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3. The provinces must assist seismic operators in limiting the redundant, pointless, and expensive imposed research, and studies coming from DFO as a condition of doing work. Redundant studies must be eliminated. No studies should be conducted without a contract to protect the seismic operator from losses, abuse, and undue delay without compensation (abuse occurred in the 2003 Cape Breton program). All study objectives, methods, and preliminary findings should be openly shared and created in consultation with seismic operators (which has been withheld from GSI). The DFO initiative relating to national standards indicates that significant research and costs will be imposed on seismic operators in what we view as an attempt to stop all exploration and development altogether.

4. The provinces need to pressure DFO and the Canadian Environmental Assessment Agency to exclude seismic from the existing Canadian Environmental Assessment Act Panel Review process that was intended for major long duration projects such as mines, pipelines, all with significant lasting environmental impacts, of which seismic has none. This process only serves to kill projects, or at the very least add 18 month delays, and seven figure costs to the project, allowing only large projects to be justified.

5. With regard to seismic as a necessity to the discovery of more oil and gas reserves for Canada, the federal Government should employ the "Precautionary Principle" towards a Canadian Energy Security plan to eliminate the overlapping, inconsistent, and dramatic growth in regulatory cost, lead times, uncertainty, and barriers. Environmentalists and government environmentalists although well intentioned will force Canada to burn Coal and turn to Nuclear power (Ontario energy plan) which will result in far more serious pollution and is the source of mercury in fish. This can have serious impacts on the already troubled fishing industries in the ocean provinces and territories. Well intentioned ideas, resulting in more regulation, trampling provincial rights, without understanding are not what Canada needs.

6. Provinces need to ask that Redundant Environmental Assessments be eliminated. Strategic or Regional Environmental Assessments should reduce the "work" and content by 90% for a permit application. GSI has had to undertake several redundant Environmental Assessments in each given area each year, because it is part of the process, no matter that it has already been well covered ground. This serves up a gauntlet for ENGO, government, and some scientists with vested interests in more study, or an agenda to stop resource development, to gang up on an applicant, demanding ever greater mitigations, restrictions, costs, delays, and studies for each seismic permit application.

7. Provinces and regulators need to be aware of the divide and conquer strategy Sierra Club/ DFO has been employing to add unusual, sometimes costly, mitigations, and environmental effects monitoring, to unknowing usually oil company applicants to raise the bar for successive programs. This has to be put in check by the offshore petroleum boards, NEB, and provinces taking a more active defensive posture in these areas. The result is a ratcheting up of costs, and unnecessary burdens that do nothing for the environment, while DFO allows the obvious harassment of whales through comparatively unregulated whale watching, presides over the destruction of fish habitat by allowing

bottom dragging, and manages fish species after fish species into threatened and endangered status because of the unsustainable quotas it sets, and management system employed. All three of these violate Canada's existing laws, but Seismic is the focus for them!

8. Provinces and regulators must prohibit DFO from regulatory delays that end projects and impose unfair losses on seismic applicants. This DFO delay strategy was employed in 2002 and 2003 in the Gulf of St. Lawrence, on the CASSIS project to occur offshore BC, and the Cape Breton projects to mention a few. Timelines for DFO comment to the provinces/ offshore boards need to be reduced, and strictly enforced.

9. For all the importance of this industry to Canadians and our way of life, or at least a smooth transition to a different way of life, Canadians deserve good governance that must demand that these processes change and that the media circus and the few left wing voices put in the spotlight, do not destroy the hard work, billions of dollars, and jobs that comprise the offshore oil and gas industry. These efforts have imposed huge inefficient costs with little apparent benefit for the environment due to seismic and drilling having the highest standards relative to any other offshore user. British Columbia, Nova Scotia, and Newfoundland & Labrador are increasingly benefiting from the economic opportunities in energy. The provinces need to support and protect the vulnerable and financially troubled Canadian seismic industry or the later economic development will surely not occur.

If you wish to understand my position in more detail, I have attached a short paper (ATTACHMENT 1) that explains more behind the rational of each of the recommendations herein.

I am confident that with more understanding and information, good policy decisions can be made. But first we must have an understanding of:

1. Current Canadian, US, and world energy supply and demand forecasts.
2. The fact that Canada is the most energy intensive country in the G8 or OECD countries per capita, per unit of GDP, and per unit of industrial output. (i.e. energy is important to Canada!)
3. The current status of Canadian environmental policy failures and new well intentioned but misguided initiatives.
4. An unwritten federal policy to shut down offshore exploration for the cleanest fuels known, ignoring the impacts of the only realistic options, coal and nuclear or a unwise reliance on Middle East oil and gas.
5. Seismic impacts relative to other more critical but oddly enough unregulated or significantly less regulated impacts (whale watching, fishing).

SPECIFIC COMMENTS REGARDING BAPE REPORT:

In summary I have the following comments:

1. Had the commission read the \$500,000 GSI 2003 Gulf of St. Lawrence Environmental Assessment many of the opinions and recommendations would not have been made as they are already considered or are part of the federal process in all offshore areas including Quebec.
2. Many of the opinions and recommendations are reflective of the biased regulation pursued by Fisheries and Oceans (DFO) regional office in Quebec. If noise is important, then all noise should be treated the same, or prioritized to those that have the largest impact based upon duration, frequency, incidence, and proximity. Currently there exists an unjustified focus on Seismic noise and Seismic impacts, essentially ignoring all other impacts.
3. Many conclusions are taken out of context and lack an understanding of other impacts that are more prevalent and frequent (shipping, fishing, whale watching). Examples in the report include the impacts to invertebrates and plankton which are assessed by experts as insignificant, but the commission not unlike DFO attempts to make more of this. For example, no focus or study occurs when DFO quotas decimate a fish species which endangered whales use as a food source, and this is a human impact that can be easily quantified and controlled, unlike the potential impacts of seismic that cannot be observed or measured because it is impossible to prove a negative (i.e. that there is no impact).
4. The public perception is that no process is in place to protect the environment. This is far from the truth, because Canada is the most over-regulated and difficult country in the world to work in for our industry. Our activity is overseen by 24 regulatory agencies with many duplicated and overlapping layers of regulations, guidelines and rules. The Smart Regulation initiative identified the Environmental Assessment process and Offshore oil and Gas regulation as two significant problem areas in Canada, with significant confusion, duplication, overlap, and uncertainty. Our industry has the highest standards to meet offshore and GSI meets all, and exceeds many of those standards.
5. Quebec needs to plan now to ensure that clean natural gas reserves in the province are an option for political or public policy. Especially since Kyoto has been ratified this will become more important to the Quebec and Canadian economy. Federal legislation new to our industry such as the Oceans Act, the Canadian Environmental Assessment Act, and the Species at Risk act along with the many initiatives under these Acts being pursued by DFO will probably prohibit any offshore energy security plan Quebec may want to pursue, should it choose to do so. Current initiatives by DFO to implement national seismic standards, if implemented, will effectively prohibit most (85%) offshore seismic in Canada.
6. GSI will soon try one more time in the Gulf of St. Lawrence to provide Quebec with the seismic information necessary to make an informed decision regarding

the future potential for any clean natural gas reserves. We hope that Quebec will support a fair and reasonable process to conduct our research.

Detailed comments to the BAPE report are attached. (ATTACHEMENT 2)

DFO NATIONAL SEISMIC STANDARDS INITIATIVE SPECIFIC COMMENTS

I have attached a letter drafted by GSI and sent by the CAGC (Canadian Association of Geophysical Contractors) to various government heads to provide more detail for your consideration and understanding. (ATTACHEMENT 3)

ADVICE AND COMMENTS:

Regarding Quebec policy related to energy I would suggest that Quebec maintain all of its options regarding energy security of supply.

A. Ensure that the federal government and in particular DFO or Environment Canada do not prohibit Quebec's rights to control and manage oil and gas exploration and development.

B. Make sure that Quebec engages DFO and Environment Canada regional offices located in Quebec regarding your objectives, opinions, and expectations.

C. Designate a group within the Natural Resources Department to manage and regulate offshore exploration and development such that DFO and Environment Canada are expert advisors only (ensure Quebec gets at least the same process as occurs with CNOPB and CNSOPB).

D. There are well known geologic trends that are prolific for hydrocarbons that passes through Quebec. The potential for clean hydrocarbon resources exists and there are many more qualified earth scientists to attest to this fact than I. But seismic exploration is the only realistic opportunity to determine the potential.

E. GSI acquired the most exploration 2D data in the Gulf, and elsewhere offshore Canada. GSI acquired the first marine 3D's in the world and in offshore Canada. GSI invented the air source array which was an environmentally sound replacement for explosives. GSI is the largest owner of seismic data in the Canadian offshore areas. GSI is the only Canadian company with a Canadian flagged seismic research vessel in the world. We are most qualified to work in Quebec, we understand the sensitive issues, we understand the latest mitigations and science regarding potential impacts to marine life, we understand the geology, and we know all of the Canadian and foreign explorers.

F. GSI can provide the most efficient way, with the least impacts, to obtain seismic information for Quebec to understand the Gulf's potential for clean energy resources. This information is absolutely necessary so that an informed decision can be made

regarding any future development projects and energy security policies for Quebec. The seismic research can also provide important information for mineral/mining reserves, and the potential for earthquake hazards by imaging the geometry of geologic beds, and fault lines which can be used by scientists and engineers from various other disciplines.

If I can provide further information or elaborate on any of my points herein please advise and I will do so.

Yours truly,
Geophysical Service Incorporated

H. Paul Einarsson
Chairman, COO

ATTACHMENT 1

Environmental Regulation of Seismic offshore Canada

By Paul Einarsson
Geophysical Service Incorporated
Adopted from a paper given on

May 18, 2004

Insight North East Oil And Gas Summit
Halifax, NS



Agenda:

I. Why are environmental regulations and their implementation important to you, to the province, and to Canada?

II. What is the current situation?

III. Specific regulation examples and issues from the front line

IV. Proposed solutions

I. Why are environmental regulations and their implementation important to you, to the province, and to Canada?

I will try to provide a framework for general understanding of the importance of energy, and the potential risks we face as a country if Canada and each province do not put a very high importance on maintaining energy security of supply.

Some Statistics may help:

1. Canada is consistently the largest energy user per dollar of Economic Output (Energy/GDP Ratio) as well as per person (Energy/per Capita Ratio) among G7 countries since 1970.¹ Canada's economy is based upon energy intensive industries including Chemicals, Petroleum, Paper and Pulp, manufacturing, and Primary metals. To avoid serious shocks to the economy the Canadian government must ensure that Canadians have the energy supply security we depend upon for the bulk of our economic output. Canada should be expanding and diversifying its supplies, and promoting competitive markets and sound public policies in energy. This is a totally different issue from utilizing more renewable energy or to have government policy incentives and initiatives to become more efficient and cleaner on the demand/consumption side. I agree Canada should look at these issues and new technologies that will change our dependence upon traditional fossil fuels, or make Canada more a more efficient consumer on a per capita basis or per unit of output basis. But this is not enough, we still must ensure adequate supplies of the cleanest fuels we have and that is natural gas and oil.

2. Canada's per capita consumption of:

- A. electricity is - third
- B. coal is - eighth
- C. natural gas - sixth
- D. nuclear power - eleventh
- E. oil production -thirteenth
- F. motor vehicle production - second

Canada is a very industrialized nation with an energy export and manufacturing dependant economy. Canadians maintain a high level of income and standard of living due to abundant and relatively cheap energy.²

How is Canada performing on environmental issues?

Again some statistics may help:

1. Marine Areas under protection – second
2. Area under protection % - fourth
3. Endangered Species Protection – twenty four
4. Environmental Agreement Compliance – thirteenth
5. Species at risk- twenty second
6. Fish Catch 43% decline since 1980, and 73% decline since 1990. Clear evidence of over-fishing, pollution, and habitat destruction.

Canada it appears is a leader in putting areas off limits, but a laggard in implementing current Canadian environmental laws, and international agreements, the substance that can make a much more significant difference.³

Other measures of how we score on the environment relative to OECD countries on a per capita basis:

1. CO2 production - second highest
2. Water use – second
3. Volatile Organic Compounds Emissions per capita and total- second
4. Hazardous Waste- fourth
5. Nuclear waste- first
6. Sulphur dioxide – second
7. Greenhouse gas – third
8. Overall Rank – second to last

Because Canada has an energy intensive economy one would expect some of these measures to be relatively high, but clearly Canada is not clean in terms of a per capita basis or unit of output basis as compared to G7 or OECD countries. Canada just started moving sulphur levels downward in fuels to meet US standards which should be complete in the next year. Canada appears clean only because of a small population over a large land mass allowing for significant dilution and dispersion, certainly not by any higher standards, or real performance on the environment. Canada can do more to make manufacturing more efficient, and to increase anti-pollution measures technologies and enforcement of existing laws without shutting down industries that have no contribution to the problem.⁴

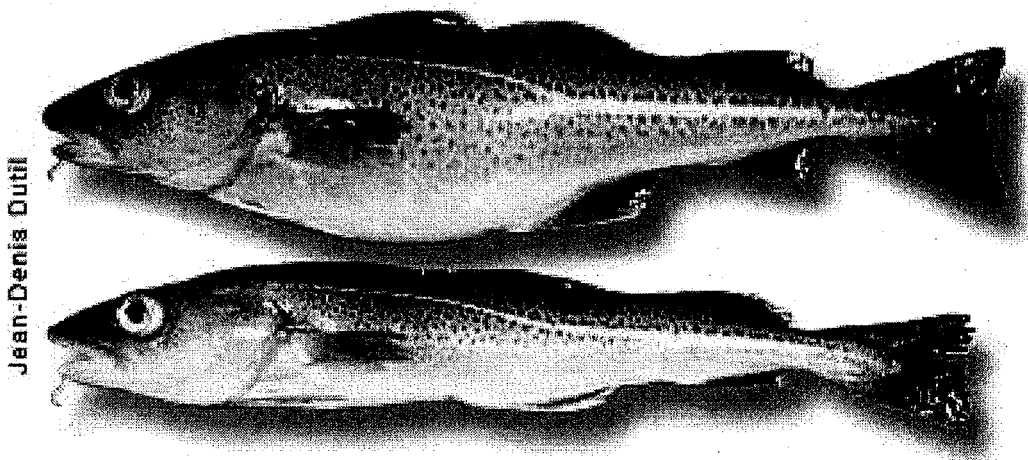
The economy and the government:

1. Fully 91% of Canada's exports of oil, natural gas, uranium, and electricity go to our number one customer the United States.⁵
2. In Canada, oil and gas contributes directly 45% of Canada's trade balance.
3. Newfoundland is leading the country in economic growth (13% p.a.) largely on the back of oil and gas. Oil and Gas contribute (16% provincial GDP) \$280 million directly to the NFLD economy as compared to \$210 million for fishing. Oil and Gas has a higher direct payroll and employs more persons directly (1,780). Oil and Gas account for 7% of provincial GDP in Nova Scotia, and natural gas exports were greater than the value of fish exports.⁶

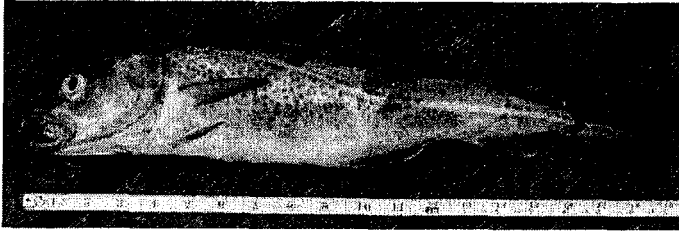
Energy and refined products are the largest export products for NWT, Alberta, Nova Scotia, and Newfoundland & Labrador, making this industry vitally important to these provinces specifically.

Specific Information to measure offshore environmental performance:

Despite moratoriums on Cod the species is not rebounding, and very unusual skinny and misshapen Cod are becoming the norm.

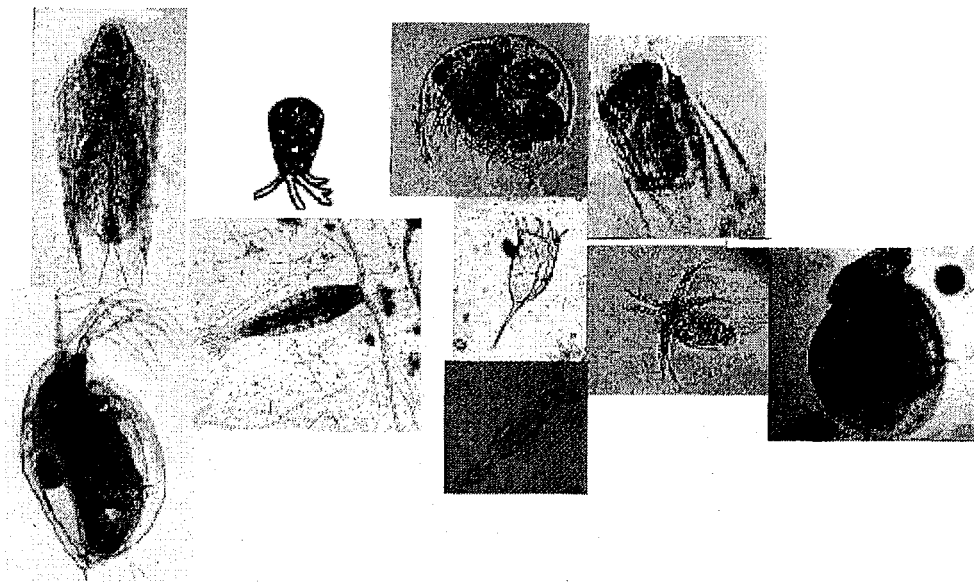


***A healthy cod and one that has been starved
for three months in the laboratory
The condition of the laboratory subject resembles
that of Gulf of St. Lawrence cod caught during
the spring fisheries in the mid-1990s***



Atlantic Salmon, Redfish, Cod, Herring, Capelin, Dogfish, Haddock, Hake, Pollock, Flounder, Halibut, Skate, Monkfish, Striped Bass, Eels....all show problems and words like low weight at age, age at maturity, low fat content, lower growth rates, landings are down, recruitment is low, abundance down substantially are used to describe their status. Over fishing appears to not only have affected the targeted species but the ecosystem in general.⁷

What impact does the fishing crisis and average smaller size of these species have on the diets of endangered Beluga and Killer whales at the top of the food chain? No one is looking at this.



The Plankton Paradox is a very puzzling situation brought forth that shows a sharp drop in zooplankton in Canada and a sharp increase in phytoplankton. Many species rely upon zooplankton and krill as the foundation for the food chain in the ocean including the large baleen whales Canada is trying to protect, and the prey and juveniles of commercial fish stocks that appear to not be recovering even after moratoriums are in place. The hypothesis offered by DFO is that the presence of fewer zooplanktons is because of an increase in the numbers of predators such as herring feeding on them. The other more scary option is that zooplankton production has decreased for some reason and is supported by the starved condition of cod that would normally be eating all the supposedly plentiful species that eat zooplankton and krill.⁸

DFO clearly has its hands full with many very complex issues, in all fairness, many of which are caused by factors outside of its control/jurisdiction. It appears that everything is linked and an understanding of one factor in isolation is not possible without the daunting task of understanding the interconnected ecosystem web. Understanding through science and then taking steps to make changes while pursuing a course of precautionary moderation in ecotourism and fisheries seems like the direction the Canadian government should take for the benefit of fishermen, Canada, the provinces, and other ocean users such as oil and gas exploration. More importantly Canada needs leadership to incorporate environmental concerns into the very important necessity for energy security. This is perhaps the greatest challenge Canada will face in the next few years. So far the federal government has earned an "F" in understanding let alone managing these issues.

Although there are many excellent papers written on energy demand and supply, such as a presentation provided by Dr. James Buckee President and CEO of Talisman Energy at the 2003 Global Business Forum and the US DOE Energy Information Administration "International Energy Outlook annual reports, which I will not try to recreate here, I think it is important to cover some highlights on the subject to underscore the importance of offshore seismic to Canada.

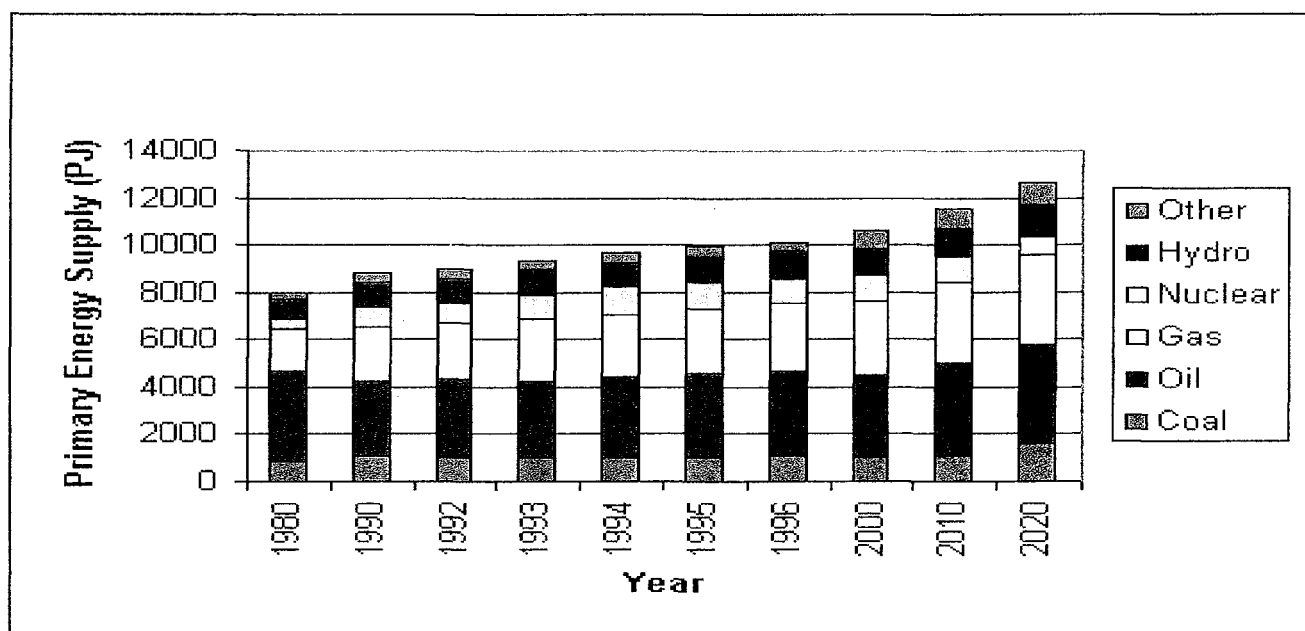
Energy Demand:

1. Energy demand is expected to increase 39% between 2002 and 2025 in the United States⁹
2. **Canadian** Energy Demand is predicted to increase 33% from 1997 to 2025 even with the inclusion of optimistic assumptions about efficiency and technology gains.¹⁰
3. In a 1999 NEB publication "Canadian Energy Supply and Demand to 2025" \$14 and \$22 US per barrel is considered the "sustainable" range....otherwise our economy suffers and a greater portion of income goes to energy, but supply should increase to meet demand and prices should move downward? This assumes that OPEC, gaining each year a larger and larger share of world supply, will be content with oil in this "sustainable" price range.
4. World energy demand is expected to rise by 54% from 2004 to 2024, primarily in fast growing economies like China and India.¹¹
5. Energy demand in developing countries is expected to rise 91 percent over the next twenty years, while rising an average of 33 percent in industrialized nations. Electricity demand is expected to almost double in the next two decades.¹²

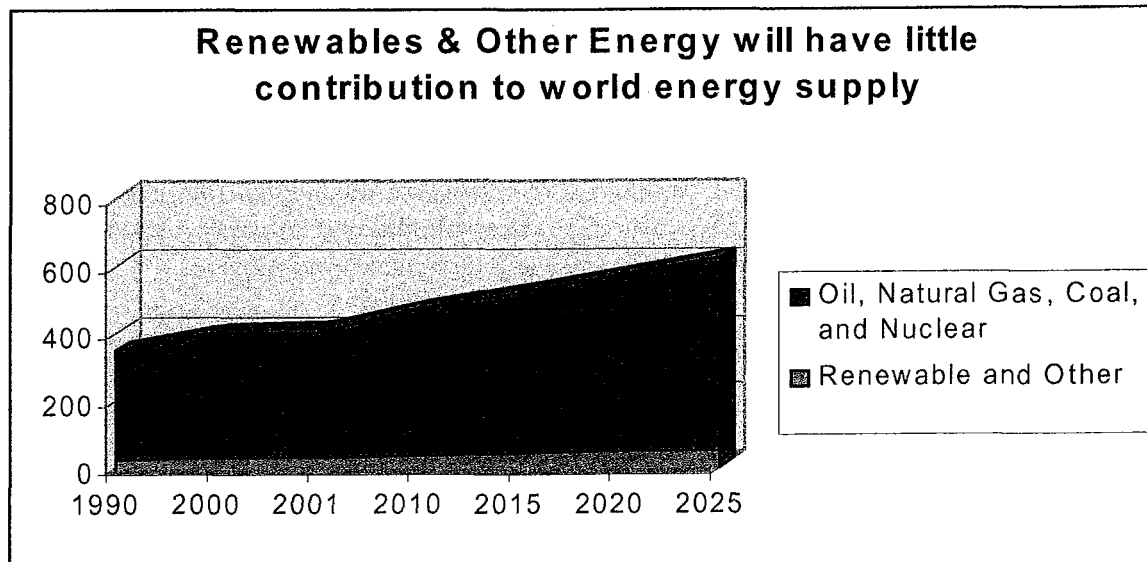
These figures assume the Kyoto Protocol is not ratified, otherwise the issues will most likely be exaggerated with more industrial production going to developing countries where higher emission and lower environmental standards exist, which will result in a net increase in pollution at a tremendous economic cost to industrialized nations.

Energy Supply:

1. Conventional Light Crude has been and will decline at a rate of 4% per year in Canada¹³
2. Canadian Supply and Demand curves for Natural Gas meet in 2025. (Assumes Mackenzie Delta Gas ties in by 2010!).¹⁴
3. The world currently consumes 27 billion barrels of oil per year, as of January 1, 1996 total proven and undiscovered reserves are 853 billion barrels for OPEC, and 769 for non-OPEC or a total of 1,622 billion barrels that if no growth in consumption occurred would last about 60 years.¹⁵
4. At current rates of world consumption growth, non-OPEC production will peak between 2010 and 2018 leaving OPEC in greater control each year thereafter.
5. Looking at severe downward reserve estimates at Sable Island, the expiry of up to 24 parcels in the next two years, and the put on hold Panuke project shows we have real problems starting to emerge in Nova Scotia and it is well past time to take notice and immediate action.



16



Source: Extracted from US DOE Energy Information Administration International Energy Outlook 2004 p.165 Units are Quadrillion BTU's

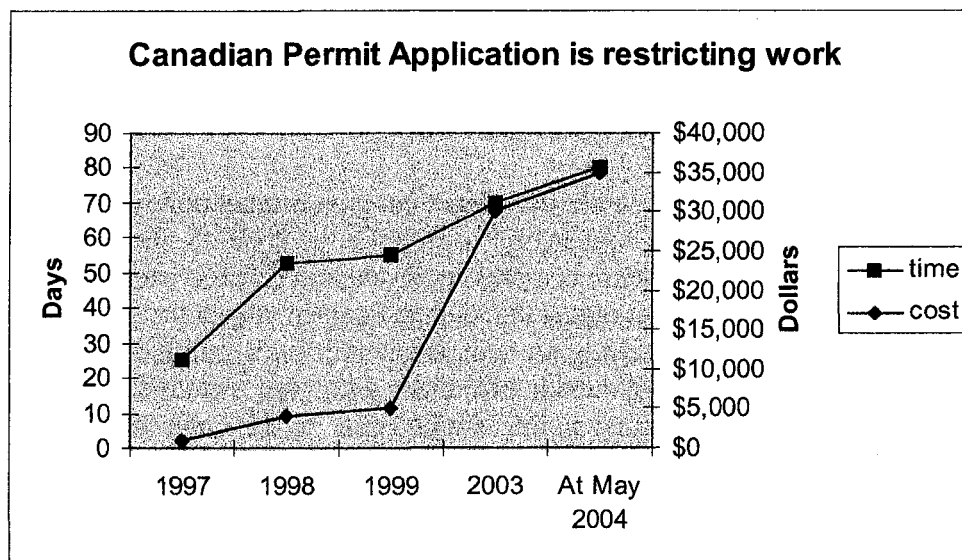
Even with double digit annual growth in solar and wind energy production that will only satisfy less than half of one percent of energy demand in 2020.¹⁷

Clearly world demand will increase substantially. Canadian government policy written or unwritten must not abandon conventional energy sources on the hope of other technologies or to force change before there is a proven, tested and reliable alternative. The world is not running out of oil yet, it is just that demand is growing so fast, new discoveries and replacing reserves are getting more expensive/difficult, and the ownership of oil and gas is consolidating outside of Canada and North America reducing our security and increasing our dependence on the Middle East. At the same time, huge increases in demand for energy in Asia will take a greater share of the export capacity from the Middle East. ENGO's need to realistically decide what energy sources logically and scientifically we should utilize rather than opposing everything and forcing governments and industry into choices that result in outcomes that are undesired by everyone including the ENGO's (Coal & Nuclear). In particular energy exploration logically will have to go into areas where little or no previous exploration has occurred. Because of government barriers and environmental opposition to cleaner oil and natural gas exploration and production, Canada will have to increasingly turn to its huge reserves of Coal (the primary source of mercury now being found in fish), to Nuclear power, and to energy intensive tar sands to meet our energy needs, and these all have more serious pollution impacts than conventional oil and gas. Ontario appears to already be embracing Nuclear as its best option. Coal plants in Ontario are some of the biggest polluters in the region, causing serious effects on both sides of the border. Quebec recently obstructed the construction of the lowest emissions power plant known which would have been based upon natural gas.

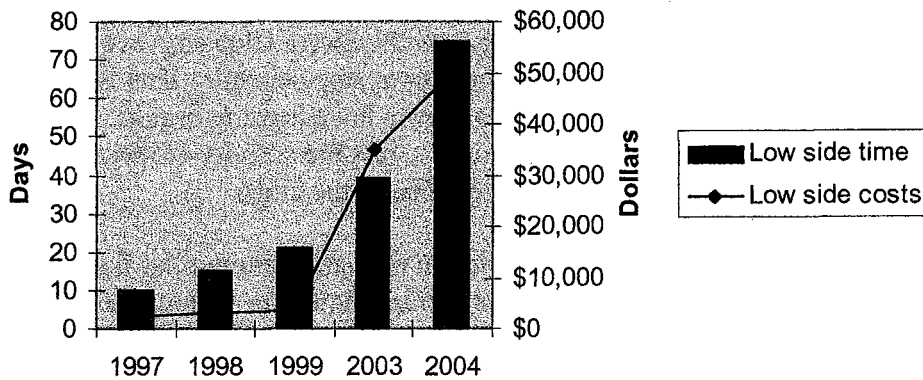
II. What is the current situation of environmental regulation of oil and gas exploration and development in the offshore areas of Canada?

Simply, the process is fragmented, redundant, repetitive, confusing, conflicting, uncertain, and costly. For all the rhetoric about streamlining and ensuring a level playing field... from our perspective it is getting worse and at an accelerating pace.

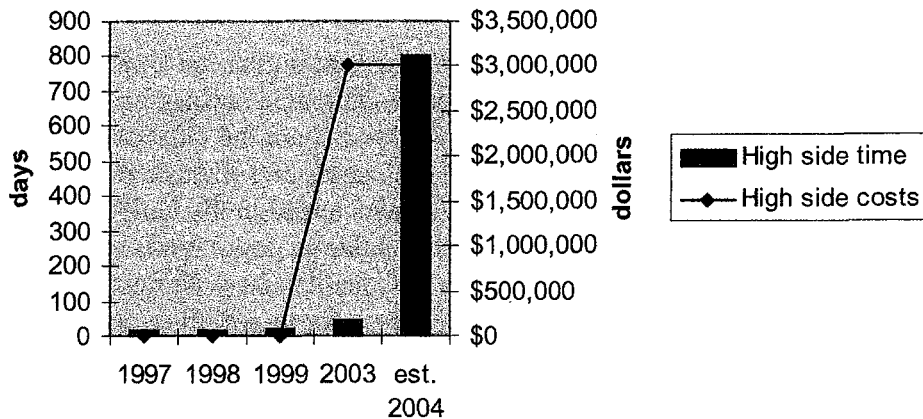
The following three graphs depict the severity of the issue and the rate of change in total costs for seismic applications and permits experienced by GSI. These costs do not include the more frequent and ever more elaborate mitigations, impact studies, and costs added to the post permit side of the equation which is equally large in magnitude. These graphs do not capture the cost of lost exploration or cancelled seismic programs necessary to move projects forward to the drilling stage. These lost opportunity costs are estimated to dwarf the industry costs herein and are/will be borne by Canadians each time they go to the gas pump, use electricity, or turn on their heat.



Environmental Assessments are becoming much more complicated



Regulatory Uncertainty cannot be priced in



Depending upon if an application is in one area or another, or if you are one offshore industry or another, the laws, regulations, and guidelines from 24 different agencies are as a rule interpreted differently and very different and uncertain outcomes result.

In general GSI objects to the concept of focusing ever increasing regulation and restrictions upon seismic (at best a 2% issue) when the remaining 98% issues are not addressed with the same level of effort and in some cases little if any effort (i.e. whale watching).

For example, unsustainable fishing management and practices have resulted in the decimation of many commercial fish stocks. Now there is a concern that seismic will stress the remaining "threatened" or "endangered" stocks. So a circumstance arrived at,

not attributed to seismic in any way, results in seismic restrictions. Will the oil industry be compensated for the damage done to fish stocks due to fishing quotas set by the government which is now impacting oil and gas operations? Incredible as it may sound this is a recurring theme with each permit application gauntlet called the Environmental Assessment. The latest issue is Crab which due to huge increases in fishing are now predicted to "crash" and some fishermen working with the Sierra Club say "we don't want seismic to push them over the edge" in an attempt to stop seismic. This is the flawed logic employed over and over. Crabs do not even have hearing organs, and seismic has nothing to do with their impending crash... it is the activity of these groups with their heads in the sand that will result in the demise of the crab.

Would it not be logical to assume that due to depletion of many commercial fish species that this would in turn reduce prey for many other species including various toothed marine mammals some of which are endangered? Of course it would but is the "precautionary principle" employed by DFO, sadly it is not.

DFO has allowed bottom dragging as a fishing method that clearly "destroys fish habitat" in contravention to Canadian law. This practice destroys habitat where small fish would normally evade being eaten. An ENGO has initiated a lawsuit on this matter that is in progress. No surprise then when fish stocks do not bounce back quickly.

Somewhat outside of DFO's control the Canadian government unlike the United States stands by while almost every coastal city and town dumps untreated sewage and oily storm water into the ocean. The result is that at the top of the food chain the Gulf of St. Lawrence Beluga is one of the most toxic animals in the ocean, and if washed onshore, has to be removed as toxic waste. Endangered Blue whales tested in the Gulf of St. Lawrence also show higher toxins as compared to other Atlantic populations and exhibit a lower reproductive rate to other populations. Even in Canadian environment minister David Anderson's hometown of Victoria some of the worst ocean polluting occurs with raw and untreated sewage and oily runoff being dumped into the ocean every day not unlike a third world country. The double standard maintained by Mr. Anderson is evidenced by his insistence that oil and gas exploration should not occur in offshore British Columbia. This is a perfect example of a focus on perception over reality and how Canada avoids the substance and results that should occur for the environment. Again, this also shows a total short sighted lack of understanding about energy choices and how Canada will actually become a dirtier place as a result of these policies to prohibit exploration for the cleanest fuels we have oil, and natural gas.

I could go on to discuss the noise emissions, without any employ of the "precautionary principle", mitigations, environmental assessments, or consultations, when government sees 12,000 ships a year, and a growing fleet of whale watching vessels in the Gulf of St. Lawrence, but I think my point is clear enough with the examples above.

The current proposed listing of about 24 marine species onto the legal list of SARA does not provide even basic information regarding how these marine species came to decline, what their current situation is, even the simplified overview afforded terrestrial or

freshwater species. This is a real concern because of the inconsistent regulation of the industry by DFO which can allow for additional regulations, mitigations, and restrictions, again when seismic did not contribute to the decline, nor is it believed to adversely affect the future status of the species.

IV. Specific examples and issues

Cape Breton Panel Review

Essentially was redundant to the Environmental Assessment already conducted. Mitigations were primarily political and were not based upon science and those that were non-political were essentially within the normal range employed by the industry already. What resulted was a huge cost, delays, and no real benefit for anyone. It did provide an opportunity for many not aware of the issues to learn and become better informed. Unfortunately, the larger energy picture, energy policy issues, and poor environmental performance of our current government were not brought into this process.

2002/2003 Gulf of St. Lawrence seismic program

First Program to experience CEAA review panel referral

Result of misrepresentation of facts, strategy of "risk is too great and we do not know so lets have a study" from biased individuals, eagerly supported by the media seeking sensational headlines

DFO intimidated the NEB into a panel referral as the politically safe choice knowing full well that it would kill the project.

DFO advice to NEB included recommendation that air surveys of the coastline with autopsy teams at the ready when all the whales wash up on the beach. This was a scare tactic to force the NEB to send a seismic program to a CEAA panel review, this killing the program.

DFO advice to the NEB included an example of a report of two dead whales with bleeding ears and was apparently represented to implicate seismic as harmful. Upon further reading of the document it became clear that the whales were exposed to high explosives being used to deepen Trinity Bay where the Hibernia GBS was being built and could not have had any exposure to seismic at all. In one case the speculation outside the scope of an important report was relied upon more than the actual findings of the report. This project referral to a panel duplicated many other studies and Panels such as the one in BC. Also, Quebec initiated an expensive and redundant BAPE panel review of seismic in the Gulf of St. Lawrence. Further, no economic support from our clients and continued pricing pressure, increased downtime, and regulatory uncertainty is leading to ever poorer financial health of the seismic industry.

2003 GSI West Cape Breton 2D program

GSI as part of a small seismic program in west Cape Breton was required by DFO to participate in a Crab environmental effects study and an acoustic study to measure sound

propagation of the air source array in shallow waters of the Gulf. The program was only supposed to take 6 days in Dec 2003. DFO made GSI wait at a cost of USD \$50,000 per day for 8 days while they bottom dragged for crabs catching only a few in the first 6-7 days. The fishing method, which could cause significant damage to the Crab, was an unusual and interesting choice, which we believe did much more harm to the marine environment than the seismic ever could. GSI objected strongly to the CNSOPB indicating that this was a real financial hardship (especially on the heels of the Gulf panel referral), and that we had three observations:

- A. Apparently there are no crabs in this area so what is the concern (not to mention it duplicated the NFLD 2002 study).
- B. Let GSI begin the work, while DFO catches as many crab as possible to put them on the last survey lines of the program.
- C. Alternatively or in addition to GSI would be willing to work with this research on a later program when DFO was better prepared.

Within 24 hours of this message over 400 crabs were caught and the study proceeded. GSI believes that significant abuse occurred in an attempt to drive up GSI costs and put us out of business. Then a DFO scientist leaked to one of the fishermen that opposed the survey strongly in the media that the test group was significantly different than the control group. This fisherman then sought to blow this up in the media and copied GSI with an email. GSI inquired to DFO as to what the significant difference was and was notified by DFO that silt was present in the gills of the test group, and it was believed that this may have been caused by the capture method or dragging of the cages along a silty bottom upon retrieval, and the story died. Then DFO would not provide us with the hypothesis, objectives, and methodology for the studies when we requested them. GSI has had to file an access to information request, DFO has given itself a three month extension to the normal response period and we have still not seen anything. The end result was GSI entered into a blank check scenario that resulted in a doubling of the cost of the program even though GSI adhered to every point of the Cape Breton Panel guidelines imposed by the CNSOPB. No damage was done to the environment other than the bottom dragging and needless testing of Crab that have no hearing organs. Lots of money was wasted and as usual with no benefit to the environment.

Regulatory Uncertainty. (Taken from a GSI letter responding to a letter from Natural Resources Canada Honorable John Efford, Minister)

With all due respect I have to strongly disagree that Canada's regulatory process is one that anyone should have confidence in. The National Energy Boards decision regarding GSI's 2003 Gulf of St. Lawrence program was wrong, it perpetuates the malign and bias of the seismic industry, by Fisheries and Oceans Canada and those with an environmental agenda who oppose the development or use of hydrocarbons.

How could any one being regulated have confidence in a decision and process;

- That cost my company millions of dollars in non-revenue time, due to the decision to send a simple seismic program to a panel review. Seismic cannot be rescheduled on short notice due to the ever increasing lead times required by the regulatory process (currently at eight weeks minimum) and in the case of the Gulf project we started over a year in advance. Ships, seismic equipment, and crew are expensive assets that keep running huge costs even when sitting. (Canadian flagged ships have incredible burdens, much higher than say foreign flags but I will not bring in all the issues in one letter ...)
- That resulted from political factors and not based upon scientific knowledge.
- That puts a seismic program that would cost about \$1,000,000 into an uncertain political regulatory process (CEAA panel) that will in itself cost \$1,000,000-\$1,500,000; involve significant non productive distraction from the business, on top of the \$500,000 spent on the EA and the estimated minimum \$300,000 on environmental mitigations during and after the program. Clearly this kills the seismic project in all cases. There is no way our industry can carry this 130-230% regulatory burden, and I would suggest it is unique, with no equal in the world.
- That puts a seismic program "on trial as guilty until proven innocent" into a process where industry is supposed to "prove" that we are not having an impact when no impact is apparent. Besides being very difficult to prove a negative, the added bias which is selectively employed called the "precautionary principle", makes this task impossible.
- That singles out for persecution the seismic industry (because it will stop oil and gas development) with unknown or no evidence of impacts when DFO has regulated many fish stocks into becoming endangered species, and allows clearly harmful practices, apparently against the law such as bottom dragging. When that species is threatened or endangered DFO then uses this to restrict, ban, or limit seismic with no evidence that seismic causes any harm, and no compensation is paid to us. I think it is reasonable to conclude that DFO's miss-management of the fishery is the only cause of fish declines and has had a serious impact on the non-recovery of endangered marine mammals that depend on fish for food.
- That allows millions of tons of fish to be killed that endangered whales rely on for food yet more cost burden related to delays, regulatory process, restrictions, Environmental assessments, imposed studies, imposed research etc... are placed on seismic with no scientifically known impact (outside of one or two laboratory tests that are so far from real world conditions as to be useless) and nothing but a potential for a minor behavioral impact to fish.
- That focuses on noise from seismic and the potential for behavioral impacts on whales (again huge costs and barriers; EA's, mitigations, meetings, studies, imposed research, limits on areas, limits on timing, limits on direction of lines, limits on water depths, limits as to time of day) above all other impacts to these species. The absolute definition of harassment of whales is called "Whale watching" or benignly named "Eco-tourism" which chases whales in noisy boats clearly interrupting their life processes with no regulation from DFO. Relative to the less frequent, lower impact, intermittent vs.

constant sound, and less direct seismic activities. This is called bias and selective regulation. Where are the EA, mitigations, number, time, calendar, day, approach, noise restrictions and the "precautionary principle" for whale watching? Completely missing!!

- After "Whale watching" the most predominant noise in the oceans for whales and in Canada's offshore areas is from commercial shipping. On average 12,000 ships pass through the Gulf of St. Lawrence each year with significant constant noise emissions not unlike those produced in less frequent seismic that produces intermittent sounds. This noise is not even considered by DFO because it does not fit with the agenda of the NGO's or DFO. Bringing shipping into this process would result in an outcry and political pressure (Canada Steamship Lines-Paul Martin) so again substance is sacrificed for perception of actually making a difference. Because of these short sighted policies it appears that there is a political preference to importing oil and ensuring Canada is at the mercy of unstable and fanatical governments in the Middle East.

- I could continue with the examples of the injustice, the bias, the misdirection, the complete lack of priority, in areas like the third world status of Canadian sewage treatment, and run-off from cities laden with chemicals and oil ...where there are know impacts, known solutions, but there is no political will to solve the problems. It is much easier to give the perception that something is being done to protect the environment by allowing DFO to over regulate a small industry out of existence when the truth is there is no substance to this plan and no positive results for the environment will be achieved. In fact the opposite will occur as Canada's electricity and manufacturing industries will be forced to turn to nuclear and coal power. Both of these have serious pollution issues much worse than gas or oil, but we will be left with no choice. Fishermen should be up in arms to support our industry as the burning of coal is contaminating the meat of fish which will destroy their industry if the government gave the real statistics and tested fish to protect the public.

Canada's energy security, Canada's number one export product/ tax revenue base is under attack and the process needs radical change today. The CEAA and SARA laws give tremendous powers to DFO and the NGO's to shut down the industry. My industry will be the first to go and we will lead the way to the decline of the oil and gas industry. This is a systematic process to block the collection of geologic information that would allow areas to be understood better and determine if there is even a potential for energy development.

It should be obvious that large oil and gas finds are farther and fewer between, reserve declines are exceeding reserve replacements in most areas, and the necessary pace of exploration is woefully too slow, bogged down in the regulatory morass, and agenda of the NGO's to move Canada to a third world status. From my vantage point this is an excellent path to energy insecurity, and economic disaster.

Again, the species that is unfairly endangered and threatened is the seismic industry, my company, is the only Canadian company in this industry with the only Canadian flag ship, employing over 60 Canadian maritime families. We are the pointy tip of the entire industry that relies upon our work. If we cannot be successful to get you to understand this fact and the serious issues facing our business, I fear this industry will not survive the

next year in Canada. We need changes in the regulatory process or our industry needs immediate endangered species protection otherwise the government will be responsible for running another industry/business out of Canada, it is that simple.

In addition, to this the Government is giving away my product in total disregard of the federal laws of Canada that has resulted in serious wasted resources and 7 years of wasted time. We have attempted to stop the release of our only product (seismic data) by the offshore petroleum boards and National Energy Board, and issues like this are causing us to be completely overwhelmed with material distractions from our work.

I have no doubt that not one thing will change and that this government is abandoning Canada's last toe hold in the seismic industry, and is at the same time giving up the entire energy export industry by systematically creating new legislated barriers as tools for the NGO's, and DFO's current promotion to the primary regulator in our business.

IV. Proposed solutions

1. The provinces need to take a much more involved role in understanding and having a strong voice in a federal regulatory process (CEAA & SARA) that is aimed at the Achilles heel of the energy industry. The provinces need to defend their management of their own natural resources from Federal intervention.
2. The provinces, Natural Resources Canada, and DFO need to collaborate on uniform, fair policies for seismic that reflect recognition of the importance of energy and Canada's future security.
3. The provinces must assist seismic operators in limiting the redundant, pointless, and expensive imposed research, and studies from DFO as a condition of doing work. Redundant studies must be eliminated. No studies should be conducted without a contract to protect the seismic operator from losses, abuse, and undue delay without compensation. All study objectives, methods, and preliminary findings should be openly shared and created in consultation with seismic operators.
4. DFO and the Canadian Environmental Assessment Agency need to exclude seismic from the existing Canadian Environmental Assessment Act Panel Review process that was intended for mines, pipelines, and large projects with significant lasting environmental impacts, of which seismic has none.
5. With regard to seismic as a necessity to the discovery of more oil and gas reserves for Canada, the federal Government should employ the "Precautionary Principle" towards a Canadian Energy Security plan to eliminate the overlapping, inconsistent, and dramatic growth in regulatory cost, lead times, uncertainty, and barriers.
6. Redundant Environmental Assessments need to be eliminated. Strategic or Regional Environmental Assessments should reduce the "work" and content by 90% for a permit application. GSI has had to undertake several redundant Environmental Assessments in a

given area each year, because it is part of the process, no matter it has already been well covered ground. This serves up a gauntlet for ENGO, government, and some scientists with vested interests in more study to gang up on an applicant, demanding ever greater mitigations, restrictions, and studies for each seismic permit application.

7. The divide and conquer strategy DFO has been employing to add unusual, sometimes costly, mitigations, and environmental effects monitoring, to unknowing usually oil company applicants to raise the bar for successive programs has to be put in check by the offshore petroleum boards, NEB, and provinces taking a more active regulatory role in this area. The result is a ratcheting up of costs, and unnecessary burdens that do nothing for the environment.

8. DFO must be prohibited from regulatory delays that end projects and impose unfair losses on seismic applicants. This DFO strategy was employed in 2002, and again in 2003 in the Gulf of St. Lawrence, on the CASSIS project to occur offshore BC, and Cape Breton to mention a few.

9. For all the importance of this industry to Canadians and our way of life, or at least a smooth transition to a different way of life, Canadians deserve good governance that must demand that these processes change and that the media circus and the few left wing voices put in the spotlight, do not destroy the hard work, billions of dollars, and jobs that comprise the offshore oil and gas industry. These efforts have imposed huge inefficient costs with little apparent benefit for the environment due to seismic and drilling having the highest standards relative to any other offshore user.

I am confident that with more understanding and information, good policy decisions can be made that reflect an honest understanding of the current world energy supply and demand, current status of Canadian environmental policy failures, and an understanding of seismic relative to other more critical but unregulated or less regulated impacts.

End Notes:

¹ US Department of Energy, Energy Information Administration, "Overall Trends: Energy Use and Carbon Emissions"

² UNDP- Human Development Report, NationMaster.com

³ NationMaster.com, and Environmental Indicators.com Economic Research Chair Environmental Law and policy University of Victoria, BC

⁴ Environmental Indicators.com Economic Research Chair Environmental Law and policy University of Victoria, BC

⁵ National Energy Data Profile - Canada – 1998 <http://www.energy.ca/ECCIC.html>

⁶ Canada's Oceans Strategy, DFO and Offshore Oil and Gas, handout presented in Calgary, AB Feb. 18, 2004

⁷ www.fisherycrisis.com/groundfish.html Summary update on Atlantic Canadian Fish Stocks 1999

⁸ Mackenzie, Debbie, 2002 The downturn of the Atlantic Cod in Eastern Canada, 2003 "Extraordinary" increase in herring, mackerel and capelin numbers on the Eastern Scotia Shelf?!, "The Plankton Paradox – and how it relates to questions of fish and seals www.greyseal.net/SCIENCE/plankton.htm

⁹ May 2004 issue of the State Department's electronic journal, Economic Perspectives. The issue is titled "Challenges to Energy Security." The entire journal can be viewed at:

<http://usinfo.state.gov/journals/journals.htm>). U.S. NATIONAL ENERGY POLICY AND GLOBAL ENERGY SECURITY By Spencer Abraham, U.S. Secretary of Energy

¹⁰ 1999 NEB publication "Canadian Energy Supply and Demand to 2025"

¹¹ U.S. Energy Information Administration's long-term forecast to 2025

¹² U.S. Energy Information Administration's long-term forecast to 2025

¹³ National Energy Board 2003, "Canada's Energy Future Scenarios for Supply and Demand to 2025" p54

¹⁴ National Energy Board 2003, "Canada's Energy Future Scenarios for Supply and Demand to 2025" p69

¹⁵ Bulletin of the Atomic Scientists "Oil the illusion of plenty" Jan/Feb 2004 Volume 60 P20-22, 70, by Alfred Cavallo also utilized is the best assessment of world reserves the "The USGS World Petroleum Assessment 2000"

¹⁶ Annual Energy Review 2003

¹⁷ Exxon "A report on Energy Trends, Greenhouse Gas Emissions, and Alternative Energy Feb 2004

ATTACHMENT 2

BAPE List of Opinions and Recommendations

GSI comments are listed below each in blue type.

Stakes Related to Seismic Surveys

Regarding Sound Waves in Marine Environments

Opinion 1 – In order to be able to evaluate the effects of the seismic surveys on the marine life, the Commission thinks that it must use the same method to calculate the level of sound pressure. To this end, marine biology specialists favour the RMS (Root Mean Square)

Consistency is reasonable.

Opinion 2 – The Commission thinks that, for complex systems such as the Estuary and the Gulf of St. Lawrence, the mitigation of sound waves modelling must be adapted to the geomorphologic and hydrodynamic characteristics of the environment and should be validated on site.

This is overkill.

Opinion 3 – Since the different types of equipment used for geophysical surveys generate sound waves of multiple pressure levels as well as different frequency bands, the Commission thinks that their characteristics should be taken into account during the environmental evaluation of their effects.

No the industry uses very similar equipment with very similar pressure and frequency content.

Opinion 4 – The Commission thinks that only a long-term monitoring of the sound climate in the Estuary and the Gulf of St. Lawrence would allow evaluating the contribution of seismic surveys to (other) human sounds.

Yes if sound is the issue why is DFO or environment Canada studying all sound rather than an unfair focus on the small percentage of sound from Seismic.

Protection of Marine Mammals and Their Habitat

Opinion 5 – Considering that many measures to mitigate the effects of seismic surveys on marine mammals already exist, the Commission thinks that these measures should be systematically analyzed and adapted to the Estuary and the Gulf of St. Lawrence particular context.

Overkill again, but if government wants to test and examine that is fine, so long as it is not imposed on industry. Government has not even done basic sound studies for whale watching and shipping let alone a requirement for any mitigations for these activities.

Recommendation 1 – The Commission recommend that the high marine mammals' concentration areas be determined prior to authorizing any seismic surveys in the Estuary and the Gulf of St. Lawrence.

Response 1- These areas are located as part of the environmental assessment process that would occur for NEB and Quebec waters. Even with no current Quebec process DFO and federal legislation would require the same Environmental Assessment in Quebec waters. Further, significant input is provided by DFO during the Environmental Assessment process. This can be achieved. We are concerned because this is a potentially open-ended requirement, since those who want to stop O&G exploration would never be satisfied that enough is known, and would use it to invoke a "precautionary" moratorium on any exploration. GSI's 2003 Environmental Assessment (apparently not considered and consulted by the commission) included most if not all of the knowledge and information regarding concentrations of marine

mammals in the Gulf, but – as in every part of Atlantic Canada (with the possible exception of the Sable Gully) – more information is always possible. In contrast, marine mammal information off Labrador is probably the most scant in the region, yet DFO Newfoundland did not recommend a halt of seismic work until information was collected; rather they saw the survey as an opportunity to add to the observational dataset for the Labrador Sea and coast through observation data collected during the seismic research survey.

There are several critical elements that are not defined / scoped in this recommendation: How is a “high concentration” to be defined (one blue whale? several pods of humpbacks?); how much information / certainty is required before this can be satisfied; what would be the status of seismic in these areas, once identified? Presumably the point of identifying these high concentration areas is to put these specific areas off limits, or to require special mitigations (as for surveys adjacent to the Gully).

In reading the commission report it appears that the 2003 EA of GSI was not read. Further it appears that DFO's comments to GSI's EA (p50) were considered but GSI's response to DFO was not considered? This is highly unusual considering that the Environmental Assessment is the major concern in this area.

In GSI's 2003 attempt for a Gulf permit, DFO Quebec (and the other interest groups) maintained that the possibility of any cetaceans being present should result in cancellation of the program. GSI chose the time of year that was least likely to have any concentrations of marine mammals present, was the least important time for life processes, changed line locations to avoid possible feeding areas, adopted special avoidance / shut down and monitoring protocols, but the argument back was that there were still too many whales and the sound would “block” the whole Gulf. In other words, having information about the locations of concentrations would not have changed the response we got back from DFO Quebec and the whale researchers.

DFO Quebec in its expert advice to the National Energy Board regarding the GSI 2003 application advised the NEB that aerial surveys of shorelines should occur with autopsy teams on standby. We can only presume the assumption of DFO was that massive whale mortalities would result if seismic research were to be conducted. GSI pointed out that this extreme expert advice is not supported by any science or empirical evidence from this planet. Air surveys have risks, have significant noise impacts, significant whale disturbance impacts, and have been used in the past with limited success in this area which GSI explained in detail to DFO. DFO also maintains the position (The Quebec region bulletin Volume 6 Number 6 December 2003) that seismic in the Gulf of St. Lawrence “could temporarily, but completely, cut off the main migratory route used by marine mammal species or affect their feeding activities” Again, this is not supported by any science and ignores GSI plan to acquire data in an West to East format and other sequences to mitigate this potential issue that has never been observed. When an agency of the federal government that claims jurisdiction in Quebec has this unusual, unsubstantiated, and agenda based opinion about an industry how will it be possible for Quebec to have a process at all? For that matter GSI believes a similar bias exists in Quebec, where for example in the “Levés sismiques dans l'estuaire et le golfe du St. Laurent- Report Summary” the authors make the following observations and conclusions :

Impacts on particular species has been identified:

- Phytoplankton does not survive when located at 1 to 5 meters of air cannons.
- Fish: Fish leave (at least temporarily) testing areas, larvae and eggs can die when at 3-5 m from noise source (surveying should therefore occur in months with low larva populations i.e. April-September.; obvious impacts on commercial fisheries.
- Birds: Info on bird impacts not sufficient, but birds will be indirectly affected by the loss of plankton as feeding material
- Turtles: begin to behave erratically when exposed to noise levels of 166 decibels
- Marine mammals: depends on specie, depths etc.

Reaching conclusions such as for birds that the minute quantity of plankton that may be killed by a seismic air source will reduce their feeding material, directly contradicts all the science and papers on the topic. This impact is essentially no greater than the plankton killed from propellers on fishing, ecotourism, and

shipping vessels all which are unregulated and much more prevalent regarding this impact. We note on page 42 of the report that there is some confusion as to the source of 230db for shipping noise. In the GSI 2003 EA this is cited and came from a reputable NS environmental consulting firm. The fact remains that there is a serious environmental issue of ships even at 200db because of the continuous sound emissions (unlike the intermittent nature of seismic air source arrays) and because of the number of ships with frequent passing where multiple ships/boats are in the same area at the same time having a cumulative effect. Rather than denying this serious issue some effort should be expended to understand the impact relative to seismic. Further, the use of the term 'Air Cannons' is a favourite of those that oppose the energy industry and those who seek graphic derogatory headlines to their propaganda. This is just one more example of the unrealistic focus and unique double standard being applied to Seismic Research, over all other impacts and sources of sound that are much more frequent and prevalent in the marine environment. These are but a few examples of the confusion, and how the regulatory practice undermines Canadian integrity and environmental effectiveness.

Recommendation 2 – The Commission recommend the Minister of the Environment to work, along with all other interested parties, to define a network of protected marine areas – including the coastal region – for the Estuary and the Gulf of St. Lawrence. As a precaution, any potential areas to be protected could be periodically or permanently banned from any authorization of seismic surveys until their status is confirmed.

Response 2- The selection or designation of protected marine areas (MPA) should not preclude seismic surveys from occurring. Seismic is not associated with any evidence of harm to fish or marine mammals in the past 35 years and millions of kilometres of surveys conducted around the world. Further, scientific monitoring studies conducted in the marine environment support the conclusion that other than potential behavioural impacts there are no other measured or observed impacts. The sound is only temporary and does not persist in the environment. Further the whole purpose of the extensive mitigation measures employed is to mitigate any potential impacts should close interaction occur fulfilling the concept of 'precaution'. The federal government (DFO) through the Oceans Act, the Species At risk act (SARA) (with 24 marine species being added), and the Canadian Environmental Assessment Act (CEAA) is considering many MPA's and restrictions on many commercial activities already will Quebec duplicate this federal process? As with Recommendation 1, this recommendation is extremely open-ended. What is the time frame? What are the criteria? Banning seismic in "any potential areas to be protected" could well be the entire Gulf, considering that the Minister is to consider the views of "all interested parties" in identifying the network. Banning all such nominated areas from seismic until proven not sensitive (i.e. not deserving of protected status) is like being presumed guilty until proven innocent.

Experience has been that the time from nomination of a candidate MPA to its creation can be many years, and even longer before a candidate area is dropped ("confirming its status" one way or another.)

Opinion 6 – The Commission thinks that the Minister of the Environment should be consulted before the authorization of any project, program or seismic surveys proposal in the Estuary and the Gulf of St. Lawrence.

The NEB has jurisdiction in the Gulf of St. Lawrence. In Quebec waters this would be a reasonable requirement if done once. Exposing the seismic applicant to a gauntlet for environmentalists and the huge costs of the Environmental Assessment process for each survey, when each survey is the same other than location, is wasteful, inefficient, and biased regulation.

Recommendation 3 – The Commission recommend that the possible authorization of any seismic surveys campaign oblige the promoter to carry out a marine mammals monitoring program and report to the Minister of the Environment.

Response 3- This is already standard Industry practice.

Recommendation 4 – The Commission recommend the Minister of the Environment, along with all other interested parties, to produce a guide of good environmental practices regarding marine mammals, applicable to any seismic surveys project. This guide should also be able to apply to any commercial and industrial activities conducted in the Estuary and the Gulf of St. Lawrence.

Response 4- This would be a worthy pursuit. The NEB has jurisdiction over much of the Gulf of St. Lawrence, this is outside of the mandate of the commission. Many regulators around the world and in Canada like the Minerals Management Service (MMS) the joint federal/provincial boards in Newfoundland and Nova Scotia (CNSOPB & CNOPB), JNCC, West Australia etc all have good examples / precedents. (GSI proposed to meet or exceed the best practices from around the world in the last Gulf of St Lawrence Environmental Assessment. DFO Quebec would not accept any of our reasonable efforts and when we addressed issues they were able to come up with additional objections.) We are glad to see that these should also apply to “any commercial and industrial activities conducted in the Estuary and the Gulf of St. Lawrence” which I presume is Fishing which is a process where fish are actually killed in great numbers, whale watching which is a process where whales are “harassed” meeting the exact definition in the legislation, and shipping which also puts significant constant noise into the environment and where there are evidence of ship strikes of whales. Although seismic regulation is on a fast track, whale watching regulations have languished for years because of the difference in political and public perception. This is something GSI has been urging DFO to do and we are anxious to finally see that this logical step is being taken. It will be interesting to observe how many years it will take, the cost, and the logistics of how this would be produced as a joint effort involving “all other interested parties”.

Commercial Fishing Upholding

Opinion 7 – The commission thinks that the few available studies concerning the effects of seismic surveys on invertebrates suggest that prudence is crucial during the planning of seismic surveys projects in order to avoid significant negative effects on a major fishery resource.

The main impact to fishery's are unsustainable fishing quotas set by DFO. No studies have been conducted on over fishing and the effects on endangered whales that eat those fish? Studying invertebrates is overkill especially if this holds up exploration or is imposed upon the seismic applicant. Again this is biased regulation compared to more obvious impacts such as bottom dragging fishing methods, whale watching, and shipping which are essentially unregulated and not studied.

Opinion 8 – The Commission deems crucial that spatial and temporal variation of plankton, shellfish, and fish along with fishing activities in the Estuary and the Gulf of St. Lawrence be considered when planning and evaluating seismic surveys.

Overkill, but much is covered in the Environmental Assessment.

Opinion 9 – The Commission thinks that the creation of research programs is justified by the uncertainties regarding the effects of seismic surveys on fishery resources and fishing.

For the past 40 years worldwide there has not been this level of concern nor has any impact been seen other than a temporary displacement in the worst case. Seismic air source arrays do not kill fish, only unsustainable fishing quotas can do that.

Opinion 10 – The Commission thinks that important habitats for fishery resources must be protected from seismic surveys or that particular conditions be applied during critical periods.

We do not agree that any impacts exist that would require this level of concern and restrictions. This is biased regulation.

Recommendation 5 – The Commission recommend that the fishing industry participate in the environmental evaluation of seismic surveys in the Estuary and the Gulf of St. Lawrence.

Response 5- In GSI's Atlantic Canada record \$500,000 2003 environmental assessment extensive consultations with Fishing, whale watching, and other industries were achieved, incorporated, and included (in their words) in the EA. Was this GSI 2003 EA read?

The significance of this recommendation depends on the meaning of "participate" – advice or veto power? Consultation is standard in Canada. Their involvement was certainly a part of our previous assessment processes (consultations, issue identification, mitigation planning), and an Fisheries Liaison Observer was to be used in 2003. This is always an important part of the assessment process in NL and NS. NS Board also has the Fishery Advisory Committee for this process – but it is advisory. As a stakeholder in the marine environment GSI has not had the opportunity to be "consulted" regarding the federal fishing quotas set by DFO that are resulting in the threatened and endangered status of many fish species, which in turn are causing undue focus and restrictions on seismic although our activity does not have even 1% of the impact on fish stocks as fishing does. To be fair and equitable we would accept fishing consultations when we are provided the same opportunity to consult on fishing and other activities.

Protection of Observation Tourism

Opinion 11 – As a precaution, the Commission deems important paying attention to migration periods, habitats and feeding grounds. If there are long-term effects, marine mammals could avoid observation spots which would harm the tourism industry.

These issues are already contemplated in the extensive Environmental Assessment process. There are no long-term effects observed anywhere in the world or in the Gulf (during past surveys) in the past 40 years why would this occur now? Tourism has more of an impact than seismic because seismic does not seek and follow whales, rather it moves in straight lines and would only be in close proximity of a stationary whale for a very short time. Tourism seeks and follows whales all day without any Environmental Assessment, no mitigations, and no spatial or temporal restrictions, this is biased regulation based upon politics, misinformation, and no true concern for marine mammals.

Recommendation 6 – The Commission recommend that the marine mammal observation industry be consulted when seismic surveys projects are planned in regions where the industry is active and that a particular attention be paid to migration and habitat when planning any seismic surveys.

Response 6- I note that this recommendation says that the industry should "be consulted" when planning a survey, vs. the fishing industry, which should "participate" in the assessment. This seems to imply different roles. Again, as another industrial user of the Gulf, this industry would normally be consulted (and was in 2003). However, the industry's response to these consultations was that surveys should not proceed, not even in late fall/early winter when the industry is not active.

The recommendation that "particular attention be paid to migration and habitat" of marine mammals seems to be more logically directed to DFO – i.e. this is more a science issue than one of industrial use. Further, there is no know impact to "habitat" from seismic as sound does not persist in the environment and does not alter or damage the habitat, unlike bottom drag fishing practices currently authorized by DFO, in apparent contravention of Canadian laws. Again, some priority and logic is need in the focus of government regulation and precaution to the clearly understood and well-known negative impacts currently unregulated and authorized in apparent contravention of Canadian law.

Regarding Competencies and Responsibilities

Opinion 12 – The Commission thinks that the same environmental rules must apply to seismic surveys in the Estuary as well as the Gulf of St. Lawrence, no matter who is the authority responsible for issuing permits.

This is what was planned in the Environmental Assessment GSI prepared in 2003 but the commission apparently did not read this very relevant document to this commission.

Recommendation 7 – The Commission recommend the development of an environmental protocol for conducting seismic surveys in marine environments. This protocol should include general and particular rules of practice and environment follow-up which take into account the marine environment's sensitivity, fragility and richness. It should be designed to harmonize the Québec and the Atlantic Provinces practices for both the Estuary and the Gulf of St. Lawrence.

Response 7- Similar concept (though in broader terms) to the "guide of good environmental practices" for marine mammals described in Recommendation 4. This seems to be what DFO is now pursuing in its so-called "regulatory intent" for marine seismic across all of Canada including Quebec.

Another federal process called "Smart Regulation" seeks to reduce confusion, overlap, duplication, and to ensure that a Canadian regulatory approach is competitive and provides a strategic advantage in the 21st Century. The External Advisory Committee on Smart Regulation (of which Mr. Gaetan Lussier, Mr. Richard Drouin, and Ms. Louise Rozon from Quebec) identifies and provides specific recommendations regarding current regulatory problem areas after consultation with government, scientific, industry, and others. There are many regulatory efforts ongoing relating to marine seismic (BC, Que, Cape Breton, SARA, Oceans Act, CEEA, and a host of DFO activities and initiatives) that are duplicative, redundant, costly, confusing, and overwhelming for the Canadian seismic industry to participate in any reasonable fashion and still maintain a business in Canada.

In particular this External Advisory Committee on Smart Regulation identified seven areas of concern and two of the seven are:

1. The Environmental Assessment Process:

Some of the conclusions and recommendations relevant for your consideration from this section are as follows:

- A. The Committee heard that the current framework of overlapping and duplicative environmental assessment processes between orders of government had to be improved.
- B. Canadians are expecting governments to work together to deliver high standards for protection and service.
- C. Despite some progress on federal-provincial harmonization of assessment, project proponents, particularly those in the oil and gas and hydroelectric industries, told the Committee that problems remain in coordinating timing, information requirements and public participation. Industry has noted that project proponents cannot always be certain of information requirements or when a final decision will be made. This situation causes uncertainty in project planning, delays in decision-making and increased costs, which in turn affect competitiveness and lead to an uncertain climate for investors.
- D. Because many departments are involved in environmental assessments, some department's requirements are not triggered at the outset of the environmental assessment process, leading to sequential processes. This adds to the uncertainty of the business environment and delays decisions, without necessarily adding benefits to the protection of the environment..... This has raised a major issue, particularly by the offshore oil and gas industry in the context of administering the fisheries Act. Fisheries and Oceans Canada is taking steps to implement an "automatically in" approach whereby the Fisheries Act review would take place at the same time as other required environmental assessments.

- E. The Committee heard that the benefits of environmental assessments (Added Comments: EA is conducted for each seismic project!) to the ecosystem are generally assumed but rarely measured. This situation combined with a procedure that is perceived as unduly complex, has started to affect the legitimacy of the environmental assessment process.
- F. The Fisheries Act represents a significant trigger for an environmental assessment when a project could damage fish habitats. Many of the greatest irritants cited by stakeholders were related to the Fisheries Act and its administration and enforcement by Fisheries and Oceans Canada. * a lack of clarity and transparency in the definitions of some terms contained in the legislation (e.g. "harmful alteration, disruption or destruction" in the Fisheries Act and "significant adverse environmental effect" in the CEAA: * imprecision as to which activities and practices are considered harmful and which are the acceptable mitigation measures under the Fisheries Act: * Identification of the need for an environmental assessment under the Fisheries Act late in the process, leading to sequential assessments (Added Comments: also late in the process referral to a panel review which takes more than a year and will cost more than a million dollars, causing ship downtime for the planned project costing millions more, and the process has no certain outcome in the mind of industry because of the prevalent bias) and : *the often inconsistent interpretation and enforcement of regulations between regions or sometimes within a region, lack of predictability and lack of transparency which can lead to decisions by regulatory officers which are perceived as capricious and abusive.

Given these concerns, it is therefore more difficult for project proponents to plan a project and be certain that it meets regulatory requirements.

2. Offshore Oil and Gas:

Some of the conclusions and recommendations relevant for your consideration from this section are as follows:

- A. A government that can design responsive regulatory frameworks that encourage responsible and sustainable resource extraction while minimizing cost, uncertainty or delay will have a strategic advantage. The committee heard that the current regulatory framework falls short of these objectives. The Committees review was intended to identify a path towards a more cohesive and rational regulatory structure. Its objectives are to provide greater timeliness, clarity, certainty, efficiency and predictability to regulation that could in turn result in greater investment and increased exploration and extraction activity while maintaining public policy objectives to protect public health and safety and the environment.
- B. The protection of marine habitats falls under the responsibility of Environment Canada, the Canadian Environmental Assessment Agency, and Fisheries and Oceans Canada through the environmental assessment process, the principles set out in the Oceans Act, and the mandates for habitat conservation and protection. Further, in some cases Marine Protected Areas (Fisheries and Oceans) and Marine Conservation Areas (Parks Canada) are established to achieve this purpose. There is a large measure of shared responsibility, which leads to the potential for confusion and inefficient cross-jurisdiction oversight. (Added Comment: Not to mention Provinces adding complexity and confusion to this already poor process i.e. BC, Que, Cape Breton) While this multi-jurisdictional structure is intended to achieve important policy goals and priorities, its complexity has led to uncoordinated approaches that can limit access and flexibility for applicants, citizens, interest groups and even other levels of government, create a lack of transparency and predictability and are costly.

Recommendation 8 – In the short run, the Commission recommend that all seismic surveys using a pressure source higher than 275.79 kPa as well as any program included be subject to the evaluation and examination of environmental impacts procedure. This subsection can be obtained by either including it in the "*Règlement sur l'évaluation et l'examen des impacts sur l'environnement*" – which already foresee the subsection of certain program types – or by adopting a special law. Seismic surveys programs authorized would then be subject to an authorization certification from the Minister of the Environment by virtue of article 22 of the "*Loi sur la qualité de l'environnement*."

Response 8- Using a source of 275.79 kPa (40 pounds per square inch) or greater is the "trigger" for a survey being assessed under CEAA (Inclusion List Regulations), where a federal permit is required. I assume this is to cover the "provincial" part of the Gulf (i.e. west of Anticosti) where the provincial permit is required. This leaves in question what the Government of Quebec would expect for a survey in the NEB administered area, where they also imply/claim provincial jurisdiction: would two environmental assessments be required, one provincial and one federal? Would the federal CEAA process be assumed to meet Quebec requirements there?

Recommendation 9 – The Commission recommend that any seismic surveys using a pressure source higher than 275.79 kPa require an authorization certification from the Minister of the Environment by virtue of article 22 of the "*Loi sur la qualité de l'environnement*." The "*Règlement relative à l'application de la Loi sur la qualité de l'environnement*" could exempt some low sound pressure seismic surveys, depending on the source type.

Response 9- Is it the source type, the applicant, or should the objective criteria of sound emissions that should be the focus of government? Otherwise this will become a subjective, confusing and complex issue at odds with Smart Regulations. Seems to be simply the corollary of Recommendation 8, to allow some surveys to proceed without assessment (e.g. GSC?)

Recommendation 10 – The Commission recommend that an expert committee be created in order to decide the thresholds sound pressure for which a seismic surveys project would be subject to the evaluation and examination of environmental impacts procedure and the thresholds for which they would be exempt from an authorization certification from the Minister of the Environment.

Response 10- Assume that this is to determine a pressure level for the long term (vs. Recommendation 8 which is "for the short run", and adopts the existing CEAA threshold trigger). This probably won't affect O&G seismic, as it will not be exempt in any case.

Opinion 13 – The Commission deems crucial that a harmonized environmental assessment procedure be developed by the governments of Québec, Canada and the Atlantic Provinces for both the Estuary and the Gulf of St. Lawrence. To that effect, the commission recalls the collaboration agreement concluded on May 19, 2004 between Québec and Canada regarding environmental evaluation.

The procedure in NEB or Quebec jurisdictions is the same as required under various federal legislation, this is already in place.

Regarding the Choices of Development and Exploitation of Hydrocarbons

Opinion 14 – The Commission thinks that the future parliamentary commission on the energy security in Québec as well as the forum on the integrated management of the St. Lawrence – planned as part of the water national Politics – would be great opportunities to consider the stakes related to the development of offshore hydrocarbons in the St. Lawrence.

Canada is the most energy intensive developed country in the world per unit of GDP output (more than the U.S.). I suspect with mining and manufacturing that Quebec is the most energy intensive province in Canada and energy security of clean fuels should be a priority. Becoming obsessed with extreme environmental views and initiatives focused on this industry while other more

pervasive and frequent impacts in other industries are ignored will do nothing for the marine environment. If seismic activity stopped in Atlantic Canada today this would not improve the quality of the marine environment at all. But it would lead to the increased reliance on OPEC energy sources, LNG terminals (more ships), and a forced move to nuclear and coal for energy, unless significant economic decline is the goal of Quebec. Economic decline leads to more pollution as this becomes a low priority when jobs are lost, or incomes decline. Blocking the exploration of clean natural gas, forgoing the energy security of these reserves, and the resultant economic hardship will surely result in a dirtier environment, more risks, more impacts to marine life, and is an unwise policy.

Opinion 15 – The Commission thinks that the evaluation of the stakes related to the exploitation of hydrocarbons in the Estuary and the Gulf of St. Lawrence should be conducted as part of a strategic environmental evaluation integrating social, economic and biophysics aspects. This evaluation should be completed prior to the authorization of any exploration work.

More regulation will kill this industry in Canada which is the goal of those who oppose all energy industries in general. Well intentioned but this path will lead to a decline in the economy, a decline in job opportunities, a decline in incomes, a decline in tax revenues, and a decline in the luxury of utilizing the cleanest technologies and mitigations (which are expensive). Strategic plans if executed once should avoid the requirement for a full Environmental Assessment each program, but they do not add any efficiencies. The goal of these Strategic or Regional evaluations is to restrict and limit major portions of areas to exploration without due process and an understanding of the implications.

Opinion 16 – The Commission thinks that insular and coastal community of the Estuary and the Gulf of St. Lawrence should participate in the establishment of energetic orientations that are likely to modify their way of living prior to any major hydrocarbons discovery.

While this sounds nice, more participation adds costs, delays, and has no benefit to the environment, the government should fund this and provide information about the importance of energy, the choices, and impacts to the environment. The claim that development will modify a way of living is equivalent to a scare tactic. All these people need energy, what should be considered is how their lives will change if no reserves are found, and energy doubles or triples, exporting Quebec jobs to China or India where there is little concern for the environment and the national companies are aggressively buying up reserves around the world. Canada meanwhile argues about even obtaining the information needed to understand if any reserves exist, and where, so that an informed decision about drilling and development can be made.

ATTACHEMENT 3

November 29, 2004

The Right Hon. Paul Martin
Prime Minister of Canada
Langevin Building
80 Wellington Street
Ottawa, Ontario, K1A 0A2

Hon. R. John Efford
Minister of Natural Resources
Natural Resources Canada
Sir William Logan Building, 21st Floor 580 Booth Street
Ottawa, Ontario, K1A 0E4

Hon. Stéphane Dion
Minister of the Environment
Environment Canada
Les Terrasses de la Chaudière, North Tower, 28th Floor
10 Wellington Street
Gatineau, Quebec, K1A 0H3

Hon. Geoff Regan
Minister of Fisheries and Oceans
Centennial Towers, Suite 1570
200 Kent Street
Ottawa, Ontario, K1A 0E6

Dear Sirs,

RE: Comments on Fisheries and Oceans initiative to create National Seismic Standards under the Oceans Act.

The Canadian Association of Geophysical Contractors has serious concerns regarding DFO's ongoing initiative to develop seismic regulations under the Oceans Act as outlined to us by Dan McDougall and Camille Mageau (DFO Ottawa) in a meeting in Calgary, September 2, 2004. The Seismic industry has demonstrated a sincere commitment to conducting our operations in an environmentally responsible manner and abiding by all laws and regulations. In over 35 years of world-wide seismic research, there is no evidence to suggest that sound from exploration and production seismic has physically injured any marine mammal or impacted the viability of any marine mammal population.

Our primary concern is regarding process. It appears that this concept was set in concrete prior to consultation with industry. These national standards seem to be contrary to smart regulation concepts, contrary to the concept of one window of service with the joint federal/provincial boards, and contrary to the stated objectives of streamlining and simplifying overlapping and onerous government regulations.

Our secondary concern is the content of the initiative with more detail on specific sections in the remainder of this letter:

- 1) *The Offshore Boards are responsible for the regulation of offshore oil and gas, including protection of the marine environment, through the Accord Implementation Acts.*

Creating seismic regulations under the Oceans Act would create duplicate authority, confusion and inefficiency in authorizations, and is counter to the intent of the Accords and the federal government's Smart Regulation initiative. Of the seven sectors identified by the external advisory committee on Smart Regulation (report issued date July 2004) two of these sectors were offshore oil and gas and the environmental assessment process. I have quoted the following text from this report that I feel is important to consider in this plan from DFO for national Standards:

1. The Environmental Assessment Process:

Some of the conclusions and recommendations relevant for your consideration from this section are as follows:

- A. The Committee heard that the current framework of overlapping and duplicative environmental assessment processes between orders of government had to be improved.
- B. Canadians are expecting governments to work together to deliver high standards for protection and service.
- C. Despite some progress on federal-provincial harmonization of assessment, project proponents, particularly those in the oil and gas and hydroelectric industries, told the Committee that problems remain in coordinating timing, information requirements and public participation. Industry has noted that project proponents cannot always be certain of information requirements or when a final decision will be made. This situation causes uncertainty in project planning, delays in decision-making and increased costs, which in turn affect competitiveness and lead to an uncertain climate for investors.
- D. Because many departments are involved in environmental assessments, some department's requirements are not triggered at the outset of the environmental assessment process, leading to sequential processes. This adds to the uncertainty of the business environment and delays decisions, without necessarily adding benefits to the protection of the environment This has raised a major issue, particularly by the offshore oil and gas industry in the context of administering the fisheries Act. Fisheries and Oceans Canada is taking steps to implement an "automatically in" approach whereby the Fisheries Act review would take place at the same time as other required environmental assessments.
- E. The Committee heard that the benefits of environmental assessments (Added Comments: EA is conducted for each seismic project!) to the ecosystem are generally assumed but rarely measured. This situation combined with a procedure that is perceived as unduly complex, has started to affect the legitimacy of the environmental assessment process.
- F. The Fisheries Act represents a significant trigger for an environmental assessment when a project could damage fish habitats. Many of the greatest irritants cited by stakeholders were related to the Fisheries Act and its administration and enforcement by Fisheries and Oceans Canada. * a lack of clarity and transparency in the definitions of some terms contained in the

legislation (e.g. "harmful alteration, disruption or destruction" in the Fisheries Act and "significant adverse environmental effect" in the CEAA) * imprecision as to which activities and practices are considered harmful and which are the acceptable mitigation measures under the Fisheries Act: * Identification of the need for an environmental assessment under the Fisheries Act late in the process, leading to sequential assessments (Added Comments: also late in the process referral to a panel review which takes more than a year and will cost more than a million dollars, causing ship downtime for the planned project costing millions more, and the process has no certain outcome in the mind of industry because of the prevalent bias) and : *the often inconsistent interpretation and enforcement of regulations between regions or sometimes within a region, lack of predictability and lack of transparency which can lead to decisions by regulatory officers which are perceived as capricious and abusive.

Given these concerns, it is therefore more difficult for project proponents to plan a project and be certain that it meets regulatory requirements.

Further comments not discussed or identified in the Smart Regulation process include:

- The impact of the Species at risk act and the new marine species under consideration for addition to the list.
- The CEAA process where at the last minute (a year into the Environmental Assessment process) a program can be referred to a Panel Review. This is essentially a guilty until proven innocent process that takes over a year and potentially millions of dollars effectively killing the project. The last minute referral also has multi-million dollar costs due to the inability to schedule the ship and crew for other work on such short notice. Example was GSI 2003 Gulf of St. Lawrence 2D seismic application.
- The selective and biased use of the "precautionary principle" manifests itself as a weapon focused on oil and gas exploration and development and appears to not be utilized to any degree with regard to shipping, whale watching, or fishing.
- The fact that redundant Environmental Assessments have to be conducted for each project, when each project essentially is the same process only differing in location, timing, and minor parameter variations. This process should be streamlined significantly to only the above three issues, screenings only with no possibility of a review panel, and without excluding spatially or temporally most of the ocean.

2. Offshore Oil and Gas:

Some of the conclusions and recommendations relevant for your consideration from this section are as follows:

- A. A government that can design responsive regulatory frameworks that encourage responsible and sustainable resource extraction while minimizing cost, uncertainty or delay will have a strategic advantage. The committee heard that the current regulatory framework falls short of these objectives. The Committees review was intended to identify a path towards a more cohesive and rational regulatory structure. Its objectives are to provide greater timeliness, clarity, certainty, efficiency and predictability to regulation that could in turn result in greater investment and increased exploration and extraction activity while maintaining public policy objectives to protect public health and safety and the environment.
- B. The protection of marine habitats falls under the responsibility of Environment Canada, the Canadian Environmental Assessment Agency, and Fisheries and Oceans Canada

through the environmental assessment process, the principles set out in the Oceans Act, and the mandates for habitat conservation and protection. Further, in some cases Marine Protected Areas (Fisheries and Oceans) and Marine Conservation Areas (Parks Canada) are established to achieve this purpose. There is a large measure of shared responsibility, which leads to the potential for confusion and inefficient cross-jurisdiction oversight. (Added Comment: Not to mention Provinces adding complexity and confusion to this already poor process i.e. BC, Quebec, Cape Breton panel reviews) While this multi-jurisdictional structure is intended to achieve important policy goals and priorities, its complexity has led to uncoordinated approaches that can limit access and flexibility for applicants, citizens, interest groups and even other levels of government, create a lack of transparency and predictability and are costly.

The apparent intention of this DFO national seismic standards initiative is to explicitly, and prejudicially regulate seismic – not general noise in the marine environment, such that no real benefit will flow to the environment yet great costs and sacrifices will be made. We believe that if all seismic were banned that no benefits would accrue to the marine environment because the primary human impacts (shipping, whale watching, and fishing) are not being addressed to the same extent or to no extent.

We believe that if noise is the issue that all noise sources should be measured and quantified for marine mammal impacts. Then based upon incidence, frequency, intensity, and proximity to marine mammals noise emissions should be ranked and appropriate levels of regulation, guidelines, mitigations, and Environmental assessments should be applied to control and mitigate the impacts of any and all primary noise sources. We believe that once this process is completed that seismic will not be the primary focus as currently exists, and whale watching, fishing, and shipping will have a much greater impact on the important commercial fish stocks, and critical life processes of whales.

Section 133A of the Canada-Nova Scotia Accord Implementation Act (for example- there is mirror federal legislation and similar NL legislation) states:

“The purpose of this Part is to promote, in respect of the exploration for and exploitation of petroleum:

- (a) safety, particularly by encouraging persons exploring for and exploiting petroleum to maintain a prudent regime for achieving safety;
- (b) the protection of the environment.....”

With respect to these responsibilities, the Offshore Boards regulate seismic operations through guidelines and operational practice as conditions of authorization for offshore activities.

We understand that the Oceans Act intends that the Act and its regulations cover issues that are not specifically conferred on another department board or agency. We believe this area is well covered under existing processes and legislation.

2) Regulations are not the optimal mechanism to regulate seismic activities in the marine environment.

Our understanding of the environmental effects of marine seismic shows minimal behavioral impacts only, but has some gaps and is evolving. Several major studies are being undertaken around the world with particular attention to marine mammals. To date there has been no

documentation of significant adverse effects on marine life from seismic surveys, in fact the evidence indicates no impact or minor behavioral impacts.

DFO's own Habitat Status Report Review of Scientific Information on Impacts of Seismic Sound on Fish, Invertebrates, Marine Turtles and Marine Mammals states that while seismic sounds are not completely without consequence "nor are they certain to result in serious, and irreversible harm to the environment".

The Minerals Management Service in the USA released the: "Geological and Geophysical Exploration for Mineral Resources on the Gulf of Mexico Outer Continental Shelf Final Programmatic Environmental Assessment" July 2004 where in the summary conclusions it says "Based on this EA, we have concluded that the G&G activities evaluated in the EA will not significantly affect the quality of the human environment. Preparation of an environmental impact statement is not required. The activities analyzed in the EA include seismic surveys, deep-tow side-scan surveys, electromagnetic surveys, geological and geochemical sampling, and remote-sensing surveys. The impact producing factors considered in the EA include seismic survey noise, vessel and aircraft noise, seafloor disturbance, and space-use conflicts with seismic arrays. Based on established significance criteria, the results of the impact analyses are that G&G activities are not expected to result in significant adverse impacts to any of the potentially affected resources. Potentially adverse but not significant impacts were identified for marine mammals (except the manatee) and commercial and recreational fishing; negligible to potentially adverse but not significant impacts were identified for sea turtles, fish, and benthic communities; and negligible impacts were identified for coastal and marine birds and the manatee."

Scientific knowledge in this area is summarized in a paper called "The Environmental Impact of Underwater Sound, AD Heathershaw et al where it shows audiograms for marine species (section 4) with the following information:

"...Inspection of the audiogram reveals that these may be grouped into three overlapping bands: (a) low frequencies (10 Hz to 300 Hz), where fish are most sensitive, (b) mid-frequencies (300 Hz to 1500 Hz), where humans are most sensitive and (c) higher frequencies (300 Hz to 1500 Hz) where toothed whales are most sensitive..... Behavioral impacts affect the general actions of an animal. These are often hard to quantify and the results and conclusions from a number of studies may even be contradictory. For instance, several studies have been carried out on the response of baleen whales to man-made sounds. The results show that sometimes the whales change their vocalizations or else move away from the noise yet on other occasions, there is no change in behavior even at high exposure levels."

Also a paper called "Seismic Surveys & Marine Mammals" joint position paper of IAGC and OGP.

It is well known that seismic energy is limited to below 100 hz outside of the range of most marine mammals and toothed whales making the requirement to shut down operations for all marine mammals unnecessary and arbitrary. Only baleen whales and elephant seals have been identified to have a potential hearing range that overlaps with seismic. The miss-information to the public regarding seismic sound is compounded by a poor understanding of field conditions. A detailed paper discusses the very limited exposure that is even possible due to measurement confusion, sound directivity of the source array, and the fact that the ship is moving, the sound is intermittent about every 10 seconds, and is of a very short duration 10/1000th of a second. All this and more is discussed in detail in "Airgun Arrays and Marine Mammals" August 2002, IAGC.

- Mitigative options and approaches are evolving and regulators must have the flexibility to respond to these developments to enhance protection and ensure operators are not unnecessarily restricted in their licensed and already highly regulated activities (Canada already has the most restrictive and uncertain regulatory process in the world). For example, the draft regulations would enshrine as a regulatory requirement Passive Acoustic Monitoring, an experimental technology yet to be proven effective. Further the International Association of Geophysical Contractors has undertaken a scientific evaluation of the effectiveness and development of Passive acoustic monitoring to ensure its usefulness to identify whales in an operational environment including the following development points:
- Reviewed noise cancellation algorithms
- Assessed detection algorithms used in currently available PAM software
- Designed architecture for object oriented programming in modular code: acquisition – detection – localization – classification – identification process
- Phase 2 will bring mid-90's PAM system software up to today's technology. Translating/updating software to Java, incorporating it into bench-built system and testing on a limited basis

Until such time as industry has evaluated and perfected this technology so that its effectiveness can be properly tested and researched, it should not be required and imposed upon seismic programs no more than it should be imposed on whale watching or shipping noise emissions (which is not being considered for).

There is no exemption mechanism (equivalent to the Regulatory Query Form process for Accord regulations) under the Oceans Act to respond to technological and scientific developments pertaining to seismic. Further, experience relating to making changes to regulations, even for simple or common sense items, is that it takes years and years of inefficient time, money, endless meetings, and energy to do so.

3) *The regulations, as written, appear to unnecessarily restrict seismic acquisition*

- No adverse environmental effects of seismic have been proven from actual seismic surveys.
- DFO does not have a complete data base on feeding, resting, migration, and breeding of all marine mammals (all marine mammals!) or on fish spawning (all species!) in all marine areas to provide appropriate and sufficient direction to operators on acceptable seismic spatial and temporal activities. Further, if this information were provided on maps for each month of the year it is believed that no reasonable spatial areas or temporal timeframes would exist to pass even the best economic hurdles for seismic to proceed.
- Requirements for Marine Mammal Observers and shutdown in the presence of marine mammals were developed as a response for areas frequented by species at risk. DFO is extending these requirements to all mammals including seals and dolphins. Such a broad mitigation measure, not scientifically justified, would have a very significant adverse effect on industry activities, in effect shutting down most if not all activity. Only endangered whales with hearing sensitivities in the same frequency range as seismic air source array output should be considered not all mammals and all fish.

It is a known fact that almost all ecosystem and population level damage was and is a result of historic and current fishing quotas, methods and practices, and historic whale hunting.

Other issues such as pollution, fish habitat destruction (bottom dragging fishing gear), whale harassment, and over fishing do not garner the same level of regulation (or in most cases any

regulation or any element of the "precautionary principle") although the impacts to the environment are measurable and known to be severe in many cases (unlike seismic).

Other noise sources are effectively unregulated such as shipping, and whale watching which puts continuous noise (as opposed to seismic which is intermittent) in close proximity to whales and most certainly disrupts critical life processes to a far greater extent than seismic. The precautionary principle and any logical prioritization seems to be missing.

Specific comments on the "DFO Seismic Regulatory Intent"

Exclusion Areas:

Clause 1 – Industry does not agree to Exclusion areas where all Marine mammals are considered. Not all species have the same sensitivity to noise in general and to low frequency noise specifically. Many species are attracted to operating seismic vessels or routinely approach seismic vessels during operations and are not apparently impacted by the sound, nor are they threatened or endangered in any way. Toothed whales for example are known to communicate and are understood to have hearing sensitivities and ranges in the kilohertz range not the hertz range where seismic sound is focused. Further, those marine mammals that are threatened or endangered did not arrive at that circumstance as a result of seismic noise, and there is no evidence that this noise has any harmful impacts other than behavioral impacts that would not be any different from shipping, and are predicted to be much less than those of close quarter whale watching impacts. DFO marine mammal scientists have told industry representatives repeatedly they do not know where all these areas are for the offshore and have not systematically collected any data since the Hibernia EIS. The CAGC is very concerned how it would be possible or reasonable for this Clause 1 to be complied with by anyone. We see a certainty for the next seismic screening document review to highlight this as a deficiency, with a requirement from DFO for the seismic proponent (rather than shipping, whale watching, fishing, and other offshore interests) to unfairly collect or fund the collection of such data for the project area before approvals are issued. For example at a DFO meeting prior to the science review conducted it was emphatically stated that the review would not result in a gap analysis, discussing what is unknown or missing. The September 2004 "Review of Scientific Information on Impacts of Seismic Sound on Fish, Invertebrates, Marine Turtles, and Marine Mammals" contains a whole section on research needs. These are believed to be what will be imposed on seismic projects as a condition of approval based upon the statement "...there is great value to linking a program of structured collection of information to the conduct of seismic surveys, to facilitate leaning by doing. However, such information collection programs must be well coordinated, and accompanied by the resources to analyze, interpret, and apply the new information, as it is collected and submitted to scientific authorities". One small seismic program conducted in West Cape Breton by GSI in 2003 involved just such an imposed research program. The ship was delayed significantly waiting for the capture of crab for a test, resulting in the cost of the seismic program being double what it would have otherwise been. Then the information was not even provided to the participant/proponent GSI. Last the study was flawed and resulted in very negative results that were not controlled for in the study. This was a model of how not to conduct a study and the adversity that can come from poor implementation.

Finally comments made in the meeting of September 2nd industry expressed a concern that when all these situations were put on a map for each month that there would be no place or time acceptable for Seismic activities. Is it the intent of the government of Canada to stop all offshore seismic activity, if so why not just state that openly rather than this indirect but equally effective approach?

Clause 2 – Industry does not understand what the magic around 20 meters is. Would that mean that 30m is some how safer? These prescribed pressure, water depth, and displacement rules will not allow for any changes in technology, scientific understanding, and are therefore not a good measure to include in a regulation. This especially in light of the fact that sub sea and coastal geomorphology will have a significant impact on reflected noise and nodal peaks and troughs in sound intensity.

Clauses 3 – What conclusive proof would indicate that 180dB is necessary as opposed to 190dB for instance? Is this same noise standard going to apply to all noise emissions in the marine environment or is this singling out Seismic noise? If so why would the implementation of the Oceans Act be served better with a sole focus on Seismic noise which contributes a minority of the total noise during a given year?

Clause 4 & 5 - Industry is opposed to a requirement to run sound models if we are then required to test sound attenuation in the field at the outset and periodically during each survey. Furthermore to do the kind of in field calibration clause 5 is talking about will almost certainly require two vessels and significant additional equipment. The purpose of modeling and field testing should be to define generic set back distances at different times of the year using the 180 db criterion. Those distances will be insignificantly affected by salinity and temperature and thermo cline characteristics in different seasons. Doing repetitive models and testing is not economically viable or necessary considering the Safety Zones currently used in the industry, which are more than effective. These tests should be conducted by ESRF or DFO in consultation with Industry once (in various water depths, output, salinity, temperature etc...to build curves for each variable) only and only a total change in technology should require further testing.

Clause 6b – Prescriptive regulations again are not workable in the field and do not allow for technology changes. Source units should be turned on starting from the smallest unit in the Source Array until the entire array is active over a 30-minute time frame as is consistent with other jurisdictions. Source units cannot be accurately controlled to provide an exact output of sound as this Clause prescribes.

Clause 6c – Industry would prefer not to fully shut down the source array. The costs associated with this step are prohibitive. Leaving the smallest source unit on, possibly at reduced pressure at all times will avoid the necessity of a ramp up while still achieving the mitigation objective.

Clause 6d & 6e – This clause would make at least 50% of seismic programs uneconomic, as it will result in a 50% cost increase. Industry proposes the following poor visibility/night time procedures:

- A. Soft Start (ramp up as amended herein) shall be used at any time the source array is not operating for more than 30 minutes.
- B. No observations are possible and no untested PAM is required (but may be encouraged/suggested).
- C. In the event of a sighting, or cessation of the source array for any reason, Shut down would consist of going to the smallest source unit at reduced pressure and therefore no soft start would be necessary.

Clause 7 – Environmental Effects monitoring if other than simple reporting shall not be onerous, shall not unduly delay operations, or increase costs, and shall utilize a contract to provide certainty and fairness for the contractor.

The five stated regulatory intent objectives under the Oceans Act Mitigation of Seismic Noise impacts are:

- a) fulfills the Minister's obligation to protect and conserve Canada's aquatic resources
- b) greatly reduces DFO's review timeframes for development proposals
- c) ensures a consistent and uniform approach across Canada to the protection of marine environmental quality,
- d) will be guided by mitigation measures currently being used in Canada and internationally,
- e) provides up-front direction for planning sustainable development activities, resulting in greater certainty to oceans-based activities.

Our responses to these five objectives are:

- a) We believe the ministers obligations are already being met under the current system as administered by the joint federal/provincial one window of the offshore petroleum boards and NEB.
- b) Because seismic projects are the same and the impacts are limited to behavioral impacts with no persistence in the environment DFO should have streamlined and simplified its process years ago.
- c) This process is focused on seismic noise, leaving all other sources of noise unregulated, so it is as far from a "consistent and uniform approach" to noise as can be imagined. Inconsistencies in regulatory outcomes across geographic regions occur within DFO and this should be an internal matter for DFO to address.
- d) Taking the highest most restrictive standards from around the world and then expanding them to include all fish, all marine mammals, and spawning, migration zones, feeding areas, breeding areas, nursing areas temporally and spatially appears to be an attempt to make the process so overwhelming to even understand, not to mention the cost as to effectively prohibit the activity altogether.
- e) As pointed out herein there are many more uncertain issues being added making the process more confusing, more complicated, and less certain. This would make oil and gas exploration and development "unsustainable" and uneconomic owing to the regulatory process alone.

In summary, the CAGC and its members the Seismic contractors that would have to implement this proposed regulation believe that this initiative has serious potential to prohibit entirely the operation of any offshore seismic in Canada. Without Seismic research operating in Canada there would be serious implications upon Canadian energy security, and access to clean natural gas and oil energy options necessary because Canada is the most energy intensive developed country per unit of GDP or per capita. With the ratification of Kyoto, if natural gas reserves are not explored for, will force imports of LNG (with its own political, and environmental risks), the use of more coal (emissions are known among other things to add mercury to fish, which threatens the fishing industry, and food stocks for endangered and already toxic whales in Canada), and the use of nuclear power (with no current plan to safely deal with waste).

We respectfully request that this initiative should be reconsidered and that the following concepts in mind:

1. Reasonable mitigations and shut downs for seismic should only be implemented for baleen whales and elephant seals, the only animals identified by science

where a possible frequency related exposure exists, and should utilize processes consistent with other jurisdictions. If there is a requirement for fish or other marine mammals the exclusion and buffer zones on a temporal and spatial basis need to be clearly defined up front before any new changes to the current system and they have to be reasonable and fair measures relative to other offshore users that emit noise. The current planned requirement is too broad and restrictive.

2. All noise emissions would be regulated in the marine environment with regulatory measures and study directed to air, land, or marine sources identified and ranked on but not limited to the following factors: incidence, frequency content, intensity, exposure time to a fixed point, proximity to endangered species, duration (i.e. intermittent or constant) pervasiveness, temporal, spatial, contribution above ambient, cumulative contribution if multiple sources etc... Only after this study is done can regulatory action take place to efficiently focus resources and time so that there is no miss-perception that regulation is directed at activities that may have a lesser impact on jobs, taxes, and votes, rather than focused on activities that would actually improve the marine environment.
3. Study and research should not be imposed on one industry, rather government or all emitters of noise into the ocean should pay for studies to increase knowledge and understanding to improve the marine environment.
4. Redundant Environmental Assessments need to be simplified to focus on the elements that are different from a base case (Regional or Strategic EA?) such as location, special circumstances, timing, such that the volume and time of the review process is greatly shortened and simplified.
5. Safety zones should be derived with study to avoid use of models for each program and the requirement for expensive field verifications, which would not be very helpful as the ship is always moving and the ocean bottom will therefore always be changing the acoustic properties of the reflections.
6. Ramp ups should be utilized at all times including night time and no PAM should be required until fully developed, and scientifically tested and verified to actually work. Shut downs should allow use of the smallest source unit at reduced pressure to avoid the need for a full ramp up and still achieve the desired "let the whale know where you are" without high sound emissions, but 20 minutes of observations should still occur in good visibility. Shut downs are no trivial matter as they require at least 4 hours of costly down time due to the requirement for the ship to turn and reacquire this lost line segment.
7. Environmental effects monitoring (EEM) if other than reporting of sightings should be funded outside of the proponent and should include a contract to protect the rights of the proponent with compensation for unreasonable downtime due to the EEM or research requirements.

Yours Truly,

Canadian Association of Geophysical Contractors

Mike Doyle, President