

Advice provided by the C-NLOPB's Offshore Helicopter Safety Inquiry (OHSI) Implementation Team to the C-NLOPB Board

**Advising Document**  
**OHSI Phase I, Recommendation 27**  
**Regarding Regulator research on helicopter safety**



In November 2010, the Honourable Robert Wells, QC, submitted the Report for Phase I of the OHSI to the C-NLOPB, containing 29 recommendations for enhancing the safety of helicopter travel offshore. Each Advising Document contains the text of the recommendation for which the advice is offered.

The Team's advice for Recommendation 27 was accepted in principle by the C-NLOPB Board at their meeting on April 28, 2011. At that time, the C-NLOPB took responsibility for developing its strategy to implement the recommendation.

The OHSI Reports, other Advising Documents, C-NLOPB OHSI Action Plans, and more can be found on the C-NLOPB website: [http://www.cnlopb.nl.ca/ohsi\\_main.shtml](http://www.cnlopb.nl.ca/ohsi_main.shtml)

# Advice to the C-NLOPB: Recommendation 27

## Recommendation

It is recommended that the Regulator be funded to involve itself directly in studies and research on offshore helicopter safety locally and in other jurisdictions as well as to initiate its own studies and research.

## Method

A working group of the OHSI Implementation Team reviewed the recommendation, identified the system safety deficiency (SSD) and developed an implementation plan. The working group subsequently examined existing ways Research and Development (R&D) is funded and managed, and envisioned how each R&D model fits with the intent of the recommendation. The working group provided the resulting information to the complete Implementation Team, and this became the basis for the Team's Advising Document for Recommendation 27.

## System Safety Deficiency (SSD)

The present approaches to industry R&D lack proactive leadership. The C-NLOPB presently lacks resources and funding to carry out R&D. The absence of research does not allow for the consistent formation of clear solutions to safety issues.

## Background

Commissioner Wells believed the C-NLOPB should actively involve itself in studies and research locally, and in other countries, on helicopter aviation safety. On page 256 of Volume 1, he wrote that we should be important players in the world of offshore oil safety R&D in dangerous environments; not because of our size, but because of the degree of danger that our offshore presents. Some examples of research cited are the concept of the side-floating helicopter and ongoing survival suit research and development in Norway.

R&D may be required to develop solutions to address safety issues or to improve on current technology or practices. R&D may also be necessary to adapt solutions developed in other jurisdictions so they are suitable for the harsh environment of the C-NL offshore. The group also anticipated that issues identified in Safety Forums (Recommendation 25) might be addressed by R&D.

Currently, the C-NLOPB has no dedicated budget for R&D, and does not conduct, direct or participate in research and development projects. There are existing sources through which R&D is conducted. These include R&D under the Accord Act, Petroleum Research Atlantic Canada (PR-AC), and the Research and Development Corporation (RDC). A description of current research models is included in Appendix A.

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Although there is a considerable amount of R&D funding generated under the Accord Act, expenditure of these funds can only be applied to projects or parts of projects conducted in this province.

### Discussion

The working group looked at several avenues through which R&D is conducted and funded and the possibilities of utilizing these models for helicopter safety R&D. The existing models noted above were reviewed.

Under the Accord Act, there are provisions for expenditures related to R&D in the province contained in Section 45, and, utilizing section 101 of the Act, there is the Environmental Studies Research Fund (please refer to Appendix A for a more detailed description of each). PR-AC is a not-for-profit, member-based organization that funds and facilitates collaborative R&D to support the safe and environmentally sound development of Atlantic Canada's petroleum resources. RDC's purpose is to strengthen the focus, quantity, quality, and relevance of R&D undertaken in the province and elsewhere for the long-term economic benefit of the province.

The *Research and Development Guidelines* provide guidance as to how much is to be spent, what qualifies as R&D, and where the money may be spent for R&D funds generated under section 45 of the Accord Act. Under the guidance, each Operator's production/exploration expenditures are expected to be consistent with the norms for such expenditures by the upstream petroleum industry in Canada. Expenditures are calculated based on the type and phase of the project. Although there are considerable funds available for R&D projects, the C-NLOPB does not have direct control of what projects are funded. What projects are funded is up to the Operators, with the stipulation that the funds must be spent within this province. The C-NLOPB can encourage Operators to conduct R&D in certain areas, but has no direct influence over what types of R&D projects the Operators fund. The requirement that funds be spent in this province prevents involvement in international projects. To allow for funds under section 45 of the Act to be spent out of the province would require a legislative change by the governments.

The Environmental Studies Research Fund (ESRF), under section 101 of the Accord Act, is a fund dedicated to environmental and social studies. The ESRF is a research program that sponsors environmental and social studies. It is designed to assist in the decision-making process related to oil and gas exploration and development on Canada's frontier lands. The funding for the ESRF is provided through levies on frontier lands paid by interested holders such as the oil and gas companies. The ESRF is directed by a joint government/industry/public Management Board and is administered by a small secretariat, which resides in the Office of Energy Research and Development, Natural Resources Canada, Ottawa, Ontario. Unfortunately, no similar R&D fund exists for the safety aspect of the industry.

Drawbacks to this fund are that it derives funds separately from the R&D funds described above, thus Operators are spending on R&D in two forms. Another drawback is that the C-NLOPB is one member of the management board and so the C-NLOPB has influence but does not drive which projects will be funded.

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An advantage is that the spending of funds is not limited to this province and that projects are independently managed, reducing the need for resources to manage projects on the C-NLOPB.

The Research & Development Corporation (RDC) is a provincial Crown corporation that was established to improve NL's R&D performance. The Research and Development Council Act was passed by the Government of Newfoundland and Labrador in December 2008. Increased R&D activities will play a major role in driving innovation, creating wealth, and increasing economic growth in NL for future generations. The RDC provides an additional level of funding for R&D in the province; it does not manage projects. The C-NLOPB would need to have its own funding to leverage RDC funding and be able to manage research projects.

The group considered the C-NLOPB being funded to do its own R&D. How R&D would be funded and managed are key issues in the Board conducting or participating in its own R&D. Currently both levels of government contribute equally to the C-NLOPB operating budget. Some 75% of that budget is cost recovered from the Operators through authorization and operating fees. If Helicopter R&D funding were cost recovered from the Operators, it would mean Operators are funding R&D as required under the Accord Act and funding Helicopter R&D (i.e., the Operators would be funding two separate R&D sources, essentially paying twice for R&D projects). The C-NLOPB managing its own projects means additional resources are required. If the governments provided separate funding for the C-NLOPB to conduct its own R&D, the perception would be that public money is being spent to fund oil industry research.

In addition, the Helicopter Safety Research Management Committee (HSRMC) in the UK was examined. Under the UK's Civil Aviation Authority, the HSRMC coordinates research activities related to large helicopters like those used offshore NL. Because the majority of large helicopters are used by offshore oil and gas operations, the Committee is comprised of regulators (such as the Civil Aviation Authority and Health and Safety Executive) and industry representation.

The working group identified four possible options for the C-NLOPB to undertake R&D.

### Option 1: C-NLOPB Initiating R&D (as per the recommendation)

The Board would fund and manage R&D projects. Issues with this model include how the projects would be funded, how costs could be recovered, and how projects would be managed. In this scenario, it is suggested that a committee within the C-NLOPB be set up to identify areas of safety-specific and helicopter safety-specific R&D requirements and to participate in helicopter-specific R&D initiatives worldwide. Once R&D projects have been identified, the Board could look to fund or partially fund these projects through the RDC and federal R&D programs. If funding is not available through these programs, the C-NLOPB would include these activities as a "special project" in its annual budgeting process. Alternatively (or in addition), the C-NLOPB could suggest these projects to PR-AC or to the Operators to take on.

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### Option 2: C-NLOPB Utilizing Existing R&D Entities

The C-NLOPB would have direct input and influence into determining R&D carried out by the existing R&D entities, such as Operators, PR-AC and the RDC (RDC may supplement funding, but does not appear to manage projects). Under this scenario, the C-NLOPB does not fund R&D and projects may be perceived as being industry-led and not independent R&D.

### Option 3: Encourage Operators' Current Spending on R&D (with potential Accord Act amendments to allow spending outside the province)

Under the Accord Act, each Operator is required to devote a specified amount to R&D. The Board does not directly fund or manager R&D. Currently, there is no motivation for the Operators to participate in safety- and helicopter safety-specific R&D activities that occur outside the province, as expenditures would not count towards their obligation

The following changes to the Act would encourage the Operators to spend more R&D funds on safety and helicopter-specific issues:

- Allow a certain percentage of obligated R&D money to be spent outside the province
- Stipulate that any expenditures outside the province must be on safety-specific R&D
- Require projects to be pre-qualified (approved by the Board)
- Require the Operator to provide justification as to why the activity cannot occur in the province (e.g., lack of R&D capacity, participation in an ongoing study)
- Require the results of the R&D work be shared with the entire NL offshore industry

### Option 4: Hybrid of Options 1 & 2

The Board would fund and involves itself in R&D outside the province and use existing R&D entities and resources for funding in NL.

Pros and cons of each model are presented in Appendix B.

## Conclusion

The OHSI Implementation Team concluded that the C-NLOPB should have the ability to either conduct or direct research for specific areas that improve safety. Where possible, the C-NLOPB should utilize existing sources to either fund the project or leverage other funds to conduct R&D in this province. The current disadvantage of some existing R&D funding is that it is limited to R&D conducted in this province. To utilize the funding available under the Accord Act to fund or participate in R&D projects outside of the province would require a legislative change to lessen the restriction on existing funding being spent in the province. Since such legislative change may take some time to achieve, it is suggested the C-NLOPB be provided designated funding for R&D projects outside of the province, as stated in Option 4. In the long term, the C-NLOPB should seek legislative changes to allow for some of the R&D money available under the Accord Act to be spent on helicopter-specific R&D, as outlined in Option 3.

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To oversee and select R&D projects, the C-NLOPB should establish groups to perform these functions. It is possible that the Helicopter Operations and Safety Steering Committee (as proposed in Recommendation 20) could be utilized to perform this function, or a separate group similar to ESRF. It may be possible to utilize an existing entity like PR-AC to perform some of the R&D oversight tasks, reducing the burden on existing resources in the C-NLOPB.

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### Appendix A

#### Current Research and Development Models

##### A. Research and Development funding under The Atlantic Accord

The legislative requirement for expenditures related to R&D in the Province is contained in Section 45 of the Act, and reads as follows:

*45(3)(c) ... expenditures shall be made for research and development to be carried out in the Province and for education and training to be provided in the Province;*

Research & Development represent one avenue whereby the exploration for, and the development and production of the petroleum resources in the Newfoundland Offshore area can make a contribution to the sustainable development of the Province. This was the vision or intent of the legislators at the time when they inserted the requirement for Research & Development and Education & Training “in the Province” into the Atlantic Accord legislation. This is best achieved by building on the intellectual capital and human resources of the Province. Achievement of this legislative intent is a key reason why some parameters or guidance are required in respect of the requirement in the Act that there be expenditures in the Province for R&D.

The level of R&D expenditure by operators is expected to be consistent with the norms for such expenditures by the upstream petroleum industry in Canada. While the expenditures must be “in the Province”, Canadian tax criteria will be used as a general guide to determine other eligibility criteria.

R&D expenditures are viewed by the Board to be strategically important contributions to growth and sustainable development associated with the offshore petroleum sector in the Province. In order to be eligible, any R&D expenditure must occur in the Province of Newfoundland & Labrador. Exploration phase, R&D expenditures up to a maximum of 5 percent of the expenditure bid will be allowed. The Total R&D expenditure (TRr&d) during the development and production phase will be determined by the Statistics Canada benchmark for oil and gas extraction companies, total recoverable oil (RO) as defined by the approved Development Plan and the long term oil price (LTOP) as follows:

$$\text{TRr\&d} = B \times (\text{RO} \times \text{LTOP})$$

A similar calculation will apply to the production of Natural Gas Liquids and Natural Gas.

Production phase R&D expenditure requirement (PPr&d) will be calculated as the difference between the Total Requirement (TRr&d) and the development phase requirement (DPr&d), as follows:

$$\text{PPr\&d} = \text{TRr\&d} - \text{DPr\&d}$$

The production phase expenditure requirement will be distributed over each POA period during the production life of the project in proportion to production. In other words the requirement for each POA

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period will be the same proportion of the production phase R&D expenditure requirement as production in that POA period is of total anticipated project production.

### **B. Environmental Studies Research Funds (ESRF)**

The Environmental Studies Research Funds (ESRF) is a research program which sponsors environmental and social studies. It is designed to assist in the decision-making process related to oil and gas exploration and development on Canada's frontier lands. The ESRF program, initiated in 1983, receives its legislative mandate through the Canada Petroleum Resources Act (CPRA), which was proclaimed in February 1987. As well the Canada-Newfoundland Atlantic Accord Implementation Act and the Canada-Nova Scotia Offshore Petroleum Resources Accord Implementation Act provide legislative direction. The funding for the ESRF is provided through levies on frontier lands paid by interested holders such as the oil and gas companies. The ESRF is directed by a joint government/industry/public Management Board and is administered by a small secretariat which resides in the Office of Energy Research and Development, Natural Resources Canada, Ottawa, Ontario.

The purpose of the ESRF is to finance environmental and social studies pertaining to the manner in which and to the terms and conditions under which petroleum exploration, development, and production activities on frontier lands should be conducted. Frontier lands, defined as those areas where Canada has the right to dispose of or exploit the natural resources, are situated in the offshore areas of Canada's East and West Coasts and the areas north of 60 degrees. Environment is interpreted in the broadest possible sense and extends from the physical environment and biological environment issues to socio-economic issues.

The program operates on a calendar-year basis. The Management Board has traditionally met on a semi-annual basis; however, the frequency of meetings is adjusted as circumstances dictate. The Management Board assesses the information requirements of government and industry to determine study subject priorities for which a study program for the coming year is developed. The budget to support the study program and administrative costs form the basis for the calculation of the levy rate schedule. The budget and levy rates are submitted to the Ministers for approval by 1 November of each year. The projects under the study program are initiated following the collection of the levies, which generally occurs in the first quarter of the calendar year

### **C. Petroleum Research Atlantic Canada (PR-AC)**

PR-AC's mission is to identify opportunities, develop proposals, fund, and manage the execution of research and technology development projects on behalf of the Newfoundland and Labrador offshore oil and gas industry. PR-AC issues Calls for Proposals in focused areas as directed by our Research Advisory Committee, and provides research funding to successful applicants. They provide Transfer-to-Usability (TTU) grants to help bridge the gap between applied research and commercialization, and facilitate multi-partner Joint Industry Projects (JIPs) to address specific member needs.

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Since 1999, PR-AC has awarded over \$7M in direct funding to projects with a total value exceeding \$30M. In addition to our Call process and project management responsibilities, PR-AC undertakes a broad range of communications activities to assist with research identification, planning and dissemination of research project results.

### **D. Research and Development Corporation (RDC)**

The Research & Development Corporation (RDC) is a provincial Crown corporation that was established to improve Newfoundland and Labrador's research and development (R&D) performance. The Research and Development Council Act was passed by the Government of Newfoundland and Labrador in December 2008.

The mandate of the RDC is to strengthen the focus, quantity, quality and relevance of research and development undertaken in the province and elsewhere for the long-term economic benefit of the province. Increased research and development activities will play a major role in driving innovation, creating wealth and increasing economic growth in Newfoundland and Labrador for future generations.

There is a need for increased investment in research and development in Newfoundland and Labrador. In 2006, R&D expenditure in Newfoundland and Labrador was equal to 1% of GDP. In contrast, the Canadian average is 2% and the Organization for Economic Cooperation and Development (OECD) average is 2.26%. Addressing this differential requires continuous investments in people, research and infrastructure.

### **E. Helicopter Safety Research Management Committee (HSRMC)**

The HSRMC coordinates research activities related to large helicopters like those used offshore NL. Large Public Transport Helicopters provide essential access offshore for the substantial UK oil and gas industry, and this operation represents the majority of the large helicopter fleet in the UK. The environment can be hostile, flying across open water in the North Sea for the majority of the time in weather that is not always benign. Landings are on oil rig helidecks that have a range of obstacles and associated difficulties (such as turbulent hot air from turbines located close to the landing) or on relatively small ships that will pitch, heave and roll according to wave motion. Most activity in this area is coordinated through the CAA Helicopter Safety Research Management Committee (HSRMC), comprising regulators, such as CAA Norway and HSE and the industry.

Some projects under this group include helicopter emergency flotation, operations to moving helidecks, and helideck lighting.

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### Appendix B

#### Pros and Cons of Identified C-NLOPB R&D Options

##### Option 1: C-NLOPB Initiating R&D (as per the recommendation)

###### Pros

- Meets the intent of the recommendation
- Gives the Board direct control of R&D
- No restriction over where the money is spent
- Focused research (to NL's harsh operating environment)
- No operator bias
- Benefits the entire industry, not one Operator (public domain)

###### Cons

- Funding (Operators paying twice)
- Public perception could be that taxpayers are funding the oil industry
- Resources for the Board to manage R&D (time and experience)
- Operators paying for the Board to manage R&D (manpower and overhead) through cost recovery
- Duplication of effort with PR-AC and RDCNL
- Funding only by existing (producing) Operators while benefits would apply to all operators
- The Board has limited access to international efforts
- The Board's present budgeting cycle is annual
  - limited flexibility
  - multi-year projects
- Operators will leave R&D to the Regulator (less focus of safety and more on operations)
- Costs are not shared equally, but everyone benefits

##### Option 2: C-NLOPB Utilizing Existing R&D Entities

###### Pros

- Avoids duplication of effort (uses RDC and PR-AC staff)
- Utilizes existing funding
- Avoids public perception of C-NLOPB funding Operators
- Does allow the Board to have input on selection of R&D projects (meets the intent of Recommendation 27)
- Avoids the limitations inherent in multi-year projects (see Option 1)

###### Cons

- Effectively carries the limitations that PR-AC and RDC have (e.g., money must be spent locally, limited ability to leverage international R&D)
- Board only has influence – not full authority – to choose projects

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- Limits the independence of the Board to choose projects
- No direct funding for Board R&D, going against intent of the recommendation
- The C-NLOPB does not presently participate in PR-AC or RDC
- Requires some MOU with the Operators and NL government (RDC)

### Option 3: Encourage Operators' Current Spending on R&D (with potential Accord Act amendments to allow spending outside the province)

#### Pros

- Not adding additional financial burden on any entity
- Avoids the perception of taxpayers funding oil companies' interests
- Operators not getting hit twice for R&D
- The Board does not have to commit additional resources to R&D projects
- Still targets safety initiatives
- Facilitates international projects
- Leverages Operators' international interests

#### Cons

- Current legislation does not allow spending outside the province
- Costs are not shared equally but benefits are
- Does not meet the stated intent of the recommendation as the Board would not fund or direct the R&D activity
- Requires legislative change

### Option 4: Hybrid of Options 1 & 2 (The Board funds and involves itself in any R&D outside the province and uses existing R&D entities and resources for funding in NL)

#### Pros:

- Meets the intent of the recommendation
- Minimizes additional funding to the Board
- Eliminates the need for legislative change

#### Cons:

- Public perception of taxpayers funding Operators' interests
- Would require Board resources to monitor
- Certain areas the Board does not have direct influence over

### Additional consideration: Relationship Building

- The C-NL offshore area would benefit from the Board examining its relationship with:
  - Other jurisdictions (UK HSE, Norway PSA, etc.)
  - PR-AC
  - HSRMC

Local R&D contractors (C-CORE, IMD, etc.)

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### References

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