

PANEL REVIEW

The Impact of Hibernia

Mark Shrimpton
Lars Osberg
Peter Sinclair
Don Steele
on

Hibernia Development Project: Report of the Hibernia Environmental Impact Statement. 4 vols. (vol. 3 has 2 pts.). St. John's: Mobil Oil Canada, Ltd. 1985.

Judith Bobbitt
on

Hibernia Development Project: Report of the Hibernia Environmental Assessment Panel. [Ottawa]: Government of Canada, Minister of Supply and Services, 1985.

INTRODUCTION

JOURNALS DO NOT normally review such volumes as the Hibernia Project Environmental Impact Statement (EIS). It is an example of "grey literature"—a weighty technical document, produced at the behest of government, printed in a limited number of copies, and not available for sale in bookstores. Yet the EIS is one of the most significant reports to be published in Newfoundland in recent years. Producing it cost over \$8 million and involved a number of primary and secondary studies of the impact of the Hibernia project on the society, economy and environment of Newfoundland. The four volumes of the EIS proper are based on 22 "supporting documents," many of them produced by local consultants. As such

there are parallels with the recently released Royal Commission on Employment and Unemployment. The main difference is that the environmental impact assessment process privatizes the research effort, albeit within terms of reference established by government, and the end product is subject to a public review by the Hibernia Environmental Assessment Panel.

Whatever the fate of the report of that Panel, the EIS itself has been highly influential. A recent Community Services Council survey of community groups in Eastern Newfoundland showed Mobil Oil Canada Ltd. to be their primary source of information on the probable impact of oil development, while the EIS was the most commonly consulted document on Hibernia. Mobil had been consulted by 67% of groups, more than had used the Petroleum Directorate (52% had), Memorial University (32%) or other sources. The EIS had been read by 75% of these community organizations, which included municipalities, rural development associations, and local and provincial interest groups. Only 55% had read the Panel report.

The EIS volumes will have impact for some years to come. Over 800 copies of the report (and 1600 copies of vol. 1, the *Summary*) were printed and sent to public libraries, information centers and interested groups and individuals across the Province. They will doubtless be used as a source document for community research, school projects and other studies.

Many of those using it will not be aware of its genesis and the ways in which this has affected the nature and quality of its content. The joint federal and provincial terms of reference were very specific as to what should, and should not, be considered. Not included in the mandate were questions of energy policy, jurisdiction, fiscal and management regimes, project economics, the division of revenues and the joint impact of multiple projects. Lars Osberg and Don Steele (below) make clear the significance of some of these omissions.

The terms of reference also spelled out at great length what topics should be addressed. Indeed, there is a growing school of thought that statements of this type are too detailed and compendious, giving similar weight to areas where there are major concerns and those where the impacts will be negligible or not significant. Certainly the EIS lacks focus, and a key determinant of the amount of consideration given different issues seems to have been the availability of background data and studies. For example, considerable concern has been expressed about the impact on the already overextended social services system. The EIS devotes only three pages to this topic, with the relevant supporting document explaining that analysis and discussion were constrained by both a lack of available data and the quality of that information. Judith Bobbitt (below) notes similar shortcomings with respect to

analysis of the threat posed by icebergs. Don Steele notes with approval specially commissioned studies of oceanography and wildlife, but one of the disappointments of the review process is that it generated relatively little useful original research in most areas. It is here that the contrast with the Royal Commission on Employment and Unemployment seems to be greatest.

The EIS was produced by the project proponent, which had a clear interest in emphasizing the benefits and downplaying the costs of the project. (Indeed the Mobil Oil slide presentation on the EIS listed the positive and negative impacts under the headings of "benefits" and "issues" respectively.) It is not possible to establish how far the failings of the EIS, as noted by community groups, government departments, the Panel and its advisors, and the reviewers here, can be attributed to this, but there are clearly grounds for reconsidering whether the proponent is the most appropriate author of an impact statement of this type. (M.S.)

JOBS AND HIBERNIA

As this review is being written (Spring, 1986) the daily newspapers are reminding economists, yet again, of the futility of economic forecasts and of the contingency of economic plans. The spot price of oil on international markets has slumped to \$18 (U.S.) per barrel, equivalent, at the time of writing, to roughly \$25 (Canadian) per barrel. Mobil Oil's plans for the Hibernia development were, however, based on the assumption that "Arab light marker crude would remain at U.S. \$29 per barrel to the end of 1985 and will then escalate at 5.5% per annum until the end of the project life. After 1985, this represents zero real increase in price in the U.S. since U.S. inflation is also set at this growth rate." Mobil further assumed that U.S. \$1 would be approximately equal to Cdn. \$.80, and on this basis the Canadian dollar price of oil was forecast to be \$36.25 in 1985, increasing thereafter.

The economics of the development of Hibernia depend fundamentally on the price of oil but, of course, they depend only indirectly on the price of oil in 1986. Even if development of Hibernia begins immediately, production will not commence until 1992. Hence the price of oil in 1992 is the really key variable. The current price of oil does, however, have a direct impact on the cash flow of oil companies and their ability to pay for the development of offshore oil. In addition, an enduring collapse of oil prices would necessarily affect expectations of future oil prices, since only the most optimistic will bet billions on world oil prices going up when they are currently going down.

Strangely enough, a reader of the EIS will find in it no mention of world prices for oil or, indeed, any hint as to the importance of world oil prices for the development of the project. Indeed, the environmental impact assessment process is notable for what it does not discuss, as much as for what it does discuss.

In terms of economic impact, the most pressing concern of Newfoundlanders about the Hibernia project can probably be summarized as "job, jobs, jobs." However, the most important thing about the oil and gas industry is not the jobs it creates directly; rather, it is the money that it makes. The extraction of oil and gas is, in general, highly capital intensive, and it is particularly capital intensive on the offshore. Drilling a \$50 million wildcat well creates just over 400 short-term jobs (both offshore and in service industries)—i.e., the cost per person-year of employment is roughly \$250,000. The EIS makes the forecast that roughly 80% of the 10,000 person-years of Newfoundland-based employment to be created in the development phase would go to Newfoundlanders, and one can assume that roughly 90% of production employment would similarly be local people. On this basis, over the next 16 years over 18,000 jobs would be generated for Newfoundlanders in the development and production of Hibernia. However, over the same period some \$9.4 billion will be spent on development and production. If one counts only the increased employment for Newfoundlanders, this amounts to a cost per job of over \$500,000; if one counts, in addition, jobs created elsewhere in the world, the cost per job is more like \$225,000.

Clearly, employment creation in the oil and gas sector is extraordinarily expensive. At these costs, relatively few jobs can be created in the oil industry, even assuming that the Hibernia project does go ahead. However, employment creation *by* oil and gas is entirely a different matter. Most of the jobs which are created from the development of oil and gas arise in the non-oil sectors of the economy and arise because people (governments and firms) make money from oil and then spend it.

Government expenditure on roads, schools and hospitals creates jobs directly in the short run and indirectly, via their general effect on economic efficiency, in the long run. Revenues from the petroleum sector enable governments to decrease other taxes (e.g., the abolition of sales tax in Alberta), leaving more purchasing power in the hands of consumers and thereby boosting spending. To be complete, one must also mention that the profits from oil development which are ultimately received by shareholders will stimulate consumer spending in the areas in which they live but, since

the vast majority of oil company shareholders live outside Newfoundland, the major concern for Newfoundlanders centers on the impact of oil revenues on provincial government finances.

If the provincial government succeeds in obtaining a significant share in oil revenues, the development of Hibernia may have a significant impact on employment in Newfoundland, since jobs are so very much cheaper to create in the non-oil sector. But the issue of indirect job creation is simply not mentioned in the EIS. Although this is probably the main way in which the development of Hibernia could affect the economy of Newfoundland, consideration of the share of the provincial government in the revenues from Hibernia development was beyond the terms of reference of the environmental impact assessment process. This process considers only the direct impact of a defined project, and pays no attention to the indirect impact or how projects could be amended to provide greater economic benefits. Unfortunately, the political process in Newfoundland has become fixated almost entirely on jobs created directly in the development and production of oil. Very little attention has been given to the cost of job creation in the oil sector or to the jobs that are lost when government foregoes revenues in order to encourage oil development.

It is not, of course, the fault of Mobil Oil that Newfoundland has placed so much emphasis on short-run job creation in the construction phase. One cannot expect Mobil Oil, or any other private company, to do otherwise than to bargain vigorously in its own interest. Mobil Oil was asked in the environmental impact assessment process to provide details of a defined project and its impact—it was not asked to maximize the benefits of that project to Newfoundlanders. The EIS had the virtue that it did recognize explicitly that choices were going to be made in the development of offshore petroleum in Newfoundland and that those choices had very considerable social and economic implications. In presenting data on two modes of development (floating production facilities and a gravity-based system), the EIS clearly demonstrated that there is not just one technical method of developing the Hibernia petroleum reserves. In addition, the EIS went to some considerable trouble to demonstrate that in several important areas (e.g., the housing market of the St. John's metropolitan area) the impact of offshore petroleum will be relatively small. There is always some point in explicitly recognizing facts that are so important that they come to be, sometimes, taken for granted or ignored. The EIS recognized two such facts: (1) there are major choices to be made in the development of offshore petroleum in Newfoundland; (2) offshore petroleum will always be one among several of Newfoundland's industries and, although important, will

never be a major direct employer in the Newfoundland labour market.

Although the Mobil EIS can be criticized, most notably for its neglect of the uncertainty involved in labour demand forecasts and its (probably gross) underestimate of the labour required in the "hook up" of production modules, the real problems in the Hibernia development lie beyond its terms of reference. The major potential impact of Hibernia on employment is indirect job creation via the tax revenues received by the provincial government. If the development of Hibernia proceeds, in 1996 the project will be generating about 1,100 direct jobs (i.e., about 0.6% of employment in Newfoundland) and a lot of cash. However, if government has made many concessions in taxation in order to get the project underway, very little of that cash will remain in Newfoundland. In that case, both direct and indirect job creation from Hibernia would be totally inadequate to deal with the problem of chronic unemployment in Newfoundland. Newfoundlanders already know, from the experience of Churchill Falls, how transitory the benefits from short-term construction employment are and, in the case of Churchill Falls, the government of Newfoundland has attempted, unsuccessfully, to renegotiate the contracts on which the development was based. One can easily foresee the same sorts of political pressures reemerging in the case of Hibernia in the not-too-distant future. (L.O.)

SOCIAL AND CULTURAL IMPACT

Despite the widespread tendency to talk of economic, political and social factors, the economic and political processes of any society are necessarily social because they must involve interaction among people. They are similarly cultural because the people have attitudes and values. The social and cultural are not what is left over after all the important matters have been discussed. Social and cultural factors are not simply reducible to the vague overview of a Newfoundland way of life that appears as the tenth and final segment of Mobil's general presentation of the socioeconomic section. Nevertheless, I shall begin this discussion of the EIS by commenting on what the company has stated, before indicating what might have been considered.

Attention is directed to Newfoundland's distinctive society and how it might be affected by the Hibernia development. A short statement is followed by a somewhat more detailed overview which is based on a consultant's report, two surveys, conducted in 1981 and 1984, and interviews with 40 community leaders. What are the basic features of Newfoundland life that make it distinct? This report comes up with the sort of conventional wisdom that second-year university students regularly churn out. For exam-

ple, reference is made to the ethnic homogeneity of the population, dependence on the fishery in rural communities, survival of oral cultural practices, self-reliance in home building, the strong influence of religion, relatively large families, "informal" education and training, and a place for women as providers of emotional support, co-workers in the fishery and social integrators. Brief reviews of urban and rural Newfoundland point out some of the well-known differences in income levels, unemployment rates and services, although the conclusion is that urban ties to rural areas are so strong that "the two sectors have more things in common than apart" (4:152).

The statement on the attitudes and values of Newfoundlanders actually presents little data from the surveys, but claims that no statistically significant differences in attitudes may be found when comparing urban and rural residents. St. John's residents were described as more cosmopolitan but still committed to such values as the importance of close-knit family life, the central place of religion in family and social activities, and the importance of close personal ties in the community.

In evaluating such conclusions, it is necessary to know how the surveys were conducted and how the questions on which the statements are based were framed. None of this information is available to the reader. In fact, there is not a single table based on these surveys, whereas other sections of the report are filled with statistical material. Furthermore, although there may be no urban-rural differences in values, this surely does not mean that Newfoundlanders are "uniform" (4:153) in their beliefs. How were the values measured and what variance was actually identified in the research? There is simply too little detail to permit a reasonable assessment of this section of the statement.

The consultant's report¹ on which the judgements of what makes up the Newfoundland way of life and of the impact of Hibernia were based is also deficient in significant ways, owing at least in part to the haste with which such documents had to be prepared. This study was to include:

1. A review of existing literature;
2. Description of the key characteristics of the Newfoundland way of life;
3. A comparison with other rural societies;
4. Analysis of the social impact of other major projects;
5. Discussion of the North Sea oil development;
6. Consideration of the possible impact on Newfoundland.

Lacking time and resources, the consultants presented an overview of the way of life that focussed on settlement and population, the economy, and family and community. They do note the problem of generalization and the constantly changing nature of social life. Having said that, the first quarter of their report gives a potted history of Newfoundland before attempting to analyse the way of life at present. Generally, this part of the report provides an uncritical review of existing literature. It is, however, more careful than Mobil's use of the data. For example, rather than accept the view that family is the universal basis of community organization, a series of "exceptions" is listed that probably amounts to a majority of the population (4:58-9). The consultants furthermore suggest that "traditional and modern viewpoints on social issues" coexist.

Despite the existence of a huge literature in rural sociology, practically no comparison is undertaken with other rural societies. Had this work been completed, the supposed unique character of the Newfoundland way of life might have been more difficult to sustain, except in matters of detail. The short section on the North Sea looks at Scotland almost exclusively, although it is Norway that has taken more steps and showed greater concern for the impact of oil development on existing social life. The general conclusion, based partly on the relatively positive experience with other major projects in the past, is that Newfoundland can absorb and adjust to a development on the scale of Hibernia without serious negative effects.

That may be true. It is unlikely that labour will be drawn from the inshore fisheries, which is unfortunate in that the fisheries are supporting too many fishermen at current price levels. The amount of direct new employment will not bring down Newfoundland's unemployment rate even to the Canadian average, especially if migrant Newfoundlanders are attracted home in the belief that jobs will be available. Outside the Avalon, in the areas with the highest rates of unemployment, the employment impact will be insignificant. Furthermore, the "permanent" jobs created will tail off after 1995. In a sense, one central problem is that Hibernia is considered to have so little impact.

This brings me to the final point and the most important one that I want to make. The significance of Hibernia for the future contours of Newfoundland's social structure and for our predominant cultural values does not lie in the jobs created in oil extraction or the adjustments that several settlements will be required to make to major local construction projects. Rather, what is really important is the indirect effect on Newfoundland of the revenues generated by oil. This may not be a matter for Mobil's con-

cern, but it should be in the terms of reference for any government's evaluation of the social impact of a project of this kind. We require an assessment of the effect on Newfoundland of oil revenues. How will the money be spent? Will the revenue go primarily to upgrading social services of various kinds and the system of communication? How much will be devoted to the establishment of an enduring employment base for the population? Will anything be spent on building up backward linkages in the fishery? Will new industries be established? How? Will Newfoundland's educational system finally be modernized and, dare one hope, removed from the control of the clergy? These questions must be answered in any serious evaluation of the social and cultural impact of a major oil development such as Hibernia. The EIS is a failure in this respect, and its value as a basis for informed public discussion is thus seriously diminished. (P.S.)

IMPACT ON BIOLOGICAL RESOURCES

For almost 500 years the biological resources of the Grand Banks have been the basis of one of the world's greatest fisheries. Now it is proposed to exploit the petroleum resources found in the Hibernia field under the edge of the bank. The aim of the impact statement is to describe the existing biological environment in a study area extending from the Burin Peninsula to the Flemish Cap, to highlight "the environmental aspects pertinent to project design and identification of significant impacts," and to identify "effects predicted to remain after the application of all practical enhancement and mitigative measures."

The impact statement is based on a review of the literature and specially commissioned studies of oceanography (plankton and benthos) and wildlife (seabirds and marine mammals). That some of these studies, such as the yearlong study of the plankton, had not ever been done previously is a sad reflection of our priorities in marine biology. The larger and more balanced set of data now available as a result of these studies of the Grand Banks is a step forward, even if we remain ignorant of year-to-year variations.

However, the statement lacks an ecological integration of the available knowledge of the marine biology of the Grand Banks that would attempt to describe the underlying reasons for its productivity and could at least ask whether the development might have effects that would spread through or be magnified when they impact upon the system. Instead, we are presented with a qualitative, generalized energy flow diagram and a catalogue of species, each accompanied by an account of its biology appropriate for an undergraduate textbook. There is no quantitative analysis of feeding habits

and food webs that would tie the various components together to form an ecosystem.

This piecemeal, shotgun approach continues when the potential for impact is considered. Each category of organism is considered equally and separately, with little regard for the effect an impact on one species might have on another. Moreover, the classification of impacts practically guarantees that only negligible or minor effects would ever be predicted, since a major impact is defined as "one affecting a whole stock or population." There are very few species for which this is at all likely. Owing to the small size of the Hibernia field, and the consequent small volume of water to be affected by a blowout or chronic small spills relative to the size of the Grand Banks, any effect other than on seabirds is bound to be negligible and indistinguishable from natural variations. The solution to pollution will still be dilution. What will happen when and if more fields like Hibernia are developed was not within the terms of reference of the statement, but it is a question that should be addressed. The effect of one field may be negligible, but that of many may not be.

The EIS concludes that direct impacts on the various fish species will be minor or negligible and not distinguishable from the normal year-to-year fluctuations in population size. However, the synergistic or additive effects of oil and other negative factors are not considered. Tainting of fish by an oil spill is recognized as a potential impact but is not considered to be significant. However, consumers are likely to be reluctant to buy fish that are perceived to have been associated with an oil spill and that are thus thought to be tainted. How long will a fish remain tainted and how far can it swim?

The Hibernia field will be operated for about twenty years, during which time it will be withdrawn from the fishery. The gravity base structure will be left on the site when it is abandoned. How long will it last? If more fields are developed, will the fishery in larger and larger areas have to be permanently abandoned?

The potential for impacts on seabirds is not given the attention it deserves. Seabirds are well known to be readily affected by small amounts of oil. Those species that spend considerable time on the water, such as the alcids, are more vulnerable than those, like the gulls, that do not. Some seabirds, such as the black-legged kittiwake, are increasing in number, whereas others, such as the Atlantic puffin and razorbill, are declining. Despite such considerations, the different kinds of birds are considered in almost equal terms. Moreover, the geographic and time scales of the data presented for each species are large and not very useful in depicting short-

term or localized concentrations. No estimates of the possible mortalities of the various species are attempted, even though it is concluded that impacts due to a major spill "could range from negligible to minor. The actual degree of impact on individual species is dependent on time of year, type of spill, and direction of movement of oil."

Surely these are the questions that should have been given the greatest amount of attention. Considering that negligible impacts on most components of the Grand Banks ecosystem could be predicted *a priori*, one can question why more effort was not devoted to determining the potential impact on the vulnerable seabirds. Detailed studies in the areas most likely to be affected by an oil spill could have related patterns of occurrence of the vulnerable species to oceanographical conditions, food supply and the migratory behaviour of the birds. The impacts on the various species, and in particular on those with already declining populations, could have been estimated. (D.S.)

ENVIRONMENTAL CONDITIONS

The function of the environmental assessment and review process is to ensure that potentially adverse environmental consequences are evaluated. This evaluation is meant to assist government in its decisions concerning funding or authorizing private sector activities to proceed, with or without mitigative measures. One of the four specified tasks in the Hibernia Environmental Assessment Panel's terms of reference was to assess "the potential effects of the marine environment on the development project." This task was not handled in an adequate manner for various reasons. The composition of the Panel and its technical advisors was such that an adequate review of the physical environment was never possible; neither the Panel nor its technical advisors included a meteorologist, even though the Panel acknowledged that the climatic extremes at the proposed offshore site posed special challenges to the development of the project.

The EIS presented by the proponent consists of summary information from background documents. The presentation of the EIS, with its many pictures and diagrams, provides admirable disguise for its lack of technical content. Many of the background documents from which the EIS information was extracted were regarded as confidential and not made available during the review process. This procedure contrasts with that of the Beaufort Sea Review, where Dome Petroleum made all of its consultant reports available to both the Panel and intervenors.

Newfoundland has a small scientific community. Most of the local consultants and the scientists at Memorial University had previously worked

for Mobil Oil. With these experts unavailable and only a late and limited provision of intervenor funding, a dampening effect was placed on the review process. Only 3 out of 90 written briefs dealt with the physical environment. These were submitted by the Ocean Ranger Foundation, the Department of Fisheries and Oceans, and Environment Canada. All dealt with deficiencies and/or understated environmental design parameters. Even the government intervention dealing with physical oceanography involved a conflict of interest, because the intervening scientist was conducting joint research projects with Mobil Oil. Because of the low emphasis placed on physical oceanographic research on the Grand Banks by the Department of Fisheries and Oceans, this situation was probably unavoidable.

In spite of the lack of a proper technical review of the environmental conditions on the Grand Banks, the Panel managed to make a number of progressive recommendations. However, it is unfortunate that decisive conclusions were reached without technical backup information. The potentially most damaging conclusion deals with iceberg impact. The Panel concludes that "it is probable that an iceberg will collide with the [Gravity Based Structure] during the life of the project. The Panel is satisfied that the design concept presented by the proponent is capable of withstanding such an event."

In the EIS Mobil bases its argument on the probability that an iceberg of sufficient mass and velocity to cause damage would have a return period greater than 500 years. These data were not drawn from real observations: Mobil stated that it had very few simultaneous recordings of iceberg mass and speed. Given the lack of information, it put together a "simulated" data set. No details were given in the EIS of the values used for iceberg mass and speed in this contrived data set. The Panel accepted Mobil's statement without seeking clarification. By doing this, it appears to have left all the responsibility for the verification of the design calculations and methodology to regulatory agencies during review of the project Development Plan. The question now is whether there will be a comprehensive review of the adequacy of environmental design parameters at that stage. There is a danger that the government's review of the Development Plan will be restricted to the engineering design aspects, with an acceptance of the environment design parameters put forward by Mobil on the basis of conclusions reached in the Hibernia review.

The major problem encountered by any environmental review is that definite answers are hard to come by. Scientists are restricted to drawing conclusions from a very limited data set and knowledge base. The low level

effort that is being made to improve the situation for the Grand Banks is disturbing. Even more disturbing, the Hibernia review process has demonstrated that it is to the advantage of the proponent to have no or little information. This made, for example, the use of generated data on icebergs acceptable for the establishment of design criteria. Similarly, Mobil Oil was able to convince the Panel that there is a very low possibility of oil spills being transported onshore, without having to make any current measurements in the vast area between Hibernia and the Newfoundland coast. Having data could only be a disadvantage to the proponent when so much can be achieved with none.

Questions remain. Who is responsible for ensuring that the relevant government agencies have the environmental information upon which to make decisions? Is it Mobil Oil with its business interests, the government who established this particular review process, or the researchers who did not accept any of their responsibilities to society? (J.B.)

Note

¹*The Impact of the Development of the Hibernia Oilfield on Newfoundland's Social and Economic Fabric.* St. John's: IDP Consultants Ltd., 1985.