

PUTTING THE ASSUMPTIONS TO THE TEST



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An examination of the Science Panel's assumptions that regulations would protect our ocean from the negative impacts of coastal oil and gas development¹

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Executive summary

In March 2003, at the request of the British Columbia government, then Minister of Natural Resources Canada, Hon. Herb Dhaliwal, announced a federal process to review the 32-year-old federal moratorium on oil and gas activities in the coastal waters of B.C.

The review was to consist of three phases: a science review, a public review and a First Nations engagement process. This report addresses the science review conducted by the Royal Society of Canada — specifically, the “Report of the Expert Panel on Science Issues Related to Oil and Gas Activities, Offshore British Columbia.” It is an analysis of the assumptions upon which the panel based its final conclusions.

The Royal Society science panel was asked to identify science gaps. They concluded that there were numerous science gaps that needed to be filled before exploration could proceed. However, in their final conclusions, they state:

Provided an adequate regulatory regime is put in place, there are no science gaps that need to be filled before lifting the moratoria on oil and gas development.²

This document examines this and other fundamental assumptions and considers them in light of British Columbian, Canadian and international experience with the regulation of offshore oil and gas and its environmental impacts.

Simply put, the Science Panel’s assumptions do not withstand scrutiny. Putting the Panel’s assumptions to the test of experience, this paper demonstrates that, contrary to the Science Panel’s assumptions about the regulatory system, the likely reality does not support the Panel’s conclusions.

The marine environment and coastal communities will be put at significant risk should B.C. proceed with offshore oil and gas exploration. The existing environmental regulatory framework in other Canadian jurisdictions is insufficient and poorly enforced, and suggests that safeguards will not be in place to ensure that the science gaps will be addressed.

British Columbia’s offshore regulatory system is currently undefined; however, experience suggests that the regulatory system we might realistically expect falls far short of one that would adequately protect the marine environment and the life and communities that it supports.

Given the serious flaws in the Science Panel’s assumptions, the ongoing uncertainties with regulation, the clearly identified science gaps and the known environmental costs of coastal oil and gas activity, this report concludes that the only responsible course is to maintain the existing moratorium on oil and gas activity.

...the Science Panel’s assumptions do not withstand scrutiny.

Our key findings:

- **Existing offshore oil and gas regulatory systems in Canada are not independent and at arm's length.** While a regulatory system for B.C. has not been adequately defined, experience indicates that any system developed is likely to be overseen by a government-appointed board that is subject to political control [see Key finding #1, page 11;]
- **Independent science and the precautionary principle are not assured features of Environmental Assessment in British Columbia and Canada, nor are public input or adequate protection of the environment guaranteed.** Public participation and independent scrutiny of the science is not guaranteed; discretionary powers in our legislation have in the past allowed decision-makers to proceed despite scientific opinion and against precaution [see Key finding #2, page 12];
- **“Best practices” are often not employed or offer insufficient protection.** In Canada and elsewhere, best practices are not “sufficiently stringent” or adequate to protect the marine environment [see Key finding #3, page 16, and a lengthier discussion in Appendix “A”, page 27];
- **Monitoring and enforcement programs are likely to be under-funded and insufficient.** Robust monitoring and enforcement are mandatory to ensure that standards are being met in a results-based regulatory system [see Key finding #4, page 17];
- **The *Species At Risk Act* is not a science-determined system with assured protections as the Science Panel has asserted.** It is in fact politically controlled and species protection is not mandatory even when scientifically necessary [see Key finding #5, page 18];
- **First Nations rights and title claims are complex and must be settled before any activities begin.** It is unreasonable to assume that these issues will be resolved by 2007 and that the outcome of these negotiations and litigation will permit offshore oil and gas activities [see Key finding #6, page 21];
- **Cook Inlet, Alaska is not a template for an environmentally sound oil and gas industry.** The regulatory and environmental experience in Cook Inlet is fraught with problems. Local citizens must repeatedly litigate to force industry compliance with “bottom-of-the-barrel” minimum rules. Significant violations continue to occur and enforcement has been lax [see Key finding #7, page 21]

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1.0 Introduction

On February 17, 2004, further to Terms of Reference in the Public Review of the Federal Moratorium on Oil and Gas Activities, Offshore British Columbia, the Royal Society of Canada released its *Report of the Expert Panel on Science Issues Related to Oil and Gas Activities, Offshore British Columbia* (the Report). The Report's authors (the Science Panel) — appointed for their expertise in science — were asked to identify science gaps. That they did. The Science Panel concluded that numerous science gaps exist which should precede offshore oil and gas activities in British Columbia.

However, the Science Panel then proceeded to make a number of very specific assumptions about what sort of regulatory framework would be in place, if the moratorium were to be lifted. Unfortunately, **the Science Panel's conclusions were all hinged on their unverified assumptions being correct**. For example, most prominently (though these are not the only regulatory assumptions), the Science Panel stated explicitly:³

For consideration of any possible oil and gas activities in the region, it is assumed that a competent regulatory regime is in place. This should be independent and at arm's length from government and industry. It is suggested that this be set up with guidance from those with substantial past experience.

And:

With implementation of the Panel's recommendations and the assumptions on which they are based, all the safeguards will be in place, when they are needed, to ensure that assessments of risk of oil and gas activities to human life and the environment in the QCB [Queen Charlotte Basin] are adequate.

And:

What it does mean is that, if the moratoria were lifted, regulation would be in place to ensure that these critical science gaps would be filled before development of an oil and gas industry in QCB.

This document examines the Science Panel's fundamental assumptions about a regulatory system for British Columbia; considers these assumptions in light of what we know about the regulatory system for oil and gas exploration and development in Canada and elsewhere in the world; and finds that the Science Panel's assumptions do not withstand scrutiny. Serious flaws underlie the Science Panel's picture of British Columbia and Canada's regulatory system, and these flaws have serious implications for environmental protection in the context of oil and gas development.

Given the flaws in the Science Panel's assumptions and analysis, the Report's conclusions about the risks associated with the identified science gaps lack a credible foundation and should therefore be dismissed.

Given the ongoing uncertainties with regulation, the clearly identified science gaps and the known environmental risks and effects of coastal oil and gas activity, we conclude that the only responsible course is to maintain the existing moratorium on oil and gas activity and tanker traffic in the Queen Charlotte Basin.

2.0 Critique of the Science Panel’s assumptions about the regulatory system

This section reviews and analyses the Science Panel’s key assumptions about what sort of regulatory framework would be in place, if the moratorium were lifted.

2.1 Key finding #1:

Existing offshore oil and gas regulatory systems in Canada are not independent and at arm’s length.

The Science Panel assumed there will be an independent regulatory board “at arm’s length” from government and industry.⁴

This assumption does not hold up for several reasons:

- Complex jurisdictional issues complicate the implementation and enforcement of any regulatory regime;
- A regulatory framework for British Columbia is undefined and a great deal of uncertainty exists in this regard; and,
- Existing examples in Canada suggest that regulatory boards are neither independent nor arm’s length.

There are jurisdictional disputes over who owns the seabed. In 2002, the Haida Nation commenced a lawsuit in which they claim title to land and the seabed, based on historical occupation over thousands of years.⁵ Other First Nations also have outstanding land and sea claims.

The federal and provincial governments have not resolved their respective jurisdiction over the seabed and have previously resorted to litigation.⁶ Given the costs associated with litigation, however, the provincial and federal governments would likely negotiate a resource management and profit sharing agreement. It stands to reason that the agreement would be similar to the kind of agreements that exist for offshore Nova Scotia and Newfoundland – the *Accord Acts*.

An independent regulatory board “at arm’s length” from government seems unlikely, in light of the current experience in British Columbia and precedents that have been set elsewhere in Canada.

Neither the Canada-Newfoundland Offshore Petroleum Board nor the Canada-Nova Scotia Offshore Petroleum Board is truly independent. For example, “fundamental decisions” of the Boards are subject to ministerial directives, suspensions and vetoes by the federal and provincial energy and mines ministers.⁷ “Fundamental decisions” include, *inter alia*, decisions to issue a Call for Bids [on exploration], the setting of terms and conditions on exploration licences, approval of development plans, decisions regarding drilling orders, the terms and conditions of significant discovery licences and of production licences, subsurface storage licences, approvals of a benefit plan, and so on.⁸ A board’s deliberations may happen at arm’s length, but the final decisions do not.

...“fundamental decisions” of the Boards are subject to ministerial directives, suspensions and vetoes by the federal and provincial energy and mines ministers.

Furthermore, it is no secret that a pro-development bias guides the offshore boards' work. For example, the *Canada-Nova Scotia Offshore Petroleum Resources Accord* states quite clearly,

1.02 The objectives of this Accord are:

(a) to achieve the early development of Petroleum Resources in the Offshore Area for the benefit of Canada as a whole and Nova Scotia in particular...

Secondly, British Columbians have experience with "independent" boards that are independent in name only. The Atlantic example is very similar to the current regime for land-based oil and gas regulation in British Columbia. Whereas the B.C. Oil and Gas Commission (OGC) is intended to be an independent regulator of industry, legislative changes instituted over the last few years have eroded that independence. This has taken place in a context of government policy directed towards creating a favourable business climate for resource industries.⁹

By law,¹⁰ the Deputy Minister of Energy (responsible for promoting the oil industry) is now the Chair of the three-person OGC Board, and holds the tie-breaking vote.¹¹ Cabinet appoints the other two Board members. Given the province's enthusiasm to promote oil and gas development in B.C., as indicated in the following quotation, it is understandable that the public lacks faith that the OGC is fulfilling its role as a critical "watchdog" over industry activities:¹²

The provincial government aims to double oil and gas production and revitalize mining in British Columbia. These changes are a substantial step in fulfilling our commitment to removing barriers that stand in the way of reaching those goals and to creating single-window authorities for mining, oil and gas and energy.¹³

Landowners and other concerned parties who are affected by current oil and gas activity have not found the OGC sympathetic to their appeals. Affected parties may ask the Commission's Advisory Committee to recommend reconsideration of an approval. To date, the Advisory Committee has considered ten such requests and recommended the OGC reconsider four. In all four of these cases, the OGC proceeded with the original approval.¹⁴

To conclude, given the examples set by other regulatory boards in Canada, it is not reasonable to assume that we will have an "independent" board "at arm's length" from government. In light of these precedents, it is more likely that B.C. will have a government-appointed board, subject to political control.

2.2 Key finding #2:

Independent science, and the precautionary principle are not assured features of Environmental Assessment in British Columbia and Canada, nor are public input or adequate protection of the environment guaranteed.

The Science Panel assumed that science and the precautionary principle, as features of Environmental Assessment, would be used to guide regulatory decisions, ensure the filling of science gaps prior to exploration activity, and result in the protection of the marine environment.¹⁵

Unfortunately, the Canadian experience suggests that even with Environmental Assessment (EA) regimes at both the provincial and federal levels, protection of the environment from project impacts is not assured. There are a number of reasons why this assumption does not bear scrutiny:

- Existing regulations do not require an Environmental Assessment for all offshore oil and gas activities;
- Current provincial and federal Environmental Assessment regulations do not guarantee effective assessments; and,

Landowners and other concerned parties who are affected by current oil and gas activity have not found the OGC sympathetic to their appeals.

- Our track record suggests that rather than taking a precautionary approach, many projects in Canada have been approved even when there is a demonstrated risk of significant environmental harm.

2.2.1 Existing regulations do not require an Environmental Assessment for all offshore oil and gas activities.

Environmental Assessment is not required for all development projects and activities in Canada, but depends on whether the project “triggers” an assessment further to the specific requirements of either federal or provincial EA legislation.

At the federal level, offshore oil and gas projects and approvals now generally trigger the *Canadian Environmental Assessment Act (CEAA)*. However, there is no guarantee that the status quo will continue. For example, exploratory drilling is currently listed in the *Comprehensive Study List Regulation*, which requires both detailed assessments and public participation. However, industry stakeholders are actively lobbying to have this list amended, which would make exploratory drilling subject to a screening,¹⁶ which is far less rigorous and does not ensure public participation. Governments will continue to face industry pressure to make EAs more streamlined and the regulatory environment less stringent.

At the provincial level, the *B.C. Environmental Assessment Act, 2002 (BCEAA)* does **not** require Environmental Assessment of either offshore oil and gas exploration activities, or the decommissioning of an offshore facility.

New offshore oil and gas facilities, and some modifications of existing facilities¹⁷ are listed in B.C.’s *Reviewable Projects Regulation*, making them eligible for an EA. However, under section 10(1)(b) of the new Act, the Executive Director of the program has the discretion to determine that an Environmental Assessment certificate is not required for the project and may order that the project proceed without an assessment.

2.2.2 The current provincial and federal regulatory schemes for EA do not guarantee Effective Assessments.

Even when a project does ultimately require a provincial or federal Environmental Assessment, flaws in the EA system can result in the approval of environmentally damaging projects.

One of the principal weaknesses of EAs in Canada is that they rely to a very large extent on self-assessment. This means that the proponent, not a third party, prepares the assessment of the project and its potential impacts.

For an EA to be effective and fulfil its mandate, the public must be guaranteed an adequate opportunity to scrutinize and comment on the project proposal and all supporting information.

Under the *BCEAA*, public participation is no longer guaranteed. The B.C. government specifically removed the guarantee of public participation in 2002. Under the new *BCEAA*, everything — the scope, procedures and methods of the EA, including whether the public will be consulted — are all left to the discretion of the executive director.¹⁸

At the federal level, under the *CEAA*, while public participation is guaranteed for comprehensive studies, panel reviews and mediations, it is not guaranteed for screenings, which comprise 99.9 percent of federal Environmental Assessments.¹⁹

Even when public participation is afforded by an EA process, however, there is no guarantee that the process will be adequate or that the input will be meaningful. The public and non-governmental organizations frequently lack the capacity and the resources to adequately test industry’s scientific assessment and results. While participant funding is now available for panel reviews, mediations and comprehensive studies under *CEAA*,²⁰ it is chronically under-funded.²¹

Under the new BCEAA, everything — the scope, procedures and methods of the EA, including whether the public will be consulted — are all left to the discretion of the executive director.

Many of the difficulties encountered by the public in the instance of the *Public Review of the Federal Moratorium* are typical of those faced in other EA processes, albeit with some differences. One serious shortcoming in the public participation process is the short notice that is often given. The Science Panel hearings — which gave only three weeks notice between the announcement of the hearings and their start date²² — is a typical example. On such short notice, it is nearly impossible for the public to participate effectively, to gather and present critical and complex scientific and technical information, or to arrange expert testimony that can support their views.

Another significant challenge is funding. In this case, which was intended to function as a Strategic Environmental Assessment, no funding was made available for public participation. Under the *CEAA*, some (limited) funding would be available, if the process were a comprehensive study, a panel review or mediation. This leaves oil industry staff scientists with a distinct advantage in these settings. When industry's scientific assertions are not met with a properly compiled countervailing view, it is hard for the public to feel confident about the conclusions reached in EA processes.²³

A lack of public confidence in the rigour of the EA process is not unfounded. Indeed, in 1998 the federal Commissioner on Environment and Sustainable Development carried out an audit of *CEAA* and found:

In 77 out of 187 projects reviewed by the audit, information on the existing environment was not provided or was too sketchy to allow a reader of the screening report to assess whether the assessment had considered all significant potential environmental effects.²⁴

The auditor concluded that “significant environmental consequences can be overlooked and environmental damage can occur as a result of some of the deficiencies that we have noted in the conduct of screenings.”²⁵

2.2.3 Our track record suggests that rather than taking the precautionary approach, projects have been approved even when there is a demonstrated risk of significant environmental harm.

It is fair to say that once a project is submitted for an EA, it will be approved.

In B.C., every project that has completed an EA has been approved.²⁶

At the federal level, during the first five years of *CEAA*, (1995-2000) of approximately 25,000 projects that underwent EA, 99.9 percent of them were approved.²⁷

According to the rules of *CEAA*, this means the projects were either deemed “not likely to have significant adverse environmental effects,” or the expected negative effects were deemed “justified in the circumstances.” Since we know that modern development goes hand-in-hand with environmental impacts, and that projects with “insignificant impact” are generally excluded from EA review, it strains belief that 99.9% of the projects would actually meet the criteria for approval, thus allowing them to proceed.

The explanation is that the *CEAA* grants the decision-maker a great deal of discretion to allow projects to go ahead. The stated criteria for approving projects are very loose and normative, involving judgments of what is a “significant adverse environmental effect” and what is “justified in the circumstances.”

As David R. Boyd, environmental lawyer, professor and former Executive Director of Sierra Legal Defence Fund, explains:

The vague phrase “justified in the circumstances” gives the government broad discretion to approve environmentally damaging projects and contradicts the Act's commitment to

sustainable development. For example, the federal government allowed the Oldman Dam, the bridge to Prince Edward Island, and the expansion of the Toronto International Airport to proceed, against the recommendations of the EAs for the projects. In 1993, the Liberals promised to “shift decision-making power to an independent Canadian Environmental Assessment Agency, subject to appeal to Cabinet.” This promise was never fulfilled.²⁸

Experience with the federal EA and management of Alberta’s oil sands projects underlines that, contrary to the Science Panel’s assumptions, the practice under the *CEAA* can be to approve now, and figure out how to repair the damage later. Since 1995, a total of nineteen oil sands projects have been proposed, applied for, or approved. A typical project requires the destruction of hundreds of hectares of forest and wetlands and produces large volumes of air and waterborne pollution. The cumulative effects of these projects include acidification of regional water bodies, contamination of fish, eradication of migratory bird habitat, and the creation of huge, polluted “end pit lakes.”

Despite an acknowledged lack of information to evaluate these cumulative effects, federal authorities routinely conclude that the effects are insignificant if the applicant takes “mitigation measures.” These measures have included participation in industry-controlled multi-stakeholder planning processes and proposals to study the problems as they are created.²⁹ This approach allows development to proceed and is a far cry from the precautionary and preventative approach the Science Panel presumes will govern the assessment of offshore activities.

Unfortunately, the courts have not proven to be much help in challenging decisions made under the *CEAA*. While there certainly has been litigation, Canadian courts have been extremely reluctant to interfere with decisions arising out of an administrative process.³⁰ The ability to successfully judicially review a poor EA is very limited, and really only has any chance of success if the process employed was clearly illegal.³¹

The record to date reveals that even when a risk of significant adverse effects has been found, the government has almost inevitably concluded that the project may proceed.

Canada has signed international treaties and passed national laws that mandate the use of the “precautionary principle” An international body of scientists at the Wingspread Conference originally laid out the principle.

Where an activity raises threats of harm to the environment or human health, precautionary measures should be taken even if some cause and effect relationships are not fully established scientifically. In this context the proponent of an activity, rather than the public bears the burden of proof. *Wingspread Statement on the Precautionary Principle 23-25 January 1998*

The Rio Declaration, to which Canada is a signatory, states:

Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation. *Rio Declaration, Principle 15*

After amendments to the *CEAA* in 2003, the “Purposes” section of the Act now clarifies that decision-makers should consider and apply the “precautionary principle” when making their decisions.³² Without any experience with the amendment, or judicial interpretation of its significance, it is impossible to predict what a difference this legislative amendment will make to Environmental Assessment.

2.2.4 Environmental Assessments have additional fundamental flaws.

Extensive experience with the EA process has shown that there are additional problems that undermine the effective assessment of environmentally sensitive developments. These problems will

The ability to successfully judicially review a poor EA is very limited, and really only has any chance of success if the process employed was clearly illegal.

not be illustrated in full in this report. However, there are some weaknesses which are common throughout the EA process, including:³³

- Inadequacy of baseline study data;
- Problems with late, inappropriate or inadequate consultation with First Nations;
- Failure to consider cumulative impacts;
- Problems with the scope of the assessment being too narrow.

2.3 Key finding #3:

"Best practices" are often not employed or offer insufficient protection.

The Science Panel assumed that technological improvements and "best practices" will be employed and will be "sufficiently stringent" to protect the marine environment from oil and gas exploration and operations.³⁴

A complete explanation as to why this assumption does not hold true is provided in Appendix A, due to the technical nature of the information. However, the important overall conclusions are:

- Clearly identified knowledge gaps have not prevented development;
- Canada does not meet globally established best practices on many fronts;
- Known environmental damage is occurring even where best practices have been implemented;
- Regular, chronic discharge and pollution continues, even where the technology exists to prevent them.

"Best practices" implemented often fall short of "best practices" available technologically

2.3.1 Clearly identified knowledge gaps have not prevented development.

Many activities, such as seismic surveying, have been identified as serious potential risks, and still require research to determine their short and long-term effects on marine species. Despite these known risks, best practices in oil and gas development have **not** precluded oil and gas activity from proceeding — with very little in the way of regulatory requirements and safeguards. This is in complete contradiction of the "precautionary principle."

2.3.2 Canada does not meet globally established best practices on many fronts.

Canada does **not** meet "best practices" in the world for regulating exploratory activities, such as seismic surveying, waste discharges from drilling muds, cuttings and produced water, or negative effects from production activities, such as air emissions, noise and light pollution, measurement and reporting of waste discharges, and remote spills detection.

In other jurisdictions, such as OSPAR-signatory countries,³⁵ standards are generally more stringent, and requirements less discretionary than those in Canada. "Best practices" implemented elsewhere often fall short of "best practices" available technologically.³⁶

2.3.3 Known environmental harm is occurring even where best practices have been implemented.

Even when "best practices" are implemented (and they are only implemented when governments force industry to adhere to a higher standard), informed observers have concluded that oil and gas development activities are resulting in known and undetermined harmful effects on the marine environment, marine species and human health.³⁷

In other words, the marine environment has not been adequately protected and the standards are not “sufficiently stringent” to manage the risks responsibly.

2.3.4 Chronic pollution continues even where the technology exists to prevent it.

We have the technology to undertake a nearly “zero discharge” regime, yet we have not had the political will to protect the ocean and to demand that industry operate only if it meets a “zero discharge” standard. As a result, regular, chronic pollution from waste discharges continues, at shockingly high levels: for example, **produced water alone is estimated to be discharged in volumes ten times the volume of hydrocarbon produced.**³⁸

Please see Appendix “A” for a full discussion of these technical issues, conclusions and references.

2.4 Key finding #4:

Monitoring and enforcement programs are likely to be under-funded and insufficient.

The Science Panel assumed that there would be sufficient monitoring and enforcement in place, should the moratorium be lifted.³⁹

Despite the critical nature of monitoring and enforcement to ensure compliance in a results-based system, this assumption can also be shown to be unsupportable in both British Columbia and Canada:

- Enforcement is severely under-funded and short-staffed; and,
- Government cutbacks disproportionately affect those responsible for monitoring and enforcement.

2.4.1 Enforcement is severely under-funded and short-staffed.

There are many examples of this. At the federal level the number of pollution enforcement personnel for the entire country is only 90 individuals, yet an internal audit in 1993 determined that 300 people were required to effectively monitor and enforce the pollution regulations. Considering the number of industries that are managed through pollution regulations, this number is extremely low. In fact, in 1998, Parliament’s Standing Committee on Environment and Sustainable Development concluded that Environment Canada was under-funded and short staffed and therefore unable to enforce the regulations.⁴⁰

The provincial situation is no less worrisome. A confidential internal survey commissioned by the B.C. Ministry of Water Land and Air Protection (MWLAP) and carried out by the Ivey School of Government, University of Western Ontario, came to similar disturbing conclusions about the ministry’s ability to carry out its mission, and in particular, to carry out effective monitoring and enforcement on behalf of the public.

CBC Radio’s *B.C. Almanac* interviewed George Heyman, President of the B.C. Government and Service Employee’s Union after the survey was leaked to the union.⁴¹ During the interview, Mr. Heyman confirmed that a large majority of the union’s members responded with serious concerns about staff levels, resources, the use of good science, and the ministry’s ability to fulfil its basic stewardship mandate.

2.4.2 Government cutbacks disproportionately affect those responsible for monitoring and enforcement.

An April 2004 study entitled *Please Hold. Someone Will Be With You. A report on diminished monitoring and enforcement capacity in the Ministry of Water, Land and Air Protection*⁴² reports that, “[c]ontinued cuts to British Columbia’s beleaguered Ministry of Water, Land and Air

Protection are putting the province further and further behind in protecting the environment and human health...” The report documents that nearly thirty percent of full-time equivalent positions in the Ministry have been eliminated and notes the troubling fact that over a number of years, conservation officer positions have been steadily cut at the same time as government has been moving towards results-based regulation. The report points out that such a system simply cannot work, without the staff to enforce the rules through monitoring and enforcement.

Significantly, the report finds that “some of the steepest cuts” have involved Scientific Technical Officers, who are charged with protecting human health by monitoring polluters. As stated by a former Scientific Technical Officer, Al Spidel:

Most dischargers know that the government doesn't come around anymore. And if there's not someone keeping the playing field level, there's no protection.

At this stage, we simply don't know whether there would be a sufficient monitoring and enforcement system for British Columbia's coast. However, the track record to date indicates a multi-year decline in enforcement capacity, and low staff morale. Given the trend, we should expect that we would not fare any better at instituting enforcement in a complex marine environment.

2.5 Key finding #5:

The *Species At Risk Act* is not a science-determined system with assured protections as the science panel has asserted.

The Science Panel assumed that the *Species At Risk Act* (SARA) will ensure protection of all endangered, threatened and special concern species identified by COSEWIC and there will be protection of these species' critical habitat, through “timely” implementation of endangered species recovery plans.⁴³

This is a very troubling assumption because it fundamentally misrepresents the SARA and suggests a reassuring level of protection that is inaccurate. There are several very important errors in the way the Panel presents the SARA and its potential effects.

- Politics, not science, mandates the inclusion of a species on a list for protection;
- Inclusion of a species on a list does not mean timely and effective protection or timely initiation of a recovery strategy;
- Even when a species is protected, the critical habitat required for survival is not well defined under the act and is subject to political discretion;
- The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) is under-resourced and incapable of assessing, and thus protecting, numerous species — even ones that have been identified as at risk by provincial bodies.

It is worth restating the Science Panel's view of SARA. At page 61 of their Report, they state:

... the *Species At Risk Act* (SARA) is part of Canada's strategy to maintain its biodiversity and protect its wildlife. The Act makes it an offence to “...kill, harm, harass, capture or take an individual of any species listed as extirpated, endangered or threatened...” by COSEWIC. Further, the Act requires the responsible minister (Minister of Fisheries for aquatic species, Minister of the Environment for birds) to develop recovery strategies for those species listed as extirpated, endangered, or threatened, and to develop management plans for species that COSEWIC lists as being of special concern. As part of any recovery strategy, SARA requires that the critical habitat of the species be identified, based on information provided by COSEWIC, or through new studies to identify such habitat in cases where insufficient data currently exist.

“Most dischargers know that the government doesn't come around anymore. And if there's not someone keeping the playing field level, there's no protection.”

Al Spidel,
former Ministry of Water, Land,
and Air Protection scientist

2.5.1 Politics, not science, mandates the inclusion of a species on a list for protection.

The Science Panel's description of how the *Species At Risk Act (SARA)* operates is fundamentally flawed. Further, the error made is not trivial in its effect. The Science Panel has described a system that has a very science-centred philosophy at its core. *SARA*, on the other hand, places key decisions on species protection in the hands of politicians, not scientists.

It is simply not accurate to say that *SARA* protects "species listed...by COSEWIC." While the scientifically based COSEWIC makes assessments of species at risk and delivers this information to the government, it is Cabinet that determines the species that make the Legal List (Schedule 1 of the Act) and which provides the opportunity for application of *SARA*'s protective provisions. Under *SARA*, it is entirely possible for COSEWIC to assess a species as endangered, threatened or of special concern, but for that species to not make the Legal List, or to make the list, but not be granted actual protection under *SARA*.

Similarly, it is not accurate to say that *SARA* requires the development of recovery strategies and action plans for species "that COSEWIC lists"; rather, *SARA* only requires such measures for those species which are listed as "threatened or endangered" on the Legal List. The basic prohibitions against harming a species and its habitat and the prohibitions against damage to critical habitat do not apply to species listed as "Special Concern" under *SARA*. Nor do the recovery provisions apply.

The bottom line in this situation is that the protection provided by *SARA* is not a 'sure thing,' as implied and presented by the Science Panel throughout the Report.

For example, the Science Panel notes that Interior Fraser Coho, Cultus Lake and Saginaw (Sakinaw) Lake sockeye salmon (which travel northward through the Queen Charlotte Basin as juveniles⁴⁴) are listed as "endangered" by COSEWIC. In its discussion of *SARA*, the Science Panel then suggests that COSEWIC-listed species will receive protection from *SARA*.

In fact, however, Cultus Lake and Sakinaw sockeye species have not received Schedule 1 listing as endangered. COSEWIC did recommend an "emergency listing" for the species, but the Minister of the Environment rejected that recommendation. These species have not yet been added to *SARA*'s Legal List — and there is no certainty that they will in fact make the list at all, or receive recovery strategies and action plans under the Act. Thus, the Minister of Environment has effectively downgraded the COSEWIC scientific committee's assessment of the urgency of the situation.

A similar situation exists for the northern bottlenose whale, Scotian Shelf population (assessed as 'Endangered'). The Backgrounder states:⁴⁵

Listing the northern bottlenose whale as endangered could have impacts on a wide range of activities on the Scotian Shelf, **including oil and gas exploration and development**, shipping, and fishing, through the entanglement of whales in fishing gear. Many of the threats to the northern bottlenose whale are poorly understood and therefore require further evaluation with stakeholders over an extended consultation period. As well, industrial activities, such as offshore oil and gas exploration and development, are addressed through the federal environmental assessment process.
(emphasis added)

This process of extended consultation, followed by a discretionary decision by government, is a reminder that, as with the *CEAA* process of EA, science and environmental sustainability do **not** necessarily rule the "protection outcome" for species such as the bottlenose whale. Instead, under both pieces of legislation, other factors — including the needs of industry — are permitted to influence the outcome, which is ultimately a discretionary decision.

The Science Panel's description of how the *Species At Risk Act (SARA)* operates is fundamentally flawed.

2.5.2 Inclusion of a species on a list does not mean timely and effective protection or timely initiation of a recovery strategy.

Some clarification is required regarding the Panel’s assumption that there will be “timely” implementation of recovery strategies and action plans after COSEWIC has identified the species.

From the point in time where COSEWIC identifies a species as being at risk, it takes a significant period of time for a recovery strategy and action plan to be developed and implemented, and for the protective provisions of the Act regarding “critical habitat” to come into effect. First, the government has to decide whether or not to list the species under *SARA*. After receiving a COSEWIC assessment, the minister may take 90 days to make a recommendation to Cabinet. Cabinet may then take nine months to consider what it will do — whether to accept or reject the assessment to list the species, or whether to request more information from COSEWIC. If Cabinet does nothing, the species proceeds to the Legal List.⁴⁶

After a species is on the Legal List, *SARA* specifies deadlines of between one and four years for the development of recovery strategies and action plans.⁴⁷ Then, following the placement of the recovery strategy or action plan on the *CEAA* register, the minister has 180 days to make an order to effectively bring into play the protective provisions for “critical habitat.”⁴⁸

Effective implementation of strategies and plans will depend upon sufficient funding and effective enforcement. It is difficult to predict whether either of these will be in place but the federal government’s capacity for enforcement is weak and has become weaker in recent years.

2.5.3 Even when a species is protected, the critical habitat required for survival is not well defined under *The Act* and is subject to political discretion.

Habitat protection is especially problematic in the *SARA* and this further undermines the certainty of effective protection given by the Science Panel. Critical Habitat is not clearly defined and the decision as to what constitutes habitat protection sufficient for species recovery is subject to political decisions. For example, while it has been shown that science supports a cessation to logging in significantly large areas to protect critical habitat of the spotted owl, listed as endangered by the federal government, the B.C. government has undertaken a plan that allows heavy logging in areas deemed scientifically essential for owl survival and likely to be defined as critical habitat. The B.C. government tends towards the view that only trees within an area actively inhabited by an owl deserve any protection. The currently proposed recovery plan actually allows heavy logging to continue in areas deemed scientifically essential for owl survival.⁴⁹

2.5.4 The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) is under-resourced and incapable of assessing, and thus protecting, numerous species — even ones that have been identified as at risk by provincial bodies.

Finally, even if a species is known to be at risk by provincial agencies it is very unlikely to receive *SARA* protection until it has been assessed by COSEWIC as threatened or endangered and formally listed under the Act; and given COSEWIC’s strained resources,⁵⁰ a COSEWIC assessment may not happen in a timely manner or at all. For example, the B.C. Government has assessed other species in spotted owl habitat in southwestern British Columbia. Of the 22 species identified as endangered, threatened or of special concern, only 11 species have been assessed by COSEWIC. Therefore, only half the species known to science to be at risk are currently likely to receive protection under *SARA*.⁵¹

To conclude, contrary to the Science Panel’s assertions, an assessment or listing of a species by COSEWIC does not necessarily result in a legal listing of the species under *SARA*, or *SARA* protection for the species or its habitat. The process for determining *SARA* protection is political,

This process of extended consultation, followed by a discretionary decision by government, is a reminder that science and environmental sustainability do not necessarily rule the ‘protection outcome’ for species.

and far less certain, than what is described in the Science Panel's Report. Even once a species is legally listed, multiple factors make timely and effective protection unlikely.

Given these clear flaws, the Science Panel's conclusions about species protection, which are based on this erroneous understanding of SARA, should be rejected.

2.6 Key finding #6:

First Nations rights and title claims are complex and must be settled before any activities begin.

The Science Panel assumed that First Nations concerns will be resolved by 2007 — ending the industry uncertainty, and paving the way for offshore development.⁵²

This report makes no attempt to speak on behalf of any First Nation or their goals regarding land and title claims. Nonetheless, it is safe to say that it is exceedingly optimistic to assume that all land claims in the Queen Charlotte Basin will be resolved in two years, by 2007.

Assuming that the end result of any rights or title claims will support or facilitate the exploitation of hydrocarbon resources also seems an unrealistic basis on which to rest important conclusions. This prejudges the outcome of some very serious issues, which have yet to be negotiated or litigated.

Finally, it is not clear that any interim agreement could be reached that would address industry uncertainty. The Haida Nation, for example, is on the record as being in support of the moratorium and is seeking to establish title to the “the land, inland waters, seabed, archipelagic waters, air space and everything contained thereon and therein,” based on thousands of years of occupancy.⁵³

2.7 Key finding #7:

Cook Inlet, Alaska is not a template for an environmentally sound oil and gas industry.

The Science Panel asserted that Cook Inlet, Alaska can be used as a template for monitoring oil and gas activities and their effects on the environment in the Queen Charlotte Basin.⁵⁴

The disastrous Exxon Valdez oil spill had far-reaching effects and continues to impact species, habitat and communities to this day. While this disaster caused some reforms, many serious issues remain for the Cook Inlet offshore industry, and do not inspire emulation. On the contrary, Cook Inlet's experience demonstrates that offshore oil and gas development is fraught with problems and risks for the marine environment and the communities which that environment supports:

- Regulation in the area is weak by global comparison;
- Ecosystem impacts continue as a result of both lawful and unlawful behaviour by industry;
- Enforcement is lax and requires intensive intervention by citizens and environmental NGOs.

2.7.1 Regulation in the area is weak by global comparison.

The regulatory standards on waste discharge in Cook Inlet are the weakest anywhere in the coastal United States, though not dissimilar to standards on Canada's East Coast. As noted in section 2.3, best practices and even legal compliance do not equate to environmental protection, even when at the leading edge of global practices.

...the Science Panel's conclusions about species protection, which are based on this erroneous understanding of SARA, should be rejected.

2.7.2 Ecosystem impacts as a result of both lawful and unlawful behaviour by industry.

Each year, industry legally⁵⁵ dumps huge waste discharges into Cook Inlet — estimated by the U.S. Environmental Protection Agency (EPA) in 1996 at **more than two billion gallons of oily water per year**, equalling **more than 70,000 gallons of crude oil per year**.⁵⁶

In 2003, the EPA found industry guilty of hundreds of permit violations relating to oil and gas operations in the coastal waters of Cook Inlet.⁵⁷ Local watchdog groups charge industry with making repeat violations involving the dumping of oil and waste and a failure to monitor discharges as required by law.⁵⁸

Other ongoing industry practices also place the Inlet at risk:

- “Cook Inlet is the only major port in the nation where laden oil tankers transit rough and icy waters without the aid of tug escorts.”⁵⁹
- A Cook Inlet Keeper study⁶⁰ of the period 1997-2002 revealed pipeline failures and maintenance problems which led to oil and gas spills from pipelines of more than 50,000 gallons per year, occurring on average once per month. A follow-up study of the year 2002-2003⁶¹ showed improvements in the volume and extent of spills, but spills still averaged almost one per month and some companies still showed disproportionately high release rates.

Local citizens allege that the waste discharges are having negative impacts on fish species and on human health. Research shows that toxic heavy metals and other chemicals found in these waste discharges harm salmon and other fish.⁶² They also note that the EPA itself has identified these same pollutants in various Cook Inlet subsistence resources, (fish and shellfish) and that this places local First Nations disproportionately at risk.⁶³

The offshore oil industry in Cook Inlet is expanding, or trying to expand, its operations, including into pristine and even protected areas.⁶⁴ This is increasing the pressure on the Inlet’s ecosystems.

2.7.3 Enforcement is lax and requires intensive intervention by citizens and environmental NGOs.

From a community perspective, it is clear that living with the offshore oil and gas industry in Cook Inlet is anything but tranquil. Communities must remain ever-vigilant in respect of industry activities.

As described in the Science Panel’s report, the Exxon Valdez disaster in 1989 prompted the 1990 passing of the *Oil Pollution Act*, and the subsequent creation of the Exxon Valdez Oil Spill Trustee Council, (EVOSTC) the Cook Inlet Regional Citizens Advisory Council, (CIRCAC) and Alaska’s Cooperatively Implemented Information Management and Monitoring System.

By 1995, it became clear that even the citizen watchdog group, CIRCAC, was not enough to keep the Cook Inlet industry in check with the rules.⁶⁵ In 1995, thousands of violations under the U.S. federal *Clean Water Act* prompted various citizens groups to sue Cook Inlet operators Unocal and others.⁶⁶ Because of the seriousness of the allegations, the EPA joined the litigation.⁶⁷ The suit was settled, with terms of the settlement stipulating that Unocal would pay \$140,000 to the federal government, and a further \$499,000 as start-up funding for Cook Inlet Keeper⁶⁸ — a member-supported, non-governmental organization dedicated to monitoring and protecting Cook Inlet.

Unfortunately, even with all of these appointed and self-appointed watchdogs and the alleged “coordination” of industry and the public, industry has failed to become a voluntary “good neighbour.” The self-appointed watchdogs must still resort to the tool of litigation to challenge industry behaviour and regulatory failings. The Cook Inlet Keeper’s website reveals several references to litigation commenced in respect of alleged violations by industry, inadequate standards and law enforcement activities by government, and failures by government to protect against identified risks. Recent examples include:

The regulatory standards on waste discharge in Cook Inlet are the weakest anywhere in the coastal United States...

- April 7, 2004 — Trustees for Alaska, on behalf of Cook Inlet Keeper and others, filed a petition to the EPA regarding repeated violations by Unocal, and requested that the EPA revoke Unocal’s “general permit” to discharge and put them under more restrictive “individual discharge permits”. The petition also alleged a disproportionate effect of the pollution on tribes by endangering their subsistence foods, contrary to President Clinton’s Executive Order 12898 on environmental justice
- August 27, 2003 — Cook Inlet Keeper filed intent to sue for hundreds of alleged violations of the *Clean Water Act*, which Cook Inlet Keeper alleged the EPA failed to diligently prosecute. The press release describing the suit alleged that the *Clean Water Act*’s “self-policing” mechanism had critically broken down, noting that inaccurate reports were filed, reports were revised years after the fact, and the EPA lost reports⁶⁹
- 1998 — Cook Inlet Keeper sued the Department of Natural Resources, the parent agency of the Alaska Division of Oil and Gas, because the Division of Oil and Gas failed to acknowledge the Federal National Marine Fisheries Service’s recommended deletion of 68 tracts for lease, due to “declining Cook Inlet beluga whale populations and conflicts of oil development with important beluga habitat.”⁷⁰

Only two criminal environmental inspectors police the entire state of Alaska, including Cook Inlet.⁷¹ This leaves the system of self-reporting and self-policing prone to breakdown. Ultimately, it leaves the community-based, non-profit organizations to monitor and lead the way on important environmental enforcement.

To conclude, the Cook Inlet experience demonstrates that the environmental impacts and much of the burden and costs of monitoring the offshore industry fall on the community and ordinary citizens. To use this as a template for monitoring oil and gas activities in B.C. is particularly problematic.

The system of self-reporting and self-policing is prone to breakdown. Ultimately, the community-based, non-profit organizations are left to monitor and lead the way on important environmental enforcement.

3.0 Conclusion

To conclude, by resting all of its conclusions on ill-founded assumptions about the regulatory framework, the Science Panel's Report strays from scientific opinion about science gaps into assumptions and analysis that fall down under scrutiny.

As has been illustrated, the Report is rife with problematic assumptions about the regulatory system. The assumptions about risk assessment and precaution, for example, overlook real weaknesses under the *CEAA*. The assumptions about "best practices" and a competent regulatory regime disregard the fact that Canada frequently fails to meet best practices, and that even "best practices" can damage the marine environment. The Report does not address the fact that results-based regulation is undermined by insufficient monitoring and enforcement, or that the extensive title claims by First Nations will likely take more than a few years to resolve. Using Cook Inlet as a desirable template conveniently overlooks some very serious ongoing problems and issues, including the social strife evident from the repeated use of litigation.

Perhaps most disturbing of all, the Science Panel's assumptions and assertions that describe how the *Species At Risk Act* works are, with respect, simply wrong. These serious misapprehensions regarding the way species protection law works in Canada make it impossible to trust any of the Science Panel's conclusions about species protection in the event of offshore oil and gas development. The Panel's critical misunderstanding of how *SARA* works taints all of the Panel's conclusions.

Our marine environment and coastal communities have much to lose, should we proceed with oil and gas exploration based on the assumption that our regulatory framework will take care of the risks. Currently, comparable regulatory frameworks are **not** sufficient, and every safeguard is not in place to ensure that the science gaps, known and unknown will be addressed.

Experience shows that the regulatory system we might realistically expect falls far short of one that would adequately protect the marine environment and the life and communities that it supports.

Given the serious flaws in the Science Panel's assumptions, the ongoing uncertainties with regulation, the clearly identified science gaps and the known environmental costs of coastal oil and gas activity, this report concludes that the only responsible course is to maintain the existing moratorium on oil and gas activity and tanker traffic in the Queen Charlotte Basin.

...the [Science Panel's] Report is rife with problematic assumptions about the regulatory system.

Appendix “A”

Detailed discussion

2.3a Key finding #3:

“Best Practices” are often not employed or offer insufficient protection.

The Science Panel assumed that technological improvements and “best practices” will be employed and will be “sufficiently stringent” to protect the marine environment from oil and gas exploration and operations.⁷²

These assumptions overlook some important facts:

- (a) Canada’s regulatory track record indicates that it often does not follow global “best practices” for oil and gas operations; and
- (b) Even with “best practices”, the marine environment is not adequately protected.

Below is a discussion of how Canada compares with other regulatory systems in dealing with the variety of environmental impacts associated with offshore oil and gas exploration and production activities, and what this means for the environment.

2.3.1a Exploration activities.

(i) Seismic:

Scientific opinion suggests that seismic surveys are proceeding around the world without adequate investigation or knowledge into the short-term and long-term effects of the surveys on marine life.⁷³ Some of the concerns raised include:⁷⁴

- Killing or injury of fish — lethal effects, rupturing of swim bladders of anadromous fish, hemorrhaging of eyes, stunning, tissue damage;
- Noise impacts on fish and marine mammals — hearing loss, behavioural changes, changes in migration routes, changes in feeding patterns or breeding/spawning activities;
- Masking of communication calls;
- Reports of deaths of whales and dolphins near where seismic testing was done;
- Reports of reductions of catches or effects on catchability;
- Unknown effects on shellfish species such as sponges, and other benthic and pelagic organisms;
- Unknown whether repeated seismic testing would cause a species to permanently leave an area;
- Questions still outstanding about whether observed effects are of short or long-term duration, and over the kind and extent of effects.

Rather than addressing these environmental and ecological concerns, however, the Canadian regulations⁷⁵ governing seismic surveying are very much focused on the testing of equipment and on avoiding accidents while workers are on board the vessel. For example, the only clear reference to the environment in the Newfoundland regulations is that the operator must “inform the Chief Conservation Officer and the Chief Safety Officer immediately, by the most rapid and practical means, of any serious accident or incident that occurs during a geophysical operation and that causes injury to or loss of life of any person, or damage to property, or that constitutes a threat to the environment.”⁷⁶

The regulations do not set any enforceable standards on noise levels, or on the protection of mammals or other marine life, which means that when permits for seismic surveying are granted, whether to impose conditions to address environmental concerns, and what conditions to impose, are decisions left up to the Board’s discretion.⁷⁷

A condition that is sometimes imposed on seismic activities is a requirement to have a “fisheries liaison observer” on board the vessel;⁷⁸ though whether such a person can effectively “monitor” damage to fish, larvae or mammals occurring below the surface and which will become evident only days, months or years into the future, is extremely questionable. It is notable, however, that in Norway, the condition is not discretionary but is prescribed by regulation: vessels carrying out seismic surveys are required to have a fisheries expert on board, to act in an advisory capacity and to keep a log.⁷⁹ Also, in recent announcements of new awards on predefined areas of the Norwegian Continental Shelf, Norway is requiring licensees to map possible coral reefs in the awarded blocks, and to ensure that coral reefs will not be damaged by petroleum activities.⁸⁰

In June 2003, *CEAA* listed seismic surveying in the Inclusion List Regulations, which means that an EA in the nature of a screening — the least rigorous kind of EA under *CEAA* — is now required before seismic surveying can proceed.

Proceeding without first conducting adequate research to fill the knowledge gaps violates the precautionary principle.

2.3.2a Production activities — waste discharges into the ocean.

(i) Drilling muds and cuttings:

The technology exists both to re-inject drilling muds and cuttings, and to transport them back to shore for treatment and injection, whether the muds are water-based (WBMs), synthetic-based (SBMs) or oil-based (OBMs). In fact, in the United States it is illegal to discharge any drilling fluids or cuttings within three miles of shore — except in Alaska.⁸¹

Despite these technological advances, it is still legal, both in Canada and in many other parts of the world, to discharge most⁸² kinds of muds and cuttings into the ocean, after treatment to reduce the quantity of oil.

In Canada and elsewhere, water-based muds and cuttings are regularly discharged to sea. In Canada, no treatment is required; in OSPAR-signatory countries,⁸³ the oil content of the fluid after treatment is required to be less than one percent.

Jonathan Wills, M.A., Ph.D., M.Inst.Pet., writer, environmental consultant and frequent speaker at conferences on oil and gas and the environment, concluded that the regular discharge of WBMs and cuttings poses problems for ocean ecosystems; is not well researched; and that the precautionary principle should apply:

Despite being less noxious than OBMs and SBMs, WBMs have ecological effects that may be more serious, widespread and prolonged than some industry sources would suggest. In particular, the effects of underwater plumes of extremely fine particles are not properly understood and may damage larval stages of commercial fish and shellfish.⁸⁴

In a study carried out by Peter Cranford et al. on the effects of both WBM and OBM waste discharges, all the drilling wastes tested were characterized as slightly toxic to non-toxic. However, the researchers still found that these same wastes can significantly affect somatic and reproductive tissue growth, and survival of adult scallops (*P. magellanicus*) at concentrations that were three to five orders of magnitude lower than the acute lethal concentrations.⁸⁵

Cranford, et al.'s, research on the impacts of drilling muds (including WBMs) on the Georges Bank concludes that the effects of drilling wastes are dependent upon a large number of factors including the type of waste discharge properties, physical oceanographic setting and the time of year. Their research found that some discharge conditions may be acceptable at one location but not at another.⁸⁶

For synthetic and enhanced mineral oil-based muds (EMOBMs), the Canada-Newfoundland Offshore Petroleum Board (CNOBP) and Canada-Nova Scotia Offshore Petroleum Board (CNSOPB) prefer operators to re-inject their drill cuttings; but, the Offshore Waste Treatment Guidelines do not insist that operators follow this practice:

Where re-injection of drill solids associated with SBM or EMOBM is not technically or **economically feasible**, the solids may be discharged at the drill site provided they are treated prior to discharge with best available treatment technology. At the time of publication of these Guidelines best available technology in some offshore regions internationally is believed to be capable of achieving a concentration of 6.9 g/100 g or less oil on wet solids.⁸⁷ (emphasis added)

(The oblique reference to “some offshore regions internationally” is interesting, since in OSPAR signatory countries, drill cuttings after cleaning must be no more than 1% oil by weight — not 6.9% by weight. As of 2001, the U.S. EPA limit was 6.9%.)

It is interesting to note that effective January 1, 2000, the CNSOPB tried imposing a 1% oil by weight limit on hydrocarbon-based drill cuttings,⁸⁸ (a stricter requirement than the 15 percent oil by weight limit that was then required under the *Offshore Waste Treatment Guidelines*) yet by October 2001 the CNSOPB was granting industry exemptions to its new policy, to a standard of 6.9% oil by weight. When the Offshore Waste Treatment Guidelines were revised in 2002, its limit was changed to 6.9%, officially bringing both Nova Scotia and Newfoundland in line with that standard.

To conclude, Canada is falling deliberately short of global best practices with regard to drilling muds and cuttings.

(ii) Produced water:

Produced water “includes formation water, injection water and process water that is extracted along with oil and gas during petroleum production.”⁸⁹

According to Wills, the “[t]echnology...exists (and is almost universally used onshore) to re-inject almost all produced water — and also, to clean it to much higher standards than currently apply, in practice, on European and North American offshore oilfields.”⁹⁰ Wills says that this zero-discharge regime can be achieved technologically and economically using modern re-injection, recycling and “closed-loop” drilling and waste treatment/disposal systems.⁹¹

Despite the availability of zero-discharge technology for produced water, in Canada under the CNSOPB and CNOBP Offshore Waste Treatment Guidelines, produced water may be discharged following treatment onsite. There are two standards for produced water oil content — one for existing installations and one for new installations:

- For existing installations, the 30-day weighted average of oil content should not exceed 40 mg/l and the 24-hour arithmetic average should not exceed 60 mg/l
- For new installations, the 30 day weighted average limit is 30 mg/l and the 24-hour arithmetic average is 60 mg/l.⁹²

The standard in Europe under the OSPAR standard is similar. The limit is currently at 40 ppm oil:water content, but a 2001 review includes a plan to move to a 30 mg/l limit within four years.⁹³

Typical discharge rates for produced water are shockingly high. According to a Canadian study:

...Over the life of the producing field, **the quantity of discharge can be typically 10 times as high as the volume of hydrocarbons produced.** Models of the produced water discharge tend to predict that produced water will be rapidly diluted and dispersed when discharged into the ocean, however, **real data with which to corroborate these assertions are scant.**⁹⁴
(emphasis added)

If we consider the “predicted” “recoverable” volumes of hydrocarbons for the Queen Charlotte Basin reported by the Science Panel — some 1.3 billion barrels of oil and some 9.8 trillion cubic feet of gas⁹⁵ — this means that the amount of produced water that would be discharged would be **ten times that amount.** This represents enormous quantities of polluted water entering the Basin.

According to Jonathan Wills,

Produced water from oil and gas installations can be a significant source of chronic oil pollution and usually also contains heavy metals, low-level radioactivity, traces of drilling fluid additives and poly-aromatic hydrocarbons. Its toxicity to sealife is proven and should be of at least equal concern to WBM-contaminated drill cuttings.⁹⁶

(iii) Conclusions on waste discharges:

There are two primary conclusions to be reached about waste discharges.

Firstly, the technology exists for the industry to operate on a zero discharge basis, yet Canada and the rest of the world continue to allow regular pollution discharge into the marine environment. The “best practices” in the North Atlantic resulted in only 29% of the 560 offshore installations in OSPAR waters practicing zero discharge operations.⁹⁷

Secondly, the concerns that are held in respect of waste discharges include not only local toxic effects but also cumulative effects over time. Concerns which merit scientific study include rises in overall water and species toxicity levels, smothering of benthic species, oiling of birds, mammals and other wildlife, acute and cumulative effects on human food fish and shellfish stocks, perception of tainting of commercial fish stocks, and so on.

In the Report on the Review of the Georges Bank Moratorium, after reviewing the science and arguments associated with waste discharges, the Panel commented:

Presentations from the petroleum industry were based on assumption that used muds and cuttings would be discharged from the rig into the marine environment, but the possibility was raised that they could be disposed of remotely, either offshore or onshore. This is not a regulatory requirement.

Alternative perspectives on whether the risks are acceptable, or not, arise where uncertainties are prominent. For drilling wastes discharged from a rig on or near Georges, the probability that significant, harmful effects would occur cannot be discounted.⁹⁸

If we consider the “predicted” “recoverable” volumes of hydrocarbons for the Queen Charlotte Basin reported by the Science Panel - some 1.3 billion barrels of oil and some 9.8 trillion cubic feet of gas – this means that the amount of produced water that would be discharged would be **ten times that amount.** This represents enormous quantities of polluted water entering the Basin.

2.3.3a Production activities — air emissions.

According to a group of Canadian researchers looking at the risks of environmental impacts:

In addition to marine discharges, air emissions are coming under increasing scrutiny. Emissions of gases associated with the production of oil and with refining operations are a cause of concern at the local and at the global level. Flaring or venting of associated natural gas, including methane and other light hydrocarbons, is a major contributor to the build up of greenhouse gases directly linked with global warming problems. The adverse impacts of global warming are expected to have a particularly marked effect on the environment.⁹⁹

Despite this concern, and the fact that diesel fuel is commonly burned as a source of power for offshore facilities,¹⁰⁰ the Canadian Offshore Waste Treatment Guidelines do not set any hard emissions standards on the air emissions resulting from flaring or other burning of fossil fuels on the offshore installation.

According to the Guidelines, operators must estimate the quantities of greenhouse gases that are produced, provide a plan for their control and reduction, and report on their emissions each year. The Guidelines also stipulate that annual reporting is to be done to the Chief Conservation Officer with “estimates and calculations...in accordance with CAPP’s [the Canadian Association of Petroleum Producers’] *Global Climate Change Voluntary Challenge Guide*”.¹⁰¹

Experience indicates that a voluntary approach to reducing greenhouse gas emissions does not work. In a 2000 report, the Pembina Institute for Appropriate Development evaluated the effectiveness of Canada’s Voluntary Challenge and Registry Program (VCR), established in 1995 to facilitate industry sectors voluntarily reporting on GHG emissions and progress in reducing those emissions. The report concluded that emissions from companies registered in the VCR were on average rising at the same rate as emissions from companies outside the program, and oil and gas production and distribution companies participating in the VCR showed the highest rate of emission increases as compared to other industrial sectors. The voluntary approach to greenhouse gas emission reduction, the authors conclude, has therefore been “wholly ineffective,” reinforcing the conclusion that “voluntary measures are wholly insufficient to meet Canada’s climate change challenge.”¹⁰²

The lack of legal standards means that there is no means to enforce emissions targets. In light of Canada’s commitments under the Kyoto Protocol, emissions standards should be set to govern the Canadian offshore industry.

Norway uses economic incentives to address the problem. Further to specific legislation, Norway charges tax on discharges of CO₂ in petroleum activities on its continental shelf, creating a measurable incentive for industry to reduce pollution levels.¹⁰³

2.3.4a Production activities — noise and light pollution from drill rigs.

Although the Newfoundland Offshore Area Petroleum Production and Conservation Regulations do require operators to prepare an environmental protection plan “that provides for the protection of the natural environment,” there is no specific mention in the regulation of the need to address noise and light pollution. Given that these sources of pollution have both known and unknown effects on seabirds, seals, fish and other marine species,¹⁰⁴ the regulations do not reflect the current “best knowledge” on these known impacts.

2.3.5a Production activities — measurement and reporting of waste discharges.

Norway demands extremely detailed measuring and reporting, in a prescribed format, of all waste discharges, with the exception of substances on OSPAR’s List of Substances/Preparations Used and Discharged Offshore which Are Considered to Pose Little or No Risk to the

Produced water from oil and gas installations can be a significant source of chronic oil pollution and usually also contains heavy metals, low-level radioactivity, traces of drilling fluid additives and poly-aromatic hydrocarbons. Its toxicity to sealife is proven and should be of at least equal concern to WBM-contaminated drill cuttings.

Environment. (PLONOR List) The government then uses the results to verify the performance of the treatment system.¹⁰⁵

In Canada, the requirements are not prescribed, are far less stringent, and appear only to be required if it is “practicable.”¹⁰⁶ There is no suggestion that the results of the measurements are used for verification purposes in Canada.

Based on the foregoing, Canada is once again not meeting “best practices.”

2.3.6a Production activities — remote spills detection.

Both the UK and Norway have systems in place for remotely monitoring pollution such as oil spills. In accordance with the Bonn Agreement, the UK makes unannounced aerial overflights and reports that “[t]he total amount of oil observed was just under 2 tonnes from just over 41 separate detections.”¹⁰⁷

Based on the scope of the research, which was extensive, though not exhaustive, Canada does not have a similar system of remote monitoring in place.

Endnotes

- ¹ By Susan Rutherford, LL.B., B.A.(H.) The author, the David Suzuki Foundation and Living Oceans Society gratefully acknowledge the financial support of West Coast Environmental Law's Environmental Dispute Resolution Fund. Acknowledgements and thanks are also extended to Tim Howard and Karen Campbell, who each provided insights and assistance. The author has endeavoured to avoid errors or omissions; any which remain are hers alone.
- ² *The Royal Society of Canada Report of the Expert Panel on Science Issues Related to Oil and Gas Activities, Offshore British Columbia*, page xix, Royal Society of Canada, February 2004.
- ³ Report, pp. 37, xix and 121 respectively.
- ⁴ E.g.: "It is assumed that a regulatory board would be set up at arm's length from government and industry to ensure safe and environmentally responsible development, using current best practice." (Report p. 114)
- ⁵ See *infra*. Section 2.6
- ⁶ *Reference Re: Ownership of Offshore Mineral Rights (British Columbia)*, [1967] S.C.R. 792, and *Reference Re: Ownership of the Bed of the Strait of Georgia and Related Areas*, [1984]1 S.C.R. 388.
- ⁷ Notably, these are the ministers responsible for resource development, not the ministers responsible for the environment.
- ⁸ E.g. Canada-Nova Scotia Offshore Petroleum Resources Accord, at Articles 13, 14, 16 and 17.
- ⁹ B.C. Government News Release, April 17, 2002 REFORMS TO REVITALIZE MINING, OIL AND GAS INDUSTRIES Online: www2.news.gov.bc.ca/nrm_news_releases/2002EM0005-000177.htm; accessed May 2004.
- ¹⁰ Oil and Gas Commission Act, S.B.C. 1998, c. 39, section 2.
- ¹¹ "Bill 36 Primer" Vancouver: West Coast Environmental Law, 2002, Online: www.wcel.org/wcelpub/wrapper.cfm?docURL=http://www.wcel.org/wcelpub/2002/14043.html; accessed 01 May 2004.
- ¹² West Coast Environmental Law and others, "Oil and Gas in British Columbia: 10 Steps to Responsible Development", at page 10.
- ¹³ *Ibid.* B.C. Government News Release, April 17 2004
- ¹⁴ *Ibid.* West Coast Environmental Law and others p. 9.
- ¹⁵ Report: "3.12 Assumptions for the Queen Charlotte Basin...." "Implementation of regulations and design should be guided by the precautionary approach as stated in section 3.6 above." (pp. 37-8); "In engineering design and in risk assessments that are carried out as part of the development process, it is assumed that the precautionary approach would be used, essentially a question of erring on the side of caution." (at p. 113); "It has become accepted practice to use the 'precautionary principle' in assessments of the risk of potential future activities." (p. 3); [Describing their approach to the precautionary approach], "The present approach is summarized in two points: (a) assessment of all relevant impacts and associated uncertainties; and (b) assessment of whether the current state of scientific knowledge permits one to proceed to the next step, bearing in mind where appropriate that further assessments are to be made....In the context of the second point, the regulatory regime is all-important (see Section 3.8 in which the Safety Case is discussed). Risks must be assessed and decisions made in such a way that the weight of the decision favours safety...." (pp. 32-33) See also "Conclusion 1" and supporting text at pp. 121-22
- ¹⁶ Personal communication with Karen Campbell, referring to activities in the CEAA Agency's Regulatory Advisory Committee's Subcommittee on the EA of Offshore Oil and Gas Activities.
- ¹⁷ Those the "executive director has determined that the modification has the potential to result in a significant adverse environmental, economic, social, heritage or health effect". See Reviewable Projects Regulation, Table 8 - Petroleum and Natural Gas Projects.
- ¹⁸ B.C. *Environmental Assessment Act*, S.B.C. 2002, c. 43, at s. 11.
- ¹⁹ David R. Boyd, *Unnatural Law: Rethinking Canadian Environmental Law and Policy* (Vancouver: UBC Press, 2003), at pp. 152-53
- ²⁰ Public participation funding was added pursuant to amendments made in 2003. Authority for funding is set out in *Canadian Environmental Assessment Act*, S.C. 1992, c. 37, at s. 58(1.1)
- ²¹ Susan Rutherford and Karen Campbell, "Time Well Spent? A Survey of Public Participation in Federal Environmental Assessment Panels (Vancouver: West Coast Environmental Law, 2004), at pp. 11-12.
- ²² The Royal Society of Canada press release dated September 23, 2003, announcing the hearings starting October 15, 2003.
- ²³ Karen Campbell, "Will the Law Protect the B.C. Coast?" Oral Presentation, Vancouver, February 27, 2004.
- ²⁴ Commissioner of the Environment and Sustainable Development (1998, 6-17), quoted in Boyd, *Unnatural Law*, *supra*. at p. 154.
- ²⁵ *Ibid.*
- ²⁶ *Ibid.*, at p. 155.
- ²⁷ Boyd, *Unnatural Law*, *supra*. at p. 151.
- ²⁸ Boyd, *Unnatural Law*, *supra*. at p. 153.
- ²⁹ The largest of these is the Cumulative Environment Management Association, a multi-stakeholder consensus-based group with majority industry membership. The size of CEMA's budget is controlled by industry, and as it slowly grapples with the challenge of cumulative effects, development proceeds. In oil sands development, the assessment and mitigation of cumulative environmental effects literally occurs after the projects are approved and operating.
- ³⁰ E.g., *Alberta Wilderness Society v. Express Pipelines Ltd.*, [1996] SCJ no. 1016 (F.C.A.)
- ³¹ Boyd, *Unnatural Law*, *supra*. at p. 161.
- ³² Canadian Environmental Assessment Act, S.C. 1992, c. 37 as amended, at s. 4.
- ³³ E.g. Susan Rutherford and Karen Campbell, "Time Well Spent?", *supra*.
- ³⁴ E.g. Report: "Best practices would be employed in all aspects of oil and gas development. These are continually improving and will be advanced further from the present state of the art by the time activities such as oil or gas production are likely to commence in the QCB." (at p. xiii); "We assume that regulation of discharges of muds and cuttings in the QCB would be at least as stringent as those in place for offshore oil and gas activities elsewhere in the world." (at p. xiv); "We have enumerated the science gaps that would need to be filled before each phase of activities commences. We have stated the consequences of not filling those gaps - potentially safety built into the design of facilities, which could lead to the activity being non-economic, or prohibition of the activity until risks are better defined by acquisition of new knowledge. A third possibility - of activity being pursued and then being found harmful - is unlikely if the regulatory regime is sufficiently stringent." (at pp. x-xi) See also pp. x, 114, 115, 121, and 122.

- ³⁵ Countries which are party to the Convention for the Protection of the Marine Environment of the North-East Atlantic ("OSPAR Convention"): Belgium, Denmark, the Commission of the European Communities, Finland, France, Germany, Iceland, Ireland, the Netherlands, Norway, Portugal, Spain, Sweden and the United Kingdom of Great Britain and Northern Ireland) and by Luxembourg and Switzerland
- ³⁶ Appendix "A" for a full discussion of these technical issues, conclusions and references.
- ³⁷ E.g. the discussion in Appendix "A" regarding concerns around the negative ecological impacts of seismic testing, and oil, drilling mud and produced water discharges.
- ³⁸ Rehan Sadiq, Brian Veitch Christopher Williams, Vanessa Pennell, Haibo Niu, Bo Worakanok, Kelly Hawboldt, Tahir Husain, Neil Bose, Mukhtasor, and Cynthia Coles, "An integrated approach to environmental decision-making for offshore oil and gas operations" (Canada - Brazil Oil and Gas HSE Seminar and Workshop, March 11-12, 2002), at pp. 2-3; posted online at <http://www.cormix.info/pdf/Veitch.pdf>
- ³⁹ E.g. Report: "The preferable approach is based on the Safety Case (objective-based or goal-setting regulation) with prescription where needed, in other words, a judicious mixture of prescriptive and objective-based regulation. To implement this, the requirements for regulators are demanding. Sharp (2000) of the HSE states that "The expertise of regulator and duty-holder staff is critically important to the standards of control actually achieved." Objective-based regulation places the responsibility for resolution of issues and development of solutions on the developer whose activity causes the risk." (at p. 38); "Monitoring is usually undertaken to meet one of two objectives: (a) to ensure compliance with regulations..." (at p. 82); "Coordination of citizen's groups with stakeholders in industry and government is of value in monitoring industry performance, and its plans for future development. Public education and environmental monitoring, together with readily available information sources are key to thesis process..." (at p. 112); "For consideration of any possible oil and gas activities in the region, it is assumed that a competent regulatory regime is in place..." (at p. 37)
- ⁴⁰ Boyd, at p. 204.
- ⁴¹ CBC Vancouver *B.C. Almanac* interview with Mark Forsythe, April 21, 2004.
- ⁴² (Vancouver: West Coast Environmental Law, 2004)
- ⁴³ Report p. 61 reproduced this page; and "The Panel assumes that Recovery Plans will be implemented in a timely fashion, resulting in critical habitat being identified and protected. This will reinforce the requirements of regulation prior to commencement of oil and gas activities." (at p. xii)
- ⁴⁴ Report, p. 55.
- ⁴⁵ Background, "Extended Listing Process for 12 Aquatic Species The *Species At Risk Act* (SARA). Online: www.dfo-mpo.gc.ca/media/backgrou/2004/sara_e.htm; accessed 25 April 2004
- ⁴⁶ *Species At Risk Act*, section 27(3).
- ⁴⁷ *Species At Risk Act*, section 42.
- ⁴⁸ That protection of critical habitat is delayed until the recovery process has been put into place is clear from the fact that "critical habitat" under SARA is defined as the "critical habitat" identified in a recovery strategy or action plan: see *Species At Risk Act*, s. 58 and Kate Smallwood, *A Guide to Canada's Species At Risk Act* (Vancouver: Sierra Legal Defence Fund, May 2003), at p. 29.
- ⁴⁹ Hodum, P. and Harrison, S. (University of California-Davis), *Ecological Assessment of the British Columbia Spotted Owl Management Plan*. Report submitted to B.C. Spotted Owl Recovery Team, 1997.
- ⁵⁰ Auditor General of Canada, 2001 *Report of the Commissioner of the Environment and Sustainable Development* Chapter 1, Section 5.2.30
- ⁵¹ Yezerinac, S and F. Moola, *Conservation status and threats to species associated with spotted owls: a new flagship fleet for British Columbia. in review*. Conservation and Society 2004.
- ⁵² The Report, at p. 5 indicates a timeline that shows for 2004-2007 "Establish regulatory regime; strategic environmental assessment; land claims issues settled." The Report states, "The Expert Panel considers the following time line to be tight and realistic, provided land claims issues and ownership of offshore resources are settled within two years, and significant discoveries are made within a year of initial drilling." See also p. 114.
- ⁵³ Mark Hume, "B.C. offers Haida control of 20 percent of islands" (*Globe and Mail*, September 4, 2003)
- ⁵⁴ Report, p. 106.
- ⁵⁵ Alaskan coastal waters (waters within 3 miles of shore) including Cook Inlet are the only location in the United States where existing oil platforms may lawfully discharge produced water and other toxic drilling wastes directly into coastal waters: 61 Fed Reg 66086, 66101 (Dec. 16, 1996)
- ⁵⁶ EPA estimates quoted from Cook Inlet Keeper, "Oil and Gas Zoom", Online: www.inletkeeper.org/oilgaszoom.htm; accessed 30 April 2004.
- ⁵⁷ April 7, 2004 Petition by Trustees for Alaska to U.S. EPA, which refers to the EPA's 2003 levying of \$531,875 in penalties against Unocal's Cook Inlet facilities for 736 permit violations, and an additional \$118,875 in penalties for violations at Unocal's King Salmon Platform.
- ⁵⁸ April 7, 2004 Petition by Trustees for Alaska to U.S. EPA - see text *infra*.
- ⁵⁹ Cook Inlet Keeper, "Action Alert". Online: www.inletkeeper.org/ACTION%20ALERT/action_alert.htm; accessed 1 May, 2004.
- ⁶⁰ Lois Epstein, R.E., *Lurking Below: Oil and Gas Pipeline Problems in the Cook Inlet Watershed* (Cook Inlet Keeper, 2002 (updated to 2004)), Online: www.inletkeeper.org; accessed 27 April 2004.
- ⁶¹ Online: www.inletkeeper.org/whatsnew.htm; accessed 27 April 2004.
- ⁶² April 7, 2004 Petition by Trustees for Alaska to U.S. EPA, at p. 7 - see text *infra*. The studies relied are: Heintz, R.A., S.D. Rice, A.C. Wertheimer, R.F. Bradshaw, F.P. Thrower, J.E. Joyce, and J.W. Short. 2000. *Delayed effects on growth and marine survival of pink salmon *Oncorhynchus gorbuscha* after exposure to crude oil during embryonic development*. Mar. Ecol. Prog. Ser. 208: 205-216; Heinz, R.A., J.W. Short and S.D. Rice. 1998. *Sensitivity of Fish Embryos to Weathered Crude Oil: Part II. Increased Mortality of Pink Salmon (*Oncorhynchus gorbuscha*) Embryos Incubating Downstream from Weathered Exxon Valdez Oil Spill*. Environmental Toxicol. And Chem. 18(3): 494-503; Meier, S., Anderson, T.E., Hasselberg, L., Kjesbu, O.S., Klunsoyr, J. and Svardal, A. *Hormonal effects of C4-C7 alkylphenols on cod (*Gadus morhua*)*. 2001. Norway Institute of Marine Research.
- ⁶³ *Ibid*. The EPA study relied on is EPA, Office of Water. 2001. *Human Exposure Evaluation of Chemical Contaminants in Seafoods Collected in the Vicinity of Tyonek, Port Graham and Nanwalek in Cook Inlet, Alaska*. (EPA-910-R-01-003).
- ⁶⁴ The Cook Inlet Keeper reports that the Bush/Cheney Administration plans to increase oil and gas production in Lower Cook Inlet especially, with the offering of 2.5 million acres of waters for lease: see "Action Alert" Online: inletkeeper.org/ACTION%20ALERT/action_alert.htm; accessed 1 May, 2004.
- ⁶⁵ A notable feature of CIRCAC is that while it is funded by the oil industry, its funding must be renegotiated every two years and is not secure. This dependency may make CIRCAC reluctant to be as critical as it might otherwise be. (Personal communication with Cook Inlet Keeper rep.)
- ⁶⁶ Cook Inlet Keeper press release: "Unocal under Fire for Dumping Violations in Cook Inlet Fisheries." (August 27, 2003), Online: www.inletkeeper.org; accessed 26 April 2004.
- ⁶⁷ *Ibid*.
- ⁶⁸ *Ibid*.
- ⁶⁹ Cook Inlet Keeper press release: "Unocal under Fire for Dumping Violations in Cook Inlet Fisheries." (August 27, 2003). Online: www.inletkeeper.org; accessed 03 May 2004.
- ⁷⁰ "Beluga Whales and the Cook Inlet Areawide Oil and Gas Lease Sale" (Cook Inlet Keeper website, Online: www.inletkeeper.org/belugatr.htm; accessed 28 April 2004.
- ⁷¹ Personal communication with Cook Inlet Keeper.
- ⁷² E.g. Report: "Best practices would be employed in all aspects of oil and gas development. These are continually improving and will be advanced further from the present state of the art by the time activities such as oil or gas production are likely to commence in the QCB." (at p. xiii); "We assume that regulation of discharges of muds and cuttings in the QCB would be at least as stringent as those in place for offshore oil and gas activities elsewhere in the world." (at p. xiv); "We have enumerated the science gaps that would need to be filled before each phase of activities commences. We have stated the consequences of not filling those gaps - potentially safety built into the design of facilities, which could lead to the activity being non-economic, or prohibition of

the activity until risks are better defined by acquisition of new knowledge. A third possibility - of activity being pursued and then being found harmful - is unlikely if the regulatory regime is sufficiently stringent." (at pp. x-xi) See also pp. x, 114, 115, 121, and 122.

⁷³ For example, in November 2003 the CNSOPB made headlines when it permitted seismic surveying to proceed off the sensitive and rich fishery coast of Cape Breton Island, contrary to scientific advice from Fisheries and Oceans Canada scientists and university scientists that the surveys ought not to proceed until further research could be done to ascertain the potential impacts of the proposed surveys on important populations of snow crab, other shellfish, fish species, dolphins and unique whale populations. See e.g. Canadian Press, "Scientists worried about sonar testing for oil," *Globe and Mail*, November 13, 2003; Steve Proctor and Eva Hoare, "Board OKs offshore seismic tests - Fishermen, scientists, ecologists slam decision," *The Halifax Herald*, November 29, 2003; Kevin Cox, "Halifax firm wins right to seismic tests", *Globe and Mail.com*, Friday November 28, 2003.

⁷⁴ E.g., LGL Limited Environmental Research Associates and Griffiths Muecke Associates, "Proceedings of a Workshop to Develop Methodologies for Conducting Research on the Effects of Seismic Exploration on the Canadian East Coast Fishery, Halifax, Nova Scotia, 7-8 September 2000" (Calgary: Environmental Studies Research Funds, 2001); CEF Consultants Limited, "Exploring for Offshore Oil and Gas", Number 2 of a series of papers on energy and the offshore (Halifax: CEF Consultants Limited, November, 1998), Online: www.cnsopb.ns.ca/Generalinfo/exploringoilgas.html; accessed 04 May 2004. Jacques Whitford Environment Limited, *Strategic Environmental Assessment Laurentian SubBasin* (St. John's, Newfoundland: November 14, 2003), Online: www.cnsopb.ns.ca/Environment/SeaLaurentian2004.pdf; accessed 28 April 2004.) Canadian Press, "Scientists worried about sonar testing for oil", *Globe and Mail*, November 13, 2003.

⁷⁵ See e.g. Newfoundland Offshore Area Petroleum Geophysical Operations Regulations. Nova Scotia has similar regulations.

⁷⁶ Newfoundland Offshore Area Petroleum Geophysical Operations Regulations, at s. 27.

⁷⁷ Nova Scotia had a 1998 policy extended to the 1999 season, which required a "fisheries liaison observer... ideally also experienced in observing marine mammals and seabirds", to liaise with fishermen and also be on board during the survey to try to "further reduce the likelihood of conflicts at sea", (Online: www.cnsopb.ns.ca/Environment/evironment.html; accessed April 26 2004.) but there is no indication on the CNSOPB website that this policy is still in force; similarly, there is no posting of such a policy in Newfoundland. For the permit granted in 2003 to carry out seismic surveying off of Cape Breton, the CNSOPB imposed the following conditions:

- A fisheries observer and marine mammal biologist to be onboard the seismic vessel

- Work must be done at least 10 km away from the low water mark
- Seismic work to be halted if a whale is sighted within one kilometer of the ship
- A 30-minute "ramp-up" period [gradually increasing the intensity of the sound source] prior to testing.

The Board ruled that the proponent's participation and contribution to a research project fulfilled a condition requiring an environmental effects monitoring program. (See Canada-Nova Scotia Offshore Petroleum Board News Release, "Board Issues Geophysical Program Authorization", Online: www.cnsopb.ns.ca/Whatsnew/News/CorridorApplication112803.html; accessed 24 April 2004.

⁷⁸ E.g., conditions on the recent CNSOPB decision to allow Corridor to proceed with seismic surveying off the coast of Cape Breton: *supra*, note 29.

⁷⁹ Regulations Relating to Resource Management in the Petroleum Activities (Resource Management Regulations), 18 June 2001, The Norwegian Petroleum Directorate, at ss. 5, 6 and 21.

⁸⁰ Norwegian Petroleum Directorate, "Awards in Predefined Areas - Norwegian Continental Shelf, 2003" ("Conditions relating to environmental concerns and fishery interests - conditions for the award") (2003), Online: www.npd.no/NR/rdonlyres/ey7z3fsv57fpxsy6nug7l66z27eq7nesmcrdkd637biud1tb6ecvoej6evxe6co7ib2kexv42g22adfce4noqflgce/tfo_2003_br osjyre_engelsk.pdf; accessed 16 April 2004.

⁸¹ Wills, "Muddied Waters" (2000), www.offshore-environment.com/drillingwastecontents.html . Chapter 4 "The Law on Offshore Wastes Discharges in Different Jurisdictions - United States".

⁸² Except oil based muds and cuttings.

⁸³ Countries which are party to the Convention for the Protection of the Marine Environment of the North-East Atlantic ("OSPAR Convention"): Belgium, Denmark, the Commission of the European Communities, Finland, France, Germany, Iceland, Ireland, the Netherlands, Norway, Portugal, Spain, Sweden and the United Kingdom of Great Britain and Northern Ireland) and by Luxembourg and Switzerland.

⁸⁴ Wills, at Chapter 2, "Summary of Conclusions."

⁸⁵ Cranford, P., D. Gordon Jr., K. Lee, S. Armsworthy, G. Tremblay (1999), "Chronic toxicity and physical disturbance effects of water- and oil-based drilling fluids and some major constituents on adult sea scallops (*Placopecten magellanicus*)," *Marine Environmental Research* 48:225-256. See also Peter J. Cranford, Donald C. Gordon Jr., Charles G. Hannah, John W. Loder, Timothy G. Milligan, D.K. Muschenheim and Y. Shen, "Modelling potential effects of petroleum exploration drilling on northeastern Georges Bank scallop stocks", *Ecological Modelling* 166 (2003):19-39.

⁸⁶ T.G. Milligan, D.C. Gordon, D. Belliveau, Y. Chen, P.J. Cranford, C. Hannah, J. Loder, D.K. Muschenheim, 1996, "Fate and Effects of Offshore Hydrocarbon Drilling Waste," Online: www.mar.dfo-mpo.gc.ca/science/review/1996/Milligan/Milligan_e.html; accessed 20 April 2004.

⁸⁷ Offshore Waste Treatment Guidelines (August 2002), at p. 7

⁸⁸ CNSOPB Policy on Discharge of Oil-Based Muds, effective January 1, 2000.

⁸⁹ Waste Treatment Guidelines, p. 4.

⁹⁰ Wills, at Chapter 2, "Summary of Conclusions."

⁹¹ *Ibid*.

⁹² Waste Treatment Guidelines, p. 4.

⁹³ Wills, *supra*., at Chapter 4, "The Law on Offshore Wastes Discharges in Different Jurisdictions - The OSPAR Convention"; and Sadiq et al, *supra*.

⁹⁴ Sadiq et al, *supra*., at pp. 2-3.

⁹⁵ Science Panel Report, at p. 14.

⁹⁶ Wills, *supra*., at Chapter 2, "Summary of Conclusions".

⁹⁷ 1998 data from Wills, *supra*., at Chapter 4, "The Law on Offshore Wastes Discharges in Different Jurisdictions - The OSPAR Convention"

⁹⁸ The Georges Bank Review Panel Report (June 1999), at p. 35.

⁹⁹ Sadiq et al, *supra*., at p. 3.

¹⁰⁰ Personal communication with Cook Inlet Keeper.

¹⁰¹ The CAPP Guide can be ordered from CAPP at a cost of \$85 for non-members: for brief information on the Guide see Online: www.capp.ca/?V_DOC_ID=763&PubID=25024; accessed April 2004.

¹⁰² Robert Hornung and Matthew Bramley, *Five Years of Failure: Federal and Provincial Government Inaction on Climate Change During a Period of Rising Industrial Emissions* (Calgary: Pembina Institute for Appropriate Development, March 2000) at pp. 7 - 11 (quotes are from p. 11). Online: www.pembina.org/publications_item.asp?id=3; accessed 26 May 2004.

¹⁰³ Act 21 December 1990 No. 72 relating to tax on discharge of CO₂ in the petroleum activities on the continental shelf. Last amended by Act 20 December 1996 no 100 (Norway).

¹⁰⁴ E.g., CEF Consultants Limited, "Exploring for Offshore Oil and Gas", Number 2 of a series of papers on energy and the offshore (Halifax: CEF Consultants Limited, November, 1998). Online: www.cnsopb.ns.ca/Generalinfo/exploringoilgas.html; accessed 27 April 2004.

¹⁰⁵ Regulations Relating to Conduct of Activities in the Petroleum Activities (The Activities Regulations), 3 September 2001, Petroleum Safety Authority Norway, Norwegian Pollution Control Authority and Norwegian Social and Health Directorate, at section 61 and Appendix 2: Requirements Regarding the Use and Discharge of Chemicals in the Petroleum Industry on the Norwegian Continental Shelf.

¹⁰⁶ Waste Treatment Guidelines, 2002, at p. 12.

¹⁰⁷ Online: www.og.dti.gov.uk/environment/as.htm; accessed 04 May 2004.



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