

Arctic oil spill response

Recent years have seen increasing interest in offshore oil exploration in the Arctic and other frontier regions. While these activities may seem like new developments, in fact Arctic oil exploration, and in some cases production, has been going on for about half a century. Hundreds of wells have been drilled in Arctic waters without any sustained, uncontrolled release of oil or gas.

In association with these activities, decades of research have looked at all aspects of oil spill preparedness, oil spill behaviour, and options for oil spill response in the Arctic marine environment. This has included hundreds of studies, laboratory and basin experiments and field trials, principally in the United States, Canada and Scandinavia.

In any oil & gas operation, the primary focus will be on prevention of incidents, including oil spills. Despite these efforts, the risk of an oil spill is always present. Therefore, any operation must include a plan for halting the release of hydrocarbons, and reducing to an absolute minimum any spill and its environmental impact. Such plans must be approved by the appropriate regulators before operations can proceed.

The objective in preparing for and in carrying out response to oil spills is to minimise damage to the Arctic environment and loss to the communities who depend on that environment. It is equally important to accelerate the recovery of any damaged ecosystem.

Oil spill response is demanding under any circumstances. Arctic conditions impose additional environmental and logistical challenges. As an integral part of continuing oil and natural gas exploration in the Arctic, we continue to address these challenges by improving our knowledge of Arctic conditions and by implementing programmes to protect people and the environment.

Therefore, operators include robust assessment and management systems that address specific risks. These systems incorporate contingency plans that are sufficiently flexible to provide a response appropriate to:

- The nature of the operation
- The size of the spill
- Local geography
- The climate and/or weather conditions expected over the period of the response

- The logistical challenges presented by remote operations

It is also essential to identify personnel and equipment needed to execute a response, supported by training and maintenance programmes to assure readiness. The health and safety of the response team and the public are paramount.

In the event of an oil spill, decisions on response options take into consideration:

- Lessons learned from prior spill response efforts, from research and from Arctic operations
- An evaluation of existing physical conditions
- Biological and social sensitivities
- Oil chemistry

During this evaluation process, experts compare response options and take into account factors such as potential for lowest overall impact and most rapid recovery.

The three primary options for oil spill response are in situ-burning, use of dispersants, and mechanical recovery. Any final decision to utilise a particular response strategy depends on the spill conditions at the time and relative risks to response personnel and the environment.

In every case, monitoring and observation are crucial in providing real-time information on the size and direction of the oil – including the success of natural processes in breaking it up. Such close scrutiny enables us to adapt our response and ensure use of the best options at all times.

The Arctic presents unique operational challenges:

- Remoteness
- Low temperatures
- Seasonal darkness
- Presence of ice

However, research has also shown that Arctic conditions can work to our advantage in effective response. For example:

- Cold water and sea ice can enhance response effectiveness by limiting the spread of oil and so allowing for more efficient in-situ burning.
- The window of opportunity for in-situ burning and dispersant operations in ice-covered waters can expand significantly when compared to equivalent spills in open water.

In response to incidents such as Macondo in the Gulf of Mexico and Montara offshore Australia, we worked to develop and implement recommendations to prevent well incidents in the first place and to improve our ability to respond in terms of intervention and clean-up. All of this was part of the Global Industry Response Group (GIRG).

Although GIRG's recommendations and action plans were not Arctic-specific, they enhance our overall ability to prevent and respond to oil spills around the world. These actions include a Joint Industry Programme (JIP) to:

- Improve co-ordination between key stakeholders internationally
- Establish guidelines governing safe dispersant use
- Promote research that advances understanding of response methodologies and risk assessment models
- Enhance recommended practices for in-situ burning

Another GIRG outcome was establishment of the Subsea Well Response Project (SWRP). It is focusing on ways to stem a well if the extensive physical controls already in place should fail. SWRP will provide an improved capping response and is studying the use of subsea dispersants and the feasibility of global containment solutions.

As part of our industry's on-going research to improve Arctic oil spill response, companies have come together under the auspices of OGP to form the Arctic Oil Spill Response Technology Joint Industry Programme. Over the course of several years, this consortium will make advances in:

- Dispersant use in broken ice
- In-situ burning
- Mechanical recovery in sea ice
- Remote detection/tracking, and modelling of oil spilled in and under sea ice

The JIP is also planning field experiments to test and validate these technologies and techniques.

For more information, visit the following links:

- www.arcticresponseotechnology.org
- www.sintef.com
- www.subseawellresponse.com

About OGP

OGP represents the upstream oil & gas industry before international organisations including the International Maritime Organisation, the United Nations Environment Programme (UNEP), Regional Seas Conventions and other groups under the UN umbrella. At the regional level, OGP is the industry representative to the European Commission and Parliament and the OSPAR Commission for the North East Atlantic. Equally important is OGP's role in promulgating best practices, particularly in the areas of health, safety, the environment and social responsibility.