

IN SITU BURNING IN BROKEN ICE

WHAT IS IN SITU BURN (ISB)?

The burning of oil "in situ" (meaning "in place") can be conducted on land, on water, on ice or on any surface upon which the oil can reside with adequate thickness (typically a few millimetres or more), has sufficient volatility to burn, and can be exposed to conditions necessary to ignite and sustain combustion.

Fire Resistant Booms

Fire resistant booms can be towed in open water and in light ice concentrations to thicken oil and provide sustained combustion. With as little as 150 metres of fire boom, 50 to 100 cubic metres of oil could be eliminated in less than an hour or two with an efficiency of 90 to 98 percent.

Natural Containment

Ice can aid in response by acting as a natural containment system, providing oil thicknesses of several centimetres or more and allowing for the rapid and efficient elimination of oil. Such burning, whether enhanced by wind or chemical-herding of the oil, can be conducted safely over large areas with little-to-no surface support personnel.

Chemical Herders

Oil slicks can be thickened to several millimetres with chemical herders thereby significantly enhancing the effectiveness of skimming and controlled burning. When heavy ice concentrations preclude the use of booms, oil layers can be concentrated and thickened by wind and/or chemical herders against large ice floes or in cracks between them.

Aerial Ignition Systems

The ignition of oil contained by fire boom or other natural barriers, such as ice, has been demonstrated hundreds of times during controlled experiments, field trials and during actual spill events over the past 30 years. Such ignition can be conducted with hand-held igniters from boats, and from the air with helicopters using a Heli-torch. Field research has been conducted and further efforts are underway to develop fixed-wing ignition systems as well.

ABOUT THE PROJECT: State of Knowledge Review

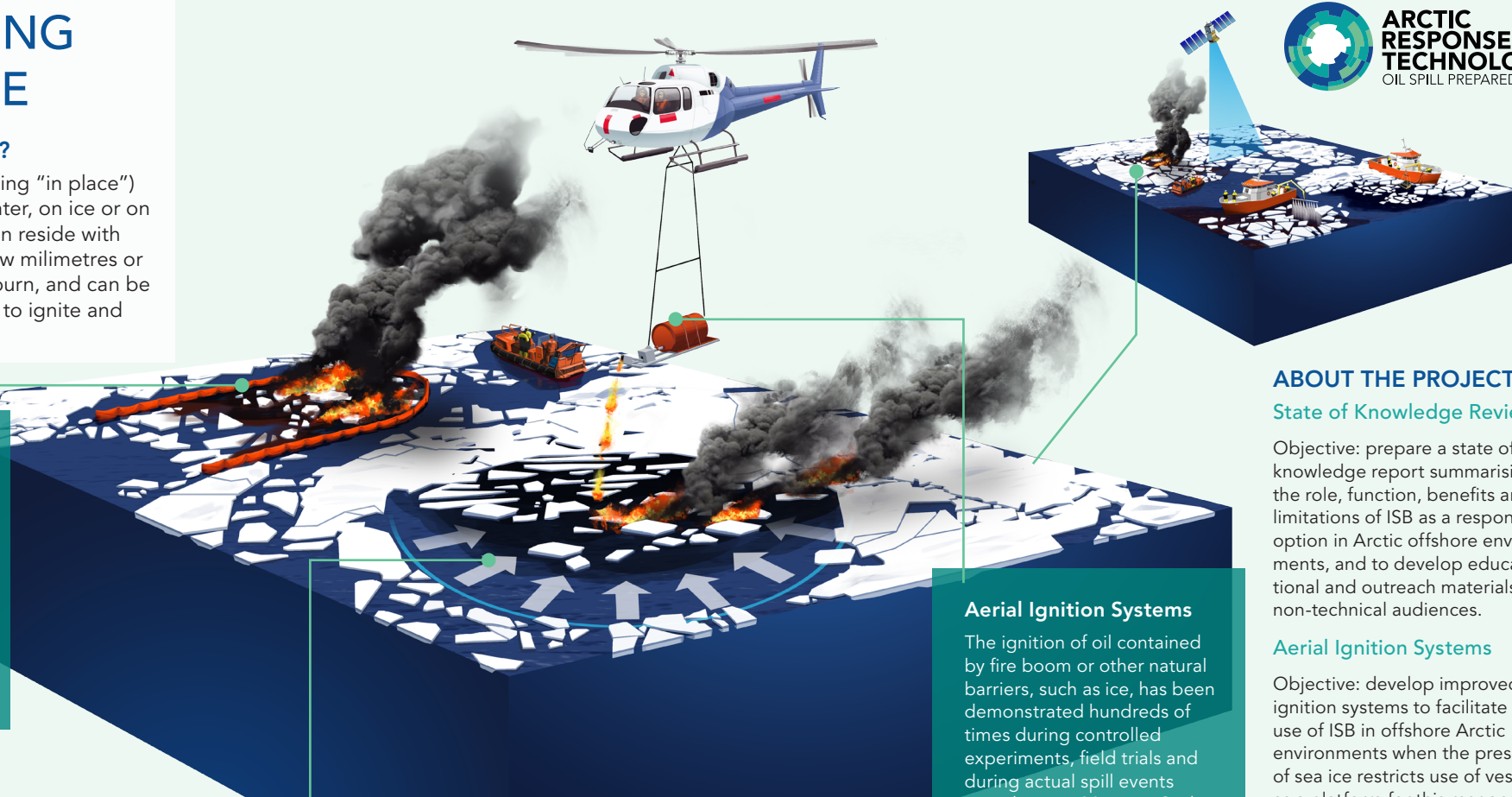
Objective: prepare a state of knowledge report summarising the role, function, benefits and limitations of ISB as a response option in Arctic offshore environments, and to develop educational and outreach materials for non-technical audiences.

Aerial Ignition Systems

Objective: develop improved ignition systems to facilitate the use of ISB in offshore Arctic environments when the presence of sea ice restricts use of vessels as a platform for this response option.

Chemical Herders

Objective: evaluate the effectiveness of herders to enable ISB in open water and among broken ice and to develop an application system for herder deployment from either boats or aircraft in cold conditions.



ABOUT THE JIP

To further build on existing research and improve the technologies and methodologies for Arctic oil spill response, nine oil and gas companies established the Arctic Oil Spill Response Technology Joint Industry Programme (JIP). 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.

The Arctic Oil Spill Response Technology JIP is sponsored by nine oil and gas companies:



ConocoPhillips



ExxonMobil



<http://www.arcticresponsetechnology.org>

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