Environment Canada
Atlantic Region

Environnement Canada
Région de l'Atlantique

Fact Sheet

Environmental Concerns of East Coast Offshore Oil & Gas Development

April, 1981

Offshore exploration and the development of hydrocarbon resources has become a matter of significant interest to the Atlantic provinces, dependent as they are on foreign oil imports and suffering some of the highest energy costs in Canada. With ever-increasing energy costs, energy self-sufficiency has become a high-priority issue in this region.

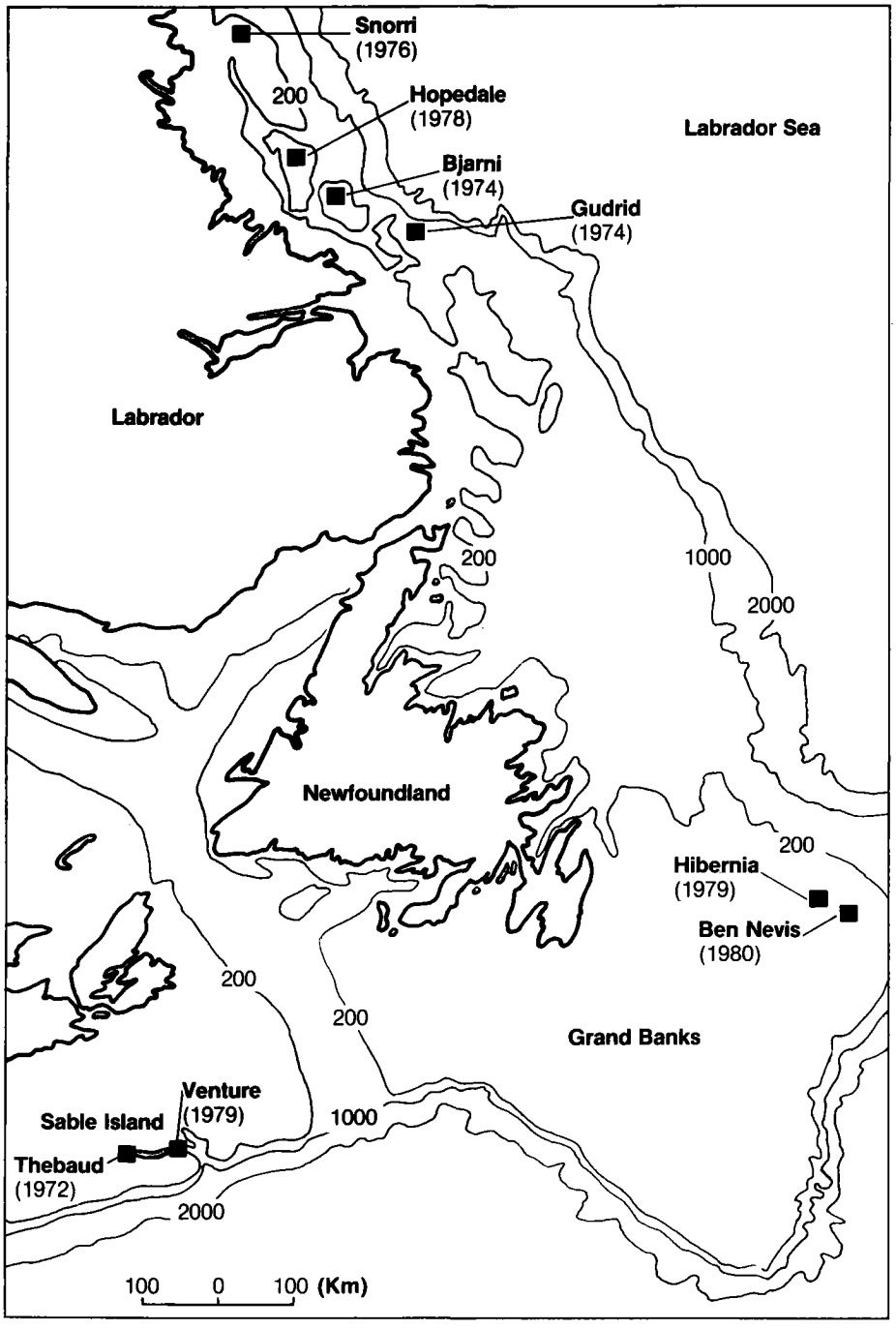
When oil and gas exploration began off the east coast in the mid 1960's, there was a great deal of initial activity and excitement; however, this died down soon after due to a lack of encouraging discoveries. Since 1976, interest in potential offshore oil and gas finds has again been mounting and extensive geophysical work and exploratory drilling are now in progress.

By 1980, in the search for oil, about 150 hydrocarbon wells had been drilled offshore in the Atlantic region and a number of promising areas have been identified: Labrador, the North East Grand Banks and Sable Island. Oil and/or gas production from the Grand Banks and Sable Island is a possibility by 1985 and 1987 respectively.

Companies conducting drilling programs must submit plans to the federal government for approval. These plans include background environmental data, oil spill movement models and estimates of the type and quantity of drilling waste discharged to the sea. Oil containment, clean-up and communication exercises must also be undertaken by industry in order to be prepared to respond to oil spills.

Risk of Oil Spills

The possibility of a major oil spill is increased as offshore activity increases. Technology is not far enough advanced to effectively combat a large spill offshore especially in adverse weather conditions. The usual approach to clean-up is to attempt to track the oil, predict its entry to sensitive resource areas and then protect these sensitive areas.



Major Discovery Wells

The risk of an offshore accident is further increased by the transportation of oil and fuel. Spills during the routine transfer of oil to pipelines or shuttle tankers have been found to be greater overall threats to the environment than oil well blowouts, which are relatively low-probability events. Blowouts can, however, be devastating when they do occur.

Oil and Seabirds
Oil spills represent a great hazard to seabirds. Many birds appear to be attracted to oil slicks, which can have a calming effect on rough water. The birds land on these calm areas and the oil destroys the water-repellant and insulating capacity of the birds' plumage. The birds either drown or lose body temperature and die. Relatively small amounts of oil can prove fatal. Flightless young and those species that dive for food are particularly susceptible to oiling from a surface slick.

The magnitude of the effect of oiling depends essentially upon the type of oil involved and the presence of other stresses such as food shortages, parasitism and cold weather. Ingestion of oil can occur while the bird preens its oil-soaked feathers. Even if death does not follow, oiling may lead to reduced egg-laying and hatching success.

Oil and Marine Environment
Some sites where offshore development will occur are located in environmentally high-risk areas. Most organisms in the marine environment subjected to oil can be affected in some way. The major determining factors are: the concentration of oil, the length of exposure, the type of oil and the life cycle stage of the organism. Earlier life stages of an organism tend to be more sensitive to oil than are adult stages. Generally, a light or more refined oil is more toxic than a heavy oil such as Bunker. The latter, however, can smother organisms which come in contact with it.

Operational Hazards
Some of the drilling and production phases that are potentially hazardous include: product transfer, well servicing, storage and handling, development of drilling and production platforms, drilling procedures, subsea techniques and handling of equipment, separation and processing, construction (in addition to pipelines) and logistics.

Some events that can cause pollution are chemical spills, and drilling fluid discharges (in excess of 10,000 barrels may be used during the drilling of an average well). Studies of environmental concerns related to drilling and production are constantly being conducted to provide a basis for good management practice.

Responsible Agencies
The responsibility for approving drilling programs lies with the Department of Energy, Mines and Resources (EMR), with Environment Canada (EC) playing an advisory role. For example, Environment Canada participates in the approval of contingency plans and in the environmental clearance of new permit acreage. Should an oil spill or blow-out occur, either the company involved or EMR should initiate a clean-up. The Canadian Coast Guard and EC would be asked for operational and environmental advice.

Background data on the environment, such as marine climatology, are also provided by Environment Canada to the lease-holding companies and their contractors. This information is used in designing the operations, planning for emergencies and conducting routine operations with safety and economy. The availability of frequent marine weather forecasts, special warnings of storms and data on sea ice and icebergs is of importance to drill rig operators and their support services, since their operations depend heavily on these factors.

To identify environmentally sensitive areas, EC has prepared shoreline characterizations, sensitivity maps and environmental atlases for coastal areas of Atlantic Canada, and conducts workshops to try to identify environmental problems associated with production offshore. Staff from Environment Canada accompany officials from Energy, Mines and Resources during some of their inspections of offshore drilling rigs and support bases.

There are vast social and economic implications in the development of resources, and these are being addressed by other agencies. As far as environmental ramifications are concerned, though, every attempt is made by Environment Canada and other federal and provincial government agencies to minimize the environmental risks for the development of offshore hydrocarbon resources.

For more information please contact
Information Service
Environment Canada
Atlantic Region
5th Floor, Queen Square
45 Alderney Drive
Dartmouth, Nova Scotia
B2Y 2N6

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