



Application of Oil Spill Response Good Practice Guides for Inland and Nearshore Operations

As the OSR-JIP represents the latest GPGs developed for the oil and gas industry, we decided to test the applicability of the GPGs for these types of operations. This study presents two examples on how the principles and response strategies outlined in the various GPGs can be easily be extended to manage and mitigate the oil spill risks from facilities located inland and nearshore.

SUMMARY

The first example is on a refinery located near-shore with an operational jetty and a single buoy mooring. We started with a comprehensive review of their operations and updated their oil spill risk assessment profile in line with the framework described in the OSR-JIP Tiered Preparedness and Response GPG. This process provided a reflection of their current oil spill response capability and identified the gaps for further improvement. Following this, we proceeded to update their contingency plan using the OSR-JIP Contingency Planning GPG to ensure that the risks identified are adequately mitigated by establishing tiered response capability. This exercise supported in improving the readiness of the facility to respond to oil spill incidents in future.

The second example involves a terminal located inland that supplies refined products through a pipeline that leads towards a jetty on the coast. We developed several area specific tactical response plans that cover risks from their above-ground pipelines and at the jetty where loading and offloading of the products to tankers are conducted. To accurately define the suitable response

technique, we started the planning process with an oil spill risk assessment following OSR-JIP Risk Assessment And Response Planning for Offshore Installations. It shall be noted that although the document developed for offshore installation, we found that the guiding principle is still applicable for a risk assessment for inland and near-shore operations. The tactical response plans were then developed with reference to several other OSR-JIP guides such as OSR-JIP Inland Response and Response Strategy Development Using Net Environmental Benefit Analysis (NEBA) GPG. The resulting plans describe health and safety concerns, identification of sensitive receptors, response techniques, location and quantity of resources, logistical requirements and timings and waste management.

Based on these case studies, we demonstrated that the OSR-JIP guides can certainly be applied for inland and nearshore facilities and have a more far wider application for the whole oil and gas industry rather than be limited to offshore operations.

BACKGROUND

Following key oil spill incidents in Australia and the Gulf of Mexico, the industry initiated a three-year Joint Industry Project to develop guidelines for oil spill preparedness and response management. These documents are commonly known as the Oil Spill Response JIP (OSR-JIP) Good Practice Guides (GPG). As the OSR-JIP originated from lessons learnt from offshore upstream operations incidents, it is only natural that the industry would apply it with the same type of operation, hence the tendency to limit the practical application for inland or nearshore facilities.

EXAMPLE 1

Oil spill response Capability Review for a refinery review in Thailand

The first case study is based on an oil refinery located within the port industrial area of Rayong, Thailand, approximately 180 km from the capital, Bangkok (Figure 1).

Main oil handling facilities include aboveground tanks, processing plant with associated pipelines, marine terminal, and a Single Point Mooring (SPM) located just about 20 km away from shore. The SPM is used by the refinery to receive imported crude oil. It uses a Pipeline End Manifold (PLEM) connected to a subsea pipeline transporting the crude to the onshore processing plant. Refined products are then distributed for local market by ground transportation or by small oil tankers via the jetty.

The Capability Review requires cooperation from both the refinery and OSRL. This simplified process is reflected in Figure 2.

The oil spill response capability was then assessed against five main elements:

- Planning Process,
- Legislation, Regulations and Agreements,
- Emergency Response Documents,
- Oil Spill Training and Exercise Programme, and
- Sustainability and Continuous Improvements.

The refinery’s current Tiered Preparedness and Response status are summarised in a report, and the gaps for each response capabilities are reflected in the Tiered Preparedness and Response wheel as shown in Figure 3, providing a snapshot view of their current level. Further, an Action Plan with identified action owners and timeline was developed in agreement with the refinery management to establish a Closure Plan following this review.

FIGURE 3: Summary of the refinery’s current Tiered Preparedness and Response status for their operations’ worst credible case oil spill scenario, presented in reference to the OSR-JIP Tiered Preparedness and Response GPG.

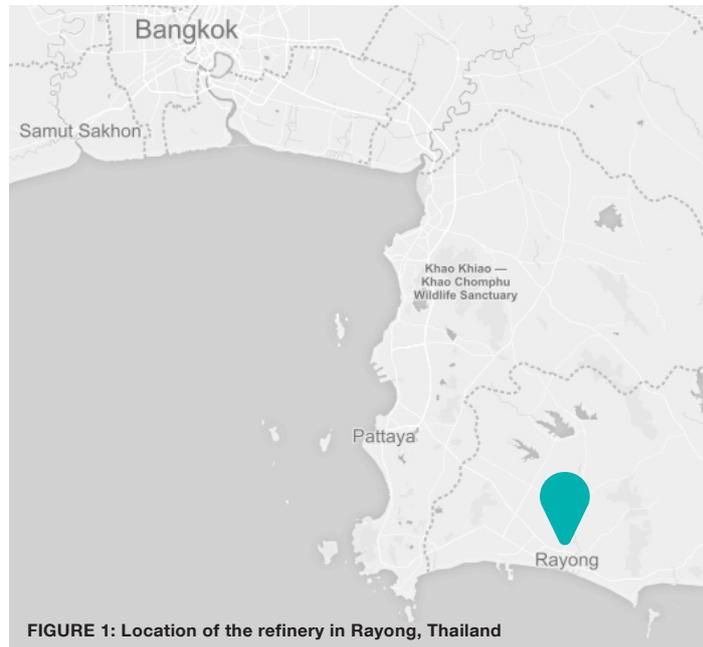


FIGURE 1: Location of the refinery in Rayong, Thailand

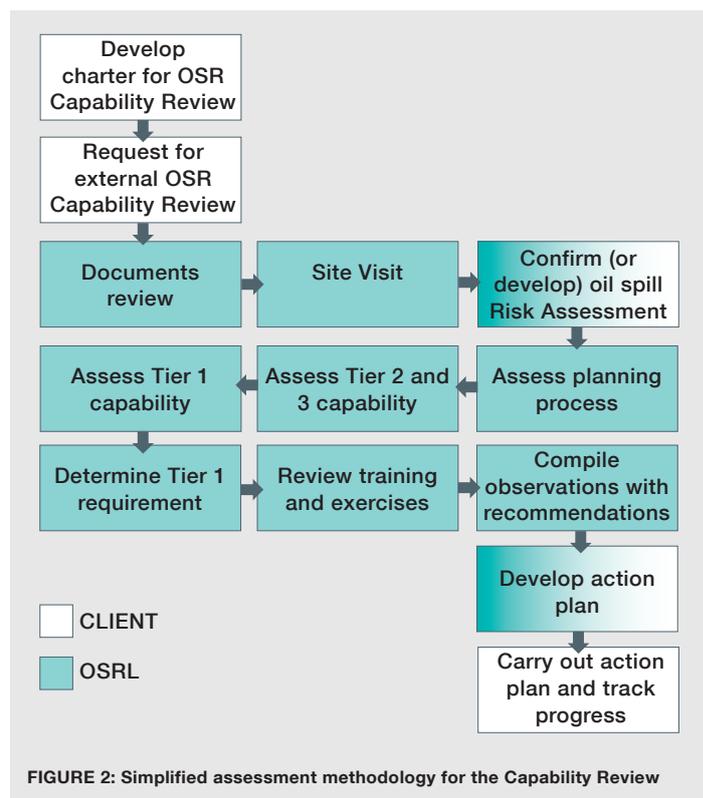
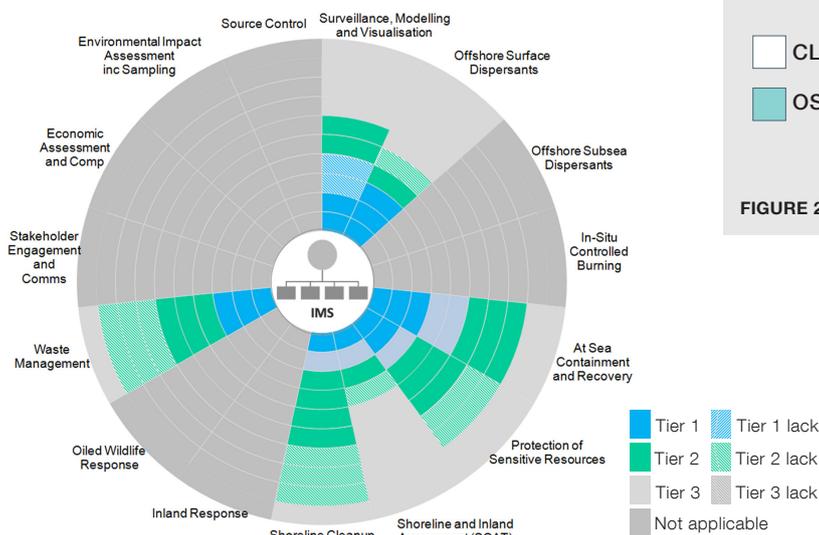


FIGURE 2: Simplified assessment methodology for the Capability Review



EXAMPLE 2

Tactical Response Planning for oil terminal in Papua New Guinea

The second example is on an oil terminal located in Lae, Papua New Guinea. The oil handling facilities of the terminal include aboveground tanks storing refined oil products for the local market. The oil is received from oil tankers and transferred to customers through a small jetty located approximately one kilometre from the terminal. All transfers are made via a single pipeline that runs aboveground along public roads that also crosses a creek. For this terminal, OSRL supported the Client by developing several tactical response plans for their operations, covering the aboveground pipelines and loading and unloading activities at the jetty.

To develop the tactical response plans, we followed a series of steps to identify the suitable response techniques to be applied, and where. These steps are summarised in Figure 4.

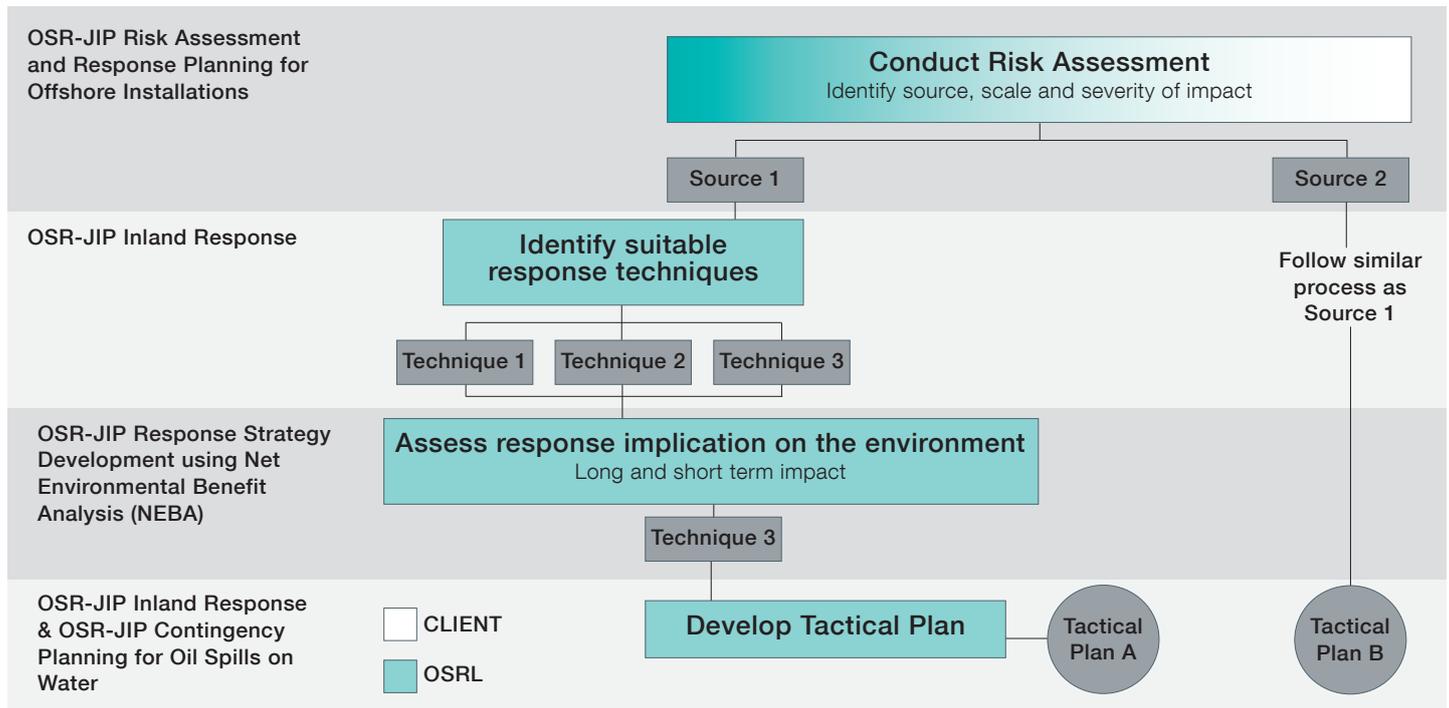
The planning process started with an oil spill risk assessment to define the various oil spill sources, most credible volume of release from these sources and the potential impact of these releases to the environment.

After the identification of these sources, the next step involves the selection of suitable response techniques for each of the identified sources based on their locations and scale of potential impact. This involves undergoing a weighted process to assess the overall environmental impact from the spill and response technique.

Based on this weighed process, the technique that has the least potential of environmental impact was selected and the tactical response plan for the source was developed.

The resulting tactical plans incorporates the risk assessment summary, a description of health and safety concerns, identification of sensitive receptors, description of the response techniques, location and quantity of resources, logistical requirements, response timelines and the waste management process.

FIGURE 4: Methodology of tactical plan development based on various OSR-JIP GPGs



CONCLUSION

Following the completion of these two case studies, and several other similar projects, we have concluded that many of the principles provided in the OSR-JIP GPGs could easily be adapted to assess the risks and improve the contingency planning processes for oil and gas operations located inland and nearshore. The challenges we anticipate relates more towards the awareness of the inland and nearshore operations on the tools and guides that are available in the OSR-JIP, and the methodological application of these principles to be specific to their operational needs.

www.oilspillresponse.com

Europe, Middle East and Africa T: +44 (0)23 8033 1551 F: +44 (0)23 8033 1972 E: southampton@oilspillresponse.com
 Asia Pacific T: +65 6266 1566 F: +65 6266 2312 E: singapore@oilspillresponse.com
 Americas T: +1 832 431 3191 F: +1 832 431 3001 E: houston@oilspillresponse.com