

# IS THE RAPID PACE OF DEVELOPMENT OF E AND P OPERATIONS OVERTAKING THE ABILITY TO PROVIDE ADEQUATE SPILL RESPONSE MEASURES?<sup>1</sup>

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**ABSTRACT:** *The past decade has seen a move into new development areas by the international oil industry. Many of the new operating locations are lacking in infrastructure, are politically unstable and have varying degrees of environmental legislation in place to regulate the developments. The industry has responded to the changing world in a number of ways. To minimise individual risk, organisations have entered the new regions working in consortia. Also, in order to accelerate and maximise profitability, the industry has developed fast-track projects to minimise the time to 'first oil' and hence gain a quicker return from the significant development costs. Consequently the time between completing the exploration phase and the onset of production is aimed at being as short as possible. This creates interesting challenges for project teams as the risk profile changes from that experienced during exploration activities to those present in production operations. The risks during exploration activities can lead to either a very small or very large spill, the latter thankfully being infrequent. To meet these risks the operators equip themselves with sufficient resources to deal with a Tier 1 spill and utilise the Tier 3 centres to satisfy the blow out scenario. However, when the operation changes to a production facility, usually by the rapid introduction of an FSO or FPSO, the risk profile changes significantly and many operators experience difficulties in modifying the response capability to meet the changing profile. The conventional approach has been to use the tiered response concept to address the increased Tier 2 requirements by developing mutual aid arrangements but in many cases there are no other operators available with whom to share resources. This paper will investigate the changes in the nature of oil industry operations and pose the question as to whether the tiered response concept is still valid in today's environment and what should steps be taken to ensure that the response preparedness and capability is developed in pace with the risk profile.*

## Discussion

**Background.** In recent years the oil industry has been entering new and different areas of the world for exploration activities in an attempt to discover additional reserves for the future. These activities attract a different risk profile for a number of reasons:

- Operations are based in less developed countries;
- Significant economic returns are expected within reduced timescales; and
- Industry is tending to develop new areas as consortia rather than as single operators to share the initial risk and high infrastructure development costs.

The difficulties associated with working in less developed areas

**Exploration activities.** Following the issuing of licences and seismic survey, the next step in the process is the exploration drilling activity. The spill risk for such activities ranges from the very small spills, which might arise as a result of lubricating oil, hydraulic oil, diesel oil and drilling mud spills through to the very large incident which might arise as a result of loss of well containment. Fortunately the frequency of large spills is very low, given the improvements in drilling technology over the years. However when they do occur it is generally the result of either major structural failure of the formation, or a number of system failures all occurring at the same time. In the case of small spills the response is generally to monitor and evaluate the situation and allow the oil to disperse naturally. Since the oils are generally non persistent this strategy is both technically and operationally preferable since in many of the developing areas there is not the infrastructure to support a containment and recovery operation or the disposal facilities for the recovered oil are not available with the result that the clean-up operation will rapidly come to a halt. The circumstances in a blowout situation are somewhat different;

in the unlikely event that one should happen the oil release can be prolonged and would require major intervention to deal with the spill. These spills are so infrequent the industry is able to demonstrate that the response can be provided from the international Tier 3 centres. The spills are generally prolonged allowing the logistics chain to be established and resources put in place.

In some cases the operator may chose, or he may be required, to have a dispersant capability in field adjacent to deal with any spill. This approach will require logistics to be in place to ensure that the dispersant can be deployed quickly and effectively before the oil has dispersed across a significant area of water. In addition the operator will need to undertake tests or use existing oil types within the area to determine the likely efficiency of a dispersant response.

**Field development.** Once the wells have been drilled, tested and accepted as commercially viable, the next stage of oil production begins. The operator is looking for rapid return on the investment made in the exploration program. In many developing areas this has led to the use of Floating Production Storage Offshore units (FPSO) to provide a quick and easy means of "early" oil production. The units have the benefit of being quick to develop and install and an advantage of being mobile for use in other locations should they be required.

With the rapid speed of field development the transition between exploration and production happens quickly and in many instances the project finds it difficult to keep up with the pace of development. Oil spill response, whilst important, is not the highest priority at this phase of the development. A consequence of this is that the response arrangements often do not keep pace with the spill risk. This is because once the field commences production the spill risk profile changes and the type and size of spill that may occur is very different. Different resources and plans need to be put in place to deal with the new production risk. This often occurs at a time when the personnel with the operation and transitioning from Exploration and Development teams to pure production operation teams. The possibility of a gap arising in the response preparedness is extremely high at this time, both in terms of operational preparedness, training and response planning.

**Infrastructure and policy.** In many of the emerging regions, there are limited infrastructure resources to support the development of the operation. The country may not have highly developed infrastructure systems such as transport facilities, communications and logistical support arrangements to accommodate a major spill response. If this is the case the planning regime must take account of this and compensate where possible.

Many of the regions in which industry is starting to operate do not have well-developed policies in respect of oil spill response. In many cases a National Plan to co-ordinate the response does not exist and there is no organisation in place to manage an incident. There is often little clarity in the policies for dispersant use or waste disposal although, in fairness, this may also be the case in some more well-developed regimes. In situations like this the problem is not only to provide the oil spill response capability but also to engage the host government in the discussion to reach workable solutions.

**Combining resources.** The traditional philosophy of oil spill response has been to combine the resources of various industry operators and to follow a tiered approach. However in emerging regions it is probable that a different approach needs to be considered.

Under the tiered response concept each operator is responsible for responding to small, local spills (Tier 1) with his own resources since the response needs to be speedily mobilised. Equipment and resources need to be close to hand. With the risk profile attached to exploration activities the level of equipment and resources is limited, it tends to be located close to the operation it covers and in some cases may be almost operation specific.

There are two means of achieving a Tier 2 capability. One approach is to combine the existing Tier 1 resources through mutual aid agreements between the operators and the second is to establish a dedicated response base complete with equipment and trained personnel. In emerging regions the combination of local Tier 1 resources are unlikely to be significant enough to generate a credible Tier 2 capability. Often there are only a few operators in the region and the operations frequently comprise of a consortium of oil companies since the industry has combined in its exploration activities in an effort to reduce individual risk, exposure and costs. Similar risk and commercial influences also mean that industry is not prepared to commit to establishing a full Tier 2 centre in a region until the commercial viability of the field has been proven. Only at this time will industry commit to the necessary capital and infrastructure investment that is required to set up a Tier 2 centre. With the rapid shift from the exploration phase to development phase this means that the risk profile has significantly changed but the spill response capability lags behind and industry has to be reliant on the combined, but minimal, Tier 1 resources. Further it is unlikely that local governments will invest in spill response to support industry's activities since it may not have developed the regulatory regime through which to do so.

At the other end of the spectrum, the Tier 3 centres have already been established by industry and are available to provide international support in the event of a major spill. However, other than within a limited geographical region, they are not able to respond in a short enough time frame to provide a credible Tier 2 response.

## Conclusion

The limited availability of local resources and the lack of established Tier 2 centres with trained personnel and properly maintained equipment in emerging regions mean there is a potential gap in the spill response chain. It has always been recognised that the boundaries between Tiers 1, 2 and 3 are not precise and need to be reviewed in the light of specific circumstances and needs. However the rapid change of risk profile between exploration and production activities means that the circumstances and needs are changing too swiftly for the proper development of Tier 2 resources. There is therefore a gap in response capability which potentially could be filled in one of two ways. Either by revisiting the Tier 1 capability that is in place for exploration activities so that it can be quickly expanded to cover the early stages of production until a more substantial and appropriate Tier 2 capability can be established. Alternatively industry will need to consider making the significant capital investment that would be required to establish a full Tier 2 base during exploration activities prior to obtaining the results of drilling operations. The latter may not be an attractive proposition financially and may lead to a proliferation of stockpiles being created which are not adequately maintained and are not fit for purpose when called upon. Whichever approach is adopted, the lack of response capability must be addressed if cover for the operation is to be sustained.

**Biography**

Lindsay Mead is the General Manager and Company Secretary for Oil Spill Response Limited. She has been with the company for six years, initially on the commercial and financial side, and she now has management responsibility for the operational base in Southampton, UK.

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<sup>1</sup> The opinions and views expressed in this paper are solely those of the authors and do not necessarily represent the views of any other party.

