

SPILL PREVENTION AND RESPONSE

Prevention is by far the most important and efficient weapon to avoid polluting the environment



Spills are one of the most critical environmental aspects for the Oil & Gas industry; for this reason Saipem carries out its operational activities with the goal of avoiding the risk of spills, or, should an accident occur, implementing measures and actions to prevent further environmental deterioration as a result of accidents.

Further details on Saipem's approach to minimising environmental impacts can be found in the 'Consolidated Non-Financial Statements' of the Annual Report 2017.

2017 Highlights	UN GC Principles	Sustainable Development Goals
Spill drills performed 314		
Oil and chemical mapping performed on vessels, rigs and at yards 29		

OIL SPILL RISK MAPPING AND RISK ASSESSMENT

Saipem confirmed its commitment to preventing oil spills in 2017 through the implementation of the following rigorous and consistent methods:

1. Oil and Chemical mapping;
2. Spill risk assessment;
3. Implementation of prevention and mitigation measures.

In this respect, Saipem continued to jointly perform oil and chemical mapping and spill risk assessment activities for offshore construction and the drilling fleet. Specifically, Saipem completed the above activities in 2017 for Castorone with regard to the offshore construction fleet, as well as for Scarabeo 9, Saipem 12000 and TAD with regard to the offshore drilling fleet. Moreover, the Saipem Offshore Division extended the oil and chemical mapping process to yards in order to include operational activities that are not carried out offshore. In addition, spill risk assessments will be completed for the Arbatax Fabrication Yard and FDS by the early 2018. Therefore, Saipem has once again demonstrated its past and future dedication to continuously assessing the environmental performance of its offshore and drilling fleets in terms of oil spill prevention and response.

Training man-hours delivered on spill management issues

+13,000

APPLYING TECHNOLOGY TO PROTECT THE ENVIRONMENT

Saipem has a very important tradition in the field of Oil Spill Response, offering a comprehensive service and related training activities.

The continuous development of innovative methodologies and solutions for oil spill response preparedness has recently resulted in the delivery of the Offset Installation Equipment (OIE) for the Subsea Well Response Project (SWRP), a non-profit joint initiative of a few major O&G companies (OSRL - Oil Spill Response Ltd consortium), aimed at developing solutions to respond quickly and efficiently to future subsea well-control incidents. In this framework, OSRL assigned a contract to Saipem for the engineering, procurement, fabrication and testing of the OIE, a tool designed to install a capping stack on a blowout well without requiring direct vertical access. This will allow support vessels to stay outside the unsafe zone while installing short-term remediation of environmental disasters.



PREVENTING ENVIRONMENTAL DISASTERS

Saipem has realised **the most technologically advanced structure** in Trieste (Italy) **to transport and install a capping system on an underwater oil well under eruption.**

The system, a quite sophisticated remotely controlled piece of machinery, is also capable of operating under extreme conditions, such as those of a subsea blowout in intermediate water depths.

More in general, an extensive and unified endeavour in the field of oil spill monitoring and intervention, involving all Saipem offshore, onshore and drilling businesses, is currently underway:

- *Early Warning Integrated System (EWIS)*: Saipem is developing a feasibility project with a qualified aerospace Italian partner, ALTEC SpA. This system will be an innovative data collection and decisional support platform for a very early and effective response to oil spills. It is well-known that the best way to minimise environmental damage in the event of an incident is to take proper action in the shortest possible time. EWIS will collect, integrate and process data from different sources (satellite, aerial, radars, fixed observational structures, etc.) related to the detection,

movement and degradation of oil slicks. All data will be processed and displayed in GIS configuration map screens ready for users to define the best oil recovery strategies.

- *Intervention Tool for cleaning Oil Spills*: the current response service generally relies on technologies that are mainly based on contaminated water containment, oil particles breaking-up by use of chemicals and shipment of the recovered oil to shore for dedicated treatment. In this field, Saipem is in the initial phase of development of a proprietary solution aimed at providing worldwide availability of modular and containerised 'plug and play' units for easy transport and lifting/installation onto offshore vessels.

SPILL NUMBER AND VOLUME

Year	Spill number	Spill volume (m ³)
2015	38	2.2
2016	30	4.3
2017	26	6.2

The total number of spills was down in 2017 compared to the previous year. Nonetheless, there were three major spills:

- The first spill consisted of water-based mud contaminated with debris from the cementing activities (2,500 litres) of an onshore drilling rig in Chile due to the obstruction of a discharge line to the debris well. Activities were interrupted and cleaning was promptly started. Checks, cleaning and testing of the circulation and discharge pipes were carried out.
- The second was an oily substance spill (about 1,000 litres) during the activities related to filling a diesel fuel tank in Saudi Arabia. The Spill Response Team was mobilised immediately after it was notified of the emergency. The contaminated sand was collected, removed and placed in the drilling debris pit and the area around the daily diesel fuel tank was restored.
- The third was an oil spill (1,000 litres) that occurred during lifting operations of a small gasoil tank from a supply vessel to the WHP3 platform at the Boscongo (Congo) yard. An investigation was conducted and changes were introduced in the execution of similar procedures in order to minimise risks.