Committee	Tim Yeo, MP	UK Deepwater Drilling— Implications of the Gulf of Mexico Oil Spill	06-Jan-11	<a href="http://www.publications.parliament.uk/pa/cm201011/cmselect/cmenergy/450/45002.htm">http://www.publications.parliament.uk/pa/cm201011/cmselect/cmenergy/450/45002.htm</a>
<i>Commission on BP DWH Oil Spill</i>	National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling	Senator Bob Graham and William K Reilley	Recommendations of the National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling (Presidential Report)	11-Jan-11	<a href="http://www.oilspillcommission.gov/">http://www.oilspillcommission.gov/</a>
<i>Commission on BP DWH Spill</i>	National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling	Chief Counsel	Macondo – Chief Counsel’s Report 2011	17-Feb-11	<a href="http://www.oilspillcommission.gov/">http://www.oilspillcommission.gov/</a>
<i>DNV</i>	US Department of the Interior	DNV	Final Report for US Dept of Interior – Forensic examination of the	20-Mar-11	<a href="http://www.deepwaterinvestigation.com/external/content/document/3043/1047291/1/DNV%20Report%20EP030842%20for%20BOEMRE%20Vol">http://www.deepwaterinvestigation.com/external/content/document/3043/1047291/1/DNV%20Report%20EP030842%20for%20BOEMRE%20Vol</a>

			Deepwater Horizon BoP		<a href="#">ume%20l.pdf</a>
<i>Joint Investigation Team- Preliminary Reports.</i>	Deepwater Horizon Joint Investigation Team	US Coastguard	Report of Investigation into the Circumstances Surrounding the Explosion, Fire, Sinking and Loss of Eleven Crew Members Aboard the Deepwater Horizon.	11-Apr-11 14 – Sep-2011	<a href="http://homeport.uscg.mil/cgi-bin/st/portal/uscg_docs/MyCG/Editorial/20110422/FINAL%20REDACTED%20VERSION%20DWH.pdf?id=334b0c7003b7436a044d6b22764b603cd133d42b">http://homeport.uscg.mil/cgi-bin/st/portal/uscg_docs/MyCG/Editorial/20110422/FINAL%20REDACTED%20VERSION%20DWH.pdf?id=334b0c7003b7436a044d6b22764b603cd133d42b</a>
<i>Transocean</i>	Transocean Investigation	Transocean	Transocean Investigation Report	June 2011	<a href="http://www.deepwater.com/fw/main/Public-Report-1076.html">http://www.deepwater.com/fw/main/Public-Report-1076.html</a>

v3 - 25.11.2011

## ANNEX 3

### *Extracts from Piper Alpha Report: (Volume Two, pp 384-385)*

#### Conclusion

22.34 I have considered carefully the factors which I have attempted to set out in the preceding paragraphs. I have come to the conclusion that the balance of advantage in the interest of the future offshore safety regime lies in favour of the transfer of responsibilities from the PED to the HSE. The decisive considerations in my mind arise from considering the differences in approach between these two bodies to the development and enforcement of regulatory control. These differences have been plain for some years and flow from differences in the way in which the bodies are directed and managed. I am confident that the major changes which I have recommended are ones which are in line with the philosophy which the HSE has followed. This alternative is clearly preferable to the PED even if it was given a higher level of manning with greater in-house expertise. I also attach importance to the benefits of integrating the work of the offshore safety regulator with the specialist functions of the HSE

.....

22.38 In these circumstances there is little which I require to say in regard to the complaint that the Safety Directorate is not independent or perceived to be independent and accordingly is not well fitted to carry out the functions of the regulatory body in regard to safety matters. On the evidence I was not convinced that the Safety Directorate actually lacks independence or that its actions had been affected by considerations related to exploitation of resources. On the other hand there is a perception, at least among some trade unionists, that it lacks independence. This is an unfortunate feature of the present scene. However, if my recommendations in this chapter are followed it will no longer be a live issue.

# OIL & GAS REGULATORY REVIEW

## ASSESSMENT OF THE FINDINGS FROM INVESTIGATIONS INTO THE DEEPWATER HORIZON INCIDENT

Summary provided by the



**Maritime & Coastguard Agency**

## CONTENTS

1. Introduction
2. National Contingency Plan (NCP) for marine pollution from shipping and offshore installations
3. Exercises
4. Oil Pollution Emergency Plans (OPEP)
5. Resources
6. Conclusion

Annex A MCA OPEP Document Review

Annex B MCA Dispersant Stockpiles

## ABBREVIATIONS

BOP	-	Blow Out Preventers
CPS	-	Counter Pollution & Salvage Branch (MCA)
DECC	-	Department of Energy and Climate Change
EU	-	European Union
HSE	-	Health & Safety Executive
ICT	-	Information Communications Technology
MCA	-	Maritime & Coastguard Agency
MMO	-	Marine Management Organisation
MRC	-	Marine Response Centre
NCP	-	National Contingency Plan
OPEP	-	Oil Pollution Emergency Plan
OSCAR	-	Oil Spill Contingency And Response
OSIS	-	Oil Spill Information System
OSPRAG	-	Oil Spill Prevention & Response Advisory Group
PCZ	-	Pollution Control Zone
ROV	-	Remotely Operated Vehicles
RVL	-	Reconnaissance Ventures Limited
UKCS	-	United Kingdom Continental Shelf

## 1. INTRODUCTION

On 20 April 2010 an explosion on the Deepwater Horizon drilling rig in the Gulf of Mexico led to the deaths of eleven members of the crew and the loss of 4.9 million barrels of oil to the sea. A number of reports have been published following investigations into the incident; the Maritime & Coastguard Agency (MCA) has reviewed the reports to determine whether they have any relevance, or possible enhancement to the UK's response to a major oil spill within the UK Continental Shelf (UKCS)/Pollution Control Zone (PCZ).

A number of recommendations contained in the reports cross over between the MCA and DECC and therefore some duplication may exist.

This summary relates only to pollution preparedness and response issues. Environmental issues are covered by the submission from the Department of Energy and Climate Change (DECC) and safety falls within the remit of the Health and Safety Executive (HSE) who issued an interim draft report in March 2011, which has been submitted to the HSE/MCA/DECC Review Group for their consideration.

This summary includes references to the Oil Spill Prevention and Response Advisory Group (OSPRAG) for clarity the composition and remit of this group is duplicated from the DECC explanation:

Immediately following the Deepwater Horizon (Macondo) incident, Oil and Gas UK, the industry's representative body, launched a joint industry and Government Group called the Oil Spill Prevention and Response Advisory Group (OSPRAG) to review the UK's ability to prevent and respond to oil spills. OSPRAG is formed of senior representatives from all sides of the oil and gas industry, from the relevant regulatory authorities (DECC, HSE and the MCA) and from trade unions. The EU Commission has observer status and sends a representative to attend OSPRAG meetings.

OSPRAG established four specialist review groups whose remit is to focus on:

- Technical issues including first response for protection of personnel, the well examination process and an inventory of blowout preventers (BOP) and remotely operated vehicles (ROV) currently employed in the UKCS;
- Oil spill response capability and remediation including national emergency response measures;
- Indemnity and insurance requirements;
- European Issues (pan-North Sea regulations/response mechanisms)

By participating in OSPRAG, the regulators benefit from the sharing of information and ideas across the industry. We also have the opportunity to ensure that the groups are fully addressing issues where we are seeking information and reassurance.

Full details of the work being undertaken by OSPRAG can be found on the Oil & Gas UK website (<http://www.oilandgasuk.co.uk/knowledgecentre/OSPRAG.cfm>).

This document is to encompass the MCA reaction to the comments and recommendations provided by the reports and reviewed by the Panel in relation to preparedness and response actions.

## 2. National Contingency Plan (NCP)

*Report No.6 Rec.6.13, 6.14, 6.17, 6.22, 6.24*

As a party to the United Nations Convention on the Law of the Sea (UNCLOS), the United Kingdom has an obligation to protect and preserve the marine environment. The National Contingency Plan (NCP) for Marine Pollution from Shipping and Offshore Installations is one of the measures the UK has taken to meet this obligation and the Department for Transport's Maritime & Coastguard Agency (MCA) is the custodian of the Plan.

The purpose of the NCP is to ensure there is a timely and measured response to incidents within the UK Continental Shelf and Pollution Control Zone. The plan sets out the circumstances in which the MCA deploys the UK national assets in response to a marine pollution incident to protect the overriding public interest and how these resources are managed. The plan deals with a variety of issues, including:

- establishing the level of response;
- setting up the national response units;
- at sea response and shoreline/ onshore responses.

Operational response cells indicated in the NCP include the Environment Group who conduct assessments and consider monitoring options for the spill and health issues.

The NCP contains details of response options, the use of onshore and/or offshore barrier berms, or dredged channels, are not considered as a response strategy. They could be considered an option depending on the situation and environmental assessment.

Local Authorities are Category 1 responders with a requirement to prepare for emergencies. The MCA provides assistance in their development by providing two types of training courses for local authority employees who would be involved in the response;

1. National Training Course on Oil, Pollution, Contingency Planning and Response &
2. Beach Supervisor Training Course on oil pollution and Response to Local Authorities

A copy of the NCP is available from the MCA Web site:

[http://www.dft.gov.uk/mca/mcga07-home/emergencyresponse/mcga-dops\\_cp\\_environmental-counter-pollution\\_and\\_response/mcga2007-ncp.htm](http://www.dft.gov.uk/mca/mcga07-home/emergencyresponse/mcga-dops_cp_environmental-counter-pollution_and_response/mcga2007-ncp.htm)

## 3. Exercises

*Report No.1 Part B rec. 10 Report No.5 rec. 5.20*

*Report No.6 rec. 6.7, 6.25*

To test the effectiveness of the NCP, and its interface with other major incident response plans, including Oil Pollution Emergency Plans (OPEPs) submitted by operators of offshore installations, a major oil pollution response exercise involving a shipping casualty is held annually and an offshore installation exercise is held every five years. An exercise involving the offshore industry, prior to the Deepwater Horizon, was Exercise Unicorn held on 10 June 2008, which involved BP as the operator.

The next National exercise involving an offshore installation was scheduled for 2013 however this was brought forward to 18 and 19 May 2011 as a direct response to the Deepwater Horizon incident and a request from the Scottish Executive.

Exercise SULA was a live multi-agency Emergency Response Exercise designed to demonstrate that both the UK's National and the offshore industry's preparedness response and counter pollution measures were appropriate and capable of effectively dealing with an incident similar to that experienced in the Gulf of Mexico.

The focus of the incident was a deepwater drilling operation conducted by Chevron, who volunteered to participate in the exercise, in an area to the West of Shetland.

During the exercise an Evaluation Team assessed the performance of response cells and individuals against the objectives submitted by participating authorities and agencies during the planning stage.

Lessons for learning were identified by the evaluators and a list of recommendations and good practices has been created and will form the basis of the final report.

A monitoring review team will be established from MCA and DECC to assess the recommendations to determine appropriateness and to assign them to appropriate persons for action.

Although the final report and associated recommendations have yet to be published topics which are linked to the Deepwater Horizon reports and included as recommendations to be considered and discussed for possible inclusion in the review of the NCP:

- Unified Command - Parallel Command
  - In order to ensure each cell was aware of activity within other cells a 'Head of Cells' conference call was trialled during exercise SULA which proved successful. It was based on a briefing of what each cell had done and what their future proposals were, it was not a forum for discussion. Further discussions and consultation required.
- Trained Staff / Resilience
  - Due to staff turnover within the MCA the experience of personnel expected to function within the MRC has depleted and it is recognised that training with supporting exercises are to be completed. This in turn would provide resilience for protracted incidents.
- Clean up response co-ordination
  - Suggestion of the MCA to assume the co-ordination authority role for pollution response measures at sea and on the shoreline.
- Equipment for purpose
  - In order for MCA personnel within response cells to communicate efficiently and effectively both internally and externally the ICT systems must be capable of accessing, as a minimum, the internet and e-mail accounts.
- Sub-Sea Dispersant
  - The NCP does not currently include the use of dispersant injection at source. Discussions with the Marine Management Organisation (MMO) and other regulatory bodies are ongoing

Due to the potential for major spills and to ensure SOSREP/Regulator/Operator interface DECC and MCA are currently considering the frequency of future offshore oil pollution exercises to test the NCP, initial views are that such exercises should be held every three years, the interval years would focus on shipping incidents.

#### **4. Oil Pollution Emergency Plans (OPEP)**

*Report No.2 rec. 2.53*

*Report No.6 rec. 6.7, 6.20*

As explained in the submission from DECC the guidance regarding the completion of OPEPs is available on Department of Energy & Climate Change's oil and gas website: (<https://www.og.decc.gov.uk/environment/msr1998.htm>). Following the Deepwater Horizon incident, DECC wrote to all operators to clarify the scope of the worst-case scenario to aid response planning. The supplementary guidance was prepared in conjunction with the MCA. With immediate effect, all OPEPs associated with exploration, appraisal and development (production) drilling operations or work-over and intervention operations on hydrocarbon producing wells, that are undertaken on the UKCS assess and provide for an effective response to an identified worst-case scenario where all containment barriers have failed resulting in a blowout, that would normally require the drilling of a relief well.

An OPEP must be prepared to meet the requirements of the Merchant Shipping (Oil Pollution Preparedness Response and Co-operation Convention) Regulations 1998 (SI 1998/1056), and is compatible with the NCP. The OPEP must detail the actions that will be taken in the event of a spill, to both control the release and respond to any spilled hydrocarbons. The OPEP is approved by the DECC taking into account any comments from statutory consultees including the MCA as the competent authority for dealing with the response to pollution at sea.

The MCA conduct a review of OPEPs with attention to the preparation and response elements of the plan such as the use of chemical dispersant options and aerial surveillance.

Particular attention is paid to the deterministic and stochastic modelling of spilled oil using the Oil Spill Information System (OSIS). The OSIS is considered to be a good source of predicating the movement of the oil on the surface of the sea for up to 14 days, depending on the robustness of tidal information in the locality and accepting that all the parameters at the front end of the model are accurate.

OPEP authors are encouraged to make use of the document review template, (Shown at Annex B). In addition to providing a consistent layout and approach it serves to highlight any issues with the plan and which may require amendment, reconsideration or review.

Subsurface modelling can be achieved from the Oil Spill Contingency And Response (OSCAR) system. The MCA can obtain, but does not currently have a contract for, subsurface release modelling and therefore is not assessed to confirm or deny any subsurface modelling contained in an OPEP.

Operators are required to obtain, and include in the OPEP, the services of an MCA approved oil spill response contractor to deal with spills that are out-with the response capability of the operator. This contingency is supported by the availability of the MCA Equipment Stockpiles of nationally deployable resources.

#### **5. Resources**

*Report No.5 rec. 5.22*

*Report No.6 rec. 6.5, 6.7, 6.16, 6.32*

##### Pollution Response Equipment

The MCA maintain stockpiles of response equipment at strategic locations around the UK. These are arranged under contract with accredited pollution response providers - currently Braemar Howells - who manage stockpiles at Dundee, Barnsley and Bristol.

The stockpiles are available on request to supplement and enhance Tier 2/3 contractors to ports, harbours and operators of offshore installations during major incident response. The

MCA may mobilise the stockpile(s) independently if there is reason to believe there is a lack of equipment currently in situ or escalation of the incident to a spill of significant national interest.

The MCA also hold chemical dispersant stockpiles at 11 strategic locations around the UK, as with equipment stockpiles, they are available to industry Tier 2/3 contractors to supplement their own dispersant stocks.

Dispersant type, quantities and location are contained at Annex B work is ongoing to create a spreadsheet of all dispersants stockpiles in the UK.

Information on MCA equipment stockpiles are listed in the MCA Equipment Catalogue which can be made available on request to the MCA Counter Pollution and Salvage Branch.

### Aircraft Response

The MCA provide aerial surveillance and dispersant spraying capability. This is currently provided under contract by Reconnaissance Ventures Limited (RVL). Cessna surveillance aircraft are based at Inverness and East Midlands airports and Lockheed Electra spraying aircraft are based at East Midlands.

The Electra aircraft are capable of carrying a payload of 20 tonnes of dispersant per sortie, with a turnaround of approximately 1 hour for reloading.

All aircraft are available 24/7; aerial surveillance at 30 minutes notice for mobilisation and the Electra aircraft are required to be spray-ready within 2 hours.

### Personnel

The MCA is the National Competent Authority for response to pollution incidents on the UK Continental Shelf and within the UK Pollution Control Zone. Within the MCA all counter pollution activities are managed by the Counter Pollution & Salvage Branch (CP&S).

The Branch currently has a complement of seven persons:

- o 1 x Head of Counter Pollution and Salvage.
- o 3 x Counter Pollution & Salvage Officers (CPSO) – Regionally dispersed in MCA offices.
- o 2 x Environmental Scientists
- o 1 x Logistics and Cost Recovery executive

The MCA operates from 25 locations, mostly around the coast of the UK. This provides the opportunity to make use of administrative staff from nearby locations to provide support to the CP&S staff who would lead the Marine Response Centre during a major incident. Arrangements are being put in hand to identify and train appropriate people from these locations so that they will be available and effective in the future.

## **6. Conclusion**

A number of recommendations raised in the various reports have previously been identified from exercises and incident response. The majority are in the process of development to achieve a more efficient and effective response to pollution incidents. The recommendations from the reports, the regulatory review and the recent offshore exercise will be taken into consideration for inclusion in the 2011 review of the NCP.



**Offshore Oil and Gas Installations  
(Including pipelines)**

**Oil Pollution Emergency Plan  
(OPEP)**

**DOCUMENT REVIEW**

Plan Title	
DECC Reference	
Operator	
Review Date	

DECC Guidance Reference	Requirements	OPEP Reference	Comments / Remarks
2.2	Glossary / Abbreviations list – items relevant to MCA		
4.2; 12.3.6	Hydrocarbon inventory identifies: <ul style="list-style-type: none"> <li><input type="checkbox"/> ITOPF category</li> <li><input type="checkbox"/> Oil characteristics</li> <li><input type="checkbox"/> Dispersion characteristics</li> </ul>		
5.1.1; 6	Aerial surveillance: <ul style="list-style-type: none"> <li><input type="checkbox"/> mobilisation times</li> </ul>		
5.2	Oil pollution modelling <ul style="list-style-type: none"> <li><input type="checkbox"/> Detail of parameters used</li> <li><input type="checkbox"/> Data source validated and referenced</li> <li><input type="checkbox"/> Relevant hydrocarbon type modelled.</li> <li><input type="checkbox"/> Deterministic surface release using 30knt wind</li> <li><input type="checkbox"/> Stochastic modelling provided</li> <li><input type="checkbox"/> Subsurface modelling included (if available)</li> <li><input type="checkbox"/> Equivalent surface release modelled</li> <li><input type="checkbox"/> If condensate field, stochastic for diesel included</li> </ul>		
6.2.1	Tier 2/3 response times		
6; 7.33; 13	Chemical Dispersant <ul style="list-style-type: none"> <li><input type="checkbox"/> Application rates</li> <li><input type="checkbox"/> Usage approval</li> <li><input type="checkbox"/> Efficacy and testing</li> </ul>		
7.2	Response tiers identified		
7.3	Response strategies identified		
7.4.1	Oil spill sampling		
8	Reporting requirements		
12.3.5	Emergency contact details <ul style="list-style-type: none"> <li><input type="checkbox"/> MRCC(s)</li> <li><input type="checkbox"/> Telephone – 24 hours</li> <li><input type="checkbox"/> Facsimile – 24 hours</li> <li><input type="checkbox"/> e-mail</li> </ul>		



## ANNEX B

In preparation for chemical dispersant requirement, the MCA have dispersant stockpiles for mobilisation to site as listed in the table below.

	Inverness	Cornwall	Halfax	East Kent	Southampton	Prestwick	Shetland	Northern Ireland	Coventry	South Wales	Stornoway	Totals
Superdispersant 25	134	107	91	32	20	83.5			35	19		<b>521.5</b>
AGMA Superconcentrate DR379	95		57	41	8.5						31	<b>232.5</b>
Dasic Slickgone NS	60	10	42	13	21			48.5		17		<b>211.5</b>
Dasic Slickgone LTSW						20	56			3		<b>79</b>
Finasol OSR 51				58	12							<b>70</b>
Enersperse 1583		14					9					<b>23</b>
Dasic Slickgone EW	10	10										<b>20</b>
Corexit 9500									10			<b>10</b>
<b>Totals per stockpile</b>	<b>299</b>	<b>141</b>	<b>190</b>	<b>144</b>	<b>61.5</b>	<b>103.5</b>	<b>65</b>	<b>48.5</b>	<b>45</b>	<b>39</b>	<b>31</b>	<b>1167.5</b>

\* information correct at time of publication of the report

## **STAKEHOLDER MEETINGS**

The independent Chair of the Review Panel led a series of meetings with stakeholders as follows:

### **DECC (Oil & Gas Environment & Decommissioning)**

- Wendy Kennedy, Irene Thompson, Sarah Pritchard, Derek Saward (18<sup>th</sup> May)
- Wendy Kennedy (6<sup>th</sup> June)

### **Health and Safety Executive**

- Steve Walker (Head of Offshore Division) (16<sup>th</sup> June 2011)

### **Maritime and Coastguard Agency**

- Philip Naylor (Director of Maritime Services) (30<sup>th</sup> June 2011)

### **Secretary of State's Representative for Maritime Salvage and Intervention**

- Hugh Shaw (SOSREP) (20<sup>th</sup> July)

### **Union Representatives**

- Jake Malloy (RMT), John Taylor and Mike McCaig (UNITE) (6<sup>th</sup> June)

### **International Association of Drilling Contractors (IADC)**

- Represented by Glen White (Rowan Drilling (U.K.) Ltd), Neil Clyne (Transocean) and Martin Ellins (KCA Deutag) (7<sup>th</sup> July)

## **Chevron**

- Eric Sirgo (General Manager Upstream, Europe), Peter Lee (OE Manager, Aberdeen) (7<sup>th</sup> July)

## **Oil and Gas UK**

- Robert Paterson & Mick Borwell of OGUK accompanied by industry representatives:
  - Boyd Wright (Centrica),
  - David Dickson (BP),
  - Crawford Jackson (Petrofac),
  - Peter Ronway (Canadian Natural Resources Ltd),
  - Andrew Hendron (ConocoPhillips),
  - Simon Taylor (Apache) (16<sup>th</sup> June)
- Malcolm Webb and Paul Dymond of OGUK accompanied by Industry representatives:
  - Paul Warwick (Vice President, UK & Africa, ConocoPhillips)
  - Barry King (ConocoPhillips) (14 July)

**WRITTEN SUBMISSIONS**

Written submissions were received from the following companies and organisations:

- Chevron
- Client Earth
- Countryside Council for Wales
- Endeavour Energy UK Ltd
- English Heritage
- Greenpeace
- Isle of Man Government
- Joint Nature Conservation Committee (JNCC)
- Natural England
- Platform
- Plexus Holdings plc
- RMT/Unite
- Scottish Natural Heritage (SNH)
- Whale and Dolphin Conservation Society (WDCS)

**LIST OF PRINCIPAL REPORTS**

USA. Department of the Interior.  
Increased Safety Measures for Energy Development on the Outer Continental Shelf  
Ken Salazar  
May 2010  
US Government Printing Office.  
<http://www.doi.gov/deepwaterhorizon/loader.cfm?csModule=security/getfile&PageID=33598>

USA. Department of the Interior.  
Outer Continental Shelf Safety Oversight Board - Report to Secretary of the Interior  
Ken Salazar  
Wilma A Lewis  
September 2010  
US Government Printing Office.  
<http://www.noia.org/website/download.asp?id=40069>

USA. National Commission on the BP Deepwater Horizon Oil Spill and Offshore  
Drilling.  
Deep Water: The Gulf Oil Disaster and the Future of Offshore Drilling. Report to the  
President. First Edition.  
Senator Bob Graham and William K Reilley  
January 2011  
US Government Printing Office.  
<http://www.oilspillcommission.gov/final-report>

BP  
Deepwater Horizon - Accident Investigation Report  
September 2010  
BP  
[http://www.bp.com/liveassets/bp\\_internet/globalbp/globalbp\\_uk\\_english/incident\\_response/STAGING/local\\_assets/downloads\\_pdfs/Deepwater\\_Horizon\\_Accident\\_Investigation\\_Report.pdf](http://www.bp.com/liveassets/bp_internet/globalbp/globalbp_uk_english/incident_response/STAGING/local_assets/downloads_pdfs/Deepwater_Horizon_Accident_Investigation_Report.pdf)

UK. House of Commons.  
*UK Deepwater Drilling: Implications of the Gulf of Mexico Oil Spill  
(Second Report of Session 2010-11 - Volume I: Report, Together With Formal  
Minutes, Oral and Written Evidence).*  
January 2011  
HM Stationery Office  
<http://www.publications.parliament.uk/pa/cm201011/cmselect/cmenergy/450/450i.pdf>

Commonwealth of Australia. Department of Resources, Energy and Tourism  
Montara Commission of Inquiry Report - Australian Government Response  
November 2010  
Department of Resources, Energy and Tourism  
<http://www.ret.gov.au/Department/responses/montara/cwlth-response/Pages/cwlth-response.aspx>

\*USA. US Coast Guard (USCG) and the Bureau of Ocean Energy Management,  
Regulation and Enforcement (BOEMRE),  
Deepwater Horizon Joint Investigation  
September 2011  
US Government Printing Office.  
<http://www.boemre.gov/ooc/press/2011/press0914.htm>

\*The Joint Investigation report issued after the Review Panel had gathered and analysed the bulk of the evidence which forms the basis of this Report. It was, however, reviewed and the Panel was satisfied that it did not give rise to substantively new issues which were not already the subject of consideration.

It should be noted from Appendices E and F that, for the purposes of their internal reviews, both HSE and DECC considered a broader range of reports and commentaries than outlined above.

**List of Acronyms and Abbreviations**

<b>ACoPs</b>	Approved codes of practice
<b>API</b>	American Petroleum Institute
<b>BOP</b>	Blowout Preventer
<b>BOPE</b>	Blowout Prevention Equipment
<b>BOEMRE</b>	Bureau of Ocean Energy Management, Regulation & Enforcement
<b>Cefas</b>	Centre for Environment, Fisheries and Aquaculture Science
<b>CPS</b>	Counter Pollution & Salvage Branch (MCA)
<b>CRM</b>	Crew Resource Management
<b>DECC</b>	Department of Energy and Climate Change
<b>DfT</b>	Department for Transport
<b>DHIRG</b>	Deepwater Horizon Incident Review Group
<b>DP</b>	Dynamic Positioning
<b>DWH</b>	Deepwater Horizon
<b>EERTAG</b>	Evacuation, Escape, and Rescue Technical Advisory Committee
<b>ETI</b>	Energy Technologies Institute
<b>EU</b>	European Union
<b>FMEA</b>	Failure Mode and Effects Analysis
<b>HAZOP</b>	Hazard and Operability Study
<b>HSE</b>	Health and Safety Executive
<b>ICT</b>	Information Communications Technology
<b>IIRG</b>	Indemnity and Insurance Review Group
<b>IMT</b>	Inspection Management Team (HSE)
<b>IRF</b>	International Regulators Forum
<b>KPI</b>	Key Performance Indicators
<b>LMRP</b>	Lower Marine Riser Package
<b>MAH</b>	Major Accident Hazard
<b>MCA</b>	Maritime and Coastguard Agency
<b>MMO</b>	Marine Management Organisation
<b>MMS</b>	Minerals Management Service
<b>MoC</b>	Management of Change
<b>MODU</b>	Mobile Drilling Unit
<b>MRC</b>	Marine Response Centre
<b>NCP</b>	National Contingency Plan
<b>NSOAF</b>	North Sea Offshore Authorities Forum
<b>OPEP</b>	Oil Pollution Emergency Plan
<b>OSCAR</b>	Oil Spill Contingency And Response
<b>OSD</b>	Offshore Division (HSE)
<b>OSIS</b>	Oil Spill Information System
<b>OSPRAG</b>	Oil Spill Prevention and Response Advisory Group
<b>OSRF</b>	Oil Spill Response Forum
<b>PCZ</b>	Pollution Control Zone
<b>RIDDOR</b>	Reporting of Injuries Diseases and Dangerous Occurrences Regulations 1995
<b>ROV</b>	Remotely Operated Vehicle

<b>RVL</b>	Reconnaissance Ventures Limited
<b>SCE</b>	Safety Critical Elements
<b>SMS</b>	Safety Management System
<b>SoSREP</b>	Secretary of State's Representative
<b>SPC</b>	Semi-Permanent Circular (HSE)
<b>TARP</b>	Trigger Action Response Plan
<b>TSB</b>	Technology Strategy Board
<b>UKCS</b>	UK Continental Shelf
<b>WLCPF</b>	Well Life Cycle Practices Forum