



# Joint industry programme on oil spill response in ice

## Background

The oil & gas industry has made significant advances in being able to detect, contain and clean up spills in Arctic environments. The past decade's work has built on forty years of research looking 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.

To further build on existing research and improve the technologies and methodologies for Arctic oil spill response, members of the IPIECA Oil Spill Working Group (OSWG), Industry Technical Advisory Committee (ITAC) and the API Emergency Preparedness and Response Program Group (EP&RPG) formed a joint committee in 2009.

Its task was to review prior and future work by the oil & gas industry on prevention and response to oil spills in ice, to identify technology advances and research needs in industry preparedness, and to prioritise identified issues.

One outcome was the recommendation to establish a Joint Industry Programme (JIP) to undertake various research projects that have been identified to improve industry capabilities and co-ordination in the area of Arctic oil spill response.

The JIP is aimed at creating international research programmes to further enhance industry knowledge and capabilities in the area of Arctic oil spill response and to raise awareness of existing industry OSR capabilities in the Arctic region.

The JIP consists of nine international oil & gas companies – BP, Chevron,

ConocoPhillips, Eni, ExxonMobil, Shell, Statoil, North Caspian Operating Company and Total – making it the largest pan-industry project dedicated to this field of research and development.

OGP is providing project management expertise. Leading industry experts and scientific institutions will perform the technical work and scientific studies.

Over the course of next four years, the JIP intends to conduct experiments involving small controlled releases of hydrocarbons – subject to official permits. These studies will be consistent with previous experimental releases carried out by industry and government over the past 40 years to obtain critical information as to the effectiveness of different response techniques and the behaviour of oil in ice.

## Industry working together

There are some unique considerations to address when considering operations in the Arctic, including prolonged periods of darkness, extreme cold, distant infrastructure, presence of sea ice offshore and a higher cost of doing business. Safety, prevention and response to oil spills are first priority for the industry. Collaboration among companies assures the most efficient use of resources, funding and expertise to improve the technologies and methodologies for Arctic oil spill response. So does close collaboration with academic institutions, governmental and non-governmental institutions. All of the results of the JIP research will be published.

## Purpose and objectives

The goal of the JIP is to advance Arctic oil spill response strategies and equipment as well as to increase understanding of potential impacts of oil on the Arctic marine environment.

This JIP will advance capability in the areas of dispersants, in-situ burning, dispersant application, mechanical recovery, remote sensing, trajectory modelling and understanding the environmental effects that may occur from a spill and the response activities that follow.

# Scope and working groups

OGP will manage seven key areas of research on behalf of the JIP: dispersants, environmental effects, trajectory modelling, remote sensing, mechanical recovery, in-situ burning and experimental field releases.

- 1 Behaviour of dispersed oil under ice and dispersant efficacy testing in Arctic environments**

Examining the effectiveness of dispersant use in Arctic environments. This will involve conducting large-scale tank research and field verification experiments on the efficacy of dispersants in Arctic marine waters and determining optimal operational dispersion criteria. The goal is to develop a numerical model capable of predicting the behaviour of a dispersed oil plume under ice, with particular emphasis on the potential for resurfacing.
- 2 Environmental impacts of Arctic spills and the response to them**

Providing a robust information base that will support the use of net environmental benefit analysis (NEBA) for Arctic oil spill environmental impact assessments and response decision-making.
- 3 Trajectory modelling in ice**

Developing a numerical model capable of predicting oil trajectory in seas with different ice concentrations.
- 4 Oil spill detection and monitoring in low visibility and ice**

Expanding the oil & gas industry's remote sensing and monitoring capabilities in ice-infested waters during periods of darkness and low visibility, and detecting and tracking in a range of oil-in-ice and water conditions. These include situations in which oil is in floes or under or on ice. Work will also include detection and monitoring of underwater dispersant plumes when dispersants are used to control continuous subsea releases.
- 5 Mechanical recovery**

Examining in detail the results obtained from previous research projects to confirm the feasibility of booms and skimmers as a viable response technique for minor spills in ice-infested waters and identifying and developing innovative concepts for mechanical recovery; taking them to 'proof of concept stage'.
- 6 In-situ burning in Arctic environments**

Developing aerial ignition systems for ISB and conducting meso-scale and large-scale basin research and field verification experiments with chemical herders to enhance and improve the effectiveness of ISB in specific Arctic ice environments.
- 7 Experimental field releases**

Developing field-release scenarios to verify technologies and methodologies developed through the Arctic JIP. The JIP will work to obtain permissions and permits to conduct a series of intentional oil releases for research purposes in different geographic regions.

## 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.

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