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(Mégantic-L'Érable)
Natural Resources Canada
House of Commons
Ottawa, Ontario
K1A 0A6

The Honourable Chuck Strahl, P.C., M.P.
Indian Affairs and Northern
Development Canada
House of Commons
Ottawa, Ontario
K1A 0A6

Dear Ministers:

On behalf of the Environmental Studies Research Funds Management Board, it is my pleasure to submit the 2009 Annual Report for the Environmental Studies Research Funds in accordance with paragraph 79(1)(d) of the *Canada Petroleum Resources Act*.

Sincerely yours,



Paul Barnes
A/ Chairman
Environmental Studies Research Funds
Management Board

2009

ANNUAL REPORT FOR THE
ENVIRONMENTAL STUDIES RESEARCH FUNDS

APRIL 2010

Environmental Studies Research Funds

Profile

The Environmental Studies Research Funds (ESRF) is a research program that sponsors environmental and social studies. It is designed to assist government decision-making related to oil and gas exploration and development on Canada's frontier lands. The ESRF program, initiated in 1983 under the *Canada Oil and Gas Act (COGA)*, now receives its legislated mandate through the superseding legislation, the *Canada Petroleum Resources Act (CPRA)*, proclaimed in February 1987. Funding for the ESRF is provided through levies on frontier lands by interest holders such as oil and gas companies. The ESRF is directed by a joint government/industry/public Management Board and is administered by a Secretariat that resides within the Office of Energy Research and Development of Natural Resources Canada in Ottawa, Ontario.

Published under the auspices of the
Environmental Studies Research Funds
ISBN 0-978-1-926750-15-6

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Background on the Structure and Operation of the Funds

The Environmental Studies Research Funds (ESRF) 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. Subsection 101(1) of the *Canada Petroleum Resources Act* (CPRA) defines an environmental study as “*work pertaining to the measurement or statistical evaluation of the physical, chemical, and biological elements of the lands, oceans, or coastal zones, including winds, waves, tides, currents, precipitation, ice cover and movement, icebergs, pollution effects, flora and fauna, both onshore and offshore, human activity and habitation, and any related matter.*”

The Environmental Studies Research Funds are directed by a twelve-member Management Board that has representation from the federal government, the Canada–Nova Scotia Offshore Petroleum Board (CNSOPB), the Canada–Newfoundland and Labrador Offshore Petroleum Board (CNLOPB), the oil and gas industry, and the general public. Mr. Paul Barnes, Atlantic Canada Manager, Canadian Association of Petroleum Producers, is the current acting chairman of the ESRF Management Board.

The ESRF Management Board directs the business of the ESRF, sets priorities for study topics, determines the program budget and facilitates the development of study proposals on behalf of the Minister of Natural Resources Canada and the Minister of Indian and Northern Affairs Canada.

The program operates on a calendar year basis. The Board generally meets three times a year; however, the frequency of meetings may be adjusted as circumstances dictate. The Board assesses the information requirements of government and industry to determine priorities for the study program for the coming year. The budget to support the study program and its administration forms the basis for the calculation of the levy rate schedule. The budget and levy rates are submitted to the Ministers for approval by November 1 of each year. The projects under the study program are initiated following the collection of levies that generally occurs in the first quarter of the calendar year.

Activities in 2009

The total value of the 2009 ESRF program was \$1,552,235. The budget included \$1,232,735 for the proposed studies and \$319,500 for the administration of the ESRF research activities program (refer to Levy #21 – Table 1).

The collection of unpaid levies is pursued on an ongoing basis by the ESRF Secretariat. Maps of the ESRF levy regions can be viewed on the ESRF website at:

http://www.esrfunds.org/legloi_e.php

Financial Statement

January 1, 2009 to December 31, 2009

In Dollars

Regions	Opening Cash Balance	Levies and Back Levies Collected	Administrative Costs	Study Program Expenditures	Closing Cash Balance
SOUTH: Regions 1 to 16	2,738,559	1,007,612	(167,958)	(484,779)	354,875
NORTH: Regions 17 to 31	380,578	1,386,972	(87,624)	(525,356)	1,154,570
TOTAL	\$3,119,137	\$2,394,584	(\$255,582)	(\$1,010,134)	\$4,248,004

Table I

ESRF Revenues

January 01, 2009 to December 31, 2009

In Dollars

REGIONS	Levy #21 (\$/ha)	Levies Invoiced 2009 B	Levies Collected 2009 C	Back Levies Collected 2009 D	Total Levy Revenue Collected (C+D)
1 Queen Charlottes North	0.0000	0	0		0
2 Hecate Strait	0.0000	0	0		0
3 Queen Charlottes South	0.0000	0	0		0
4 Vancouver Island	0.0000	0	0		0
5 Labrador North	0.1490	1,082	1,082		1,082
6 Labrador Central	0.1490	92,589	122,555		122,555
7 Labrador South	0.1490	50,525	20,261		20,261
8 Northeast Newfoundland	0.0699	194	0		0
9 Newfoundland Slope	0.0708	156,101	133,538		133,538
10 Grand Banks North	0.1220	71,987	106,837	3,687	110,524
11 Grand Banks South	0.1068	98,882	124,054	84,178	208,232
12 Scotian Shelf East	0.0908	161,415	86,304		86,304
13 Scotian Shelf West	0.1326	21,199	0		0
14 Scotian Slope	0.0696	145,184	130,165	130,010	260,175
15 Gulf of St. Lawrence	0.0774	72,680	40,333	24,607	64,940
16 Hudson Bay	0.0000	0	0		0
17 Beaufort South	0.5095	277,456	277,334	167,614	444,948
18 Beaufort North	0.4128	253,949	729,898	32,447	762,345
19 Western Archipelago-Offshore	0.0492	367	1,129	913	2,042
20 Central Archipelago-Offshore	0.0492	11,850	12,088		12,088
21 Eastern Archipelago-Offshore	0.0159	411	303		303
22 Baffin Bay	0.0000	0	0		0
23 Yukon North	0.0000	0	0		0
24 Yukon South	0.0000	0	0		0
25 Mackenzie Delta	0.0448	21,232	18,212		18,212
26 Mackenzie North	0.0686	72,066	37,712		37,712
27 Mackenzie Central	0.0448	33,488	105,872		105,872
28 Mackenzie South	0.0448	5,001	1,514		1,514
29 Western Archipelago-Onshore	0.0000	0	0		0
30 Central Archipelago-Onshore	0.0448	2,138	1,886		1,886
31 Eastern Archipelago-Onshore	0.0115	141	49		49
TOTAL		\$1,549,936.90	\$1,951,126.74	\$443,456.81	\$2,394,583.55

2009 Study Program

The ESRF Management Board approved the following eight new studies for the 2009 study program:

Northern Studies

Priority Area:

Oil and Gas Effects on Northern Use of Land and Water

- A review of Tuktoyaktuk Harbour as a Base for Offshore Oil and Gas Exploration and Development
- An Analysis of Historical Water Quality Data for Bosworth Creek

Oil Spill Fate, Effects and Response

- A Review of Oil Spill State of Knowledge for the Beaufort Sea

Seismic Issues – Offshore

- Development of Aerial Survey Techniques and Whale Detection Methods for Seismic Operations in the Beaufort Sea
- Validation of Predicted Sound Effects on Whale Behaviour Based on Acoustic Modelling and Field Observations in the Beaufort Sea

East Coast Studies

Priority Area:

Socio-Economic

- Evaluation of potential socio-economic effects on the Labrador coast as a result of the resumption of offshore oil and gas exploration and development and possible future production

Air Emissions

- Modelling Emissions from Offshore Installations

Seabirds

- Developing Remote Tracking Technology for Drift Blocks

Continuing Studies in 2009 – Northern

Priority Area:

Seismic Issues – Onshore

- Seismic Lines Recovery Study

Waste Management

- Waste Disposal Options in the Inuvialuit Settlement Region

Effects on Protected Species/Areas

- Bosworth Creek Reclamation

Cumulative Effects/Land Use Planning

- Valued Components Thresholds Project

Socio-Economic Effects

- Considerations in Developing Oil and Gas Industry Best Practices in the North

Continuing Studies in 2009 – East Coast

Priority Area:

Seismic Issues

- Invertebrates (snow crab)
- Monkfish
- Fish Behaviour
- Marine Mammal Observation Data Analysis
- Lobster Feeding

Seabirds

- Offshore Monitoring
- Sheens and Feathers

Waste Management

- Produced Water
- Synthetic-Based Mud Fate

Miscellaneous

- Oil Spill Workshop
- Whale Vocalization

Plans for 2010

In September 2009, the ESRF Management Board established the budget for the 2010 program, which will be supported by Levy #22. This program was recommended by the Management Board and has been approved by the Minister of Natural Resources Canada and the Minister of Indian and Northern Affairs Canada. The study program has an estimated value of \$2,880,949 and an administration budget of \$576,698.00 for new programs. Continuing studies from 2009 will be funded from the balance of existing uncommitted funds.

The ESRF Management Board has established the following priority areas for 2010:

North

1. Seismic Exploration Offshore
2. Seismic Exploration Onshore
3. Waste Management
4. Effects on Protected Areas/Species
5. Cumulative Effects/Land Use Planning
6. Socio-economic Effects

East Coast

1. Seismic
2. Seabirds
3. Waste Management
4. Socio-Economic Issues
5. Offshore Air Emission

Publication of Reports

All ESRF studies are subject to a scientific/technical peer review. Reports that are deemed to be scientifically or technically significant are published in the ESRF Technical Report Series. The series is documented in several international databases including the Canadian Institute for Scientific and Technical Information (CISTI).

Since its inception in 1983, the ESRF has published 163 reports. All reports are available to download for free on the [ESRF website](#).

Recent Publications

In 2009, the ESRF published the following reports in the ESRF Technical Report Series:

- 161 KAVIK-AXYS INC. *Review of the Ikhil Gas Development and Pipeline Regulatory and Environmental Process: Lessons Learned*. January 2007. 49 p.
- 162 HARWOOD, LOIS, THOMAS G. SMITH, HUMFREY MELLING. *Assessing the Potential Effects of Near Shore Hydrocarbon Exploration on Ringed Seals in the Beaufort Sea Region 2003-2006*. November 2007. 103 p.
- 163 KAVIK-AXYS INC. *Biophysical Research Requirements for Beaufort Sea Hydrocarbon Development*. August 2008. 125 p.

Appendix 1 – ESRF Publications 1985–2009

Bibliographies

- 010 GOODWIN, C.R., J.C. FINLEY and L.M. HOWARD. *Ice Scour Bibliography*. July 1985. 99 p.
- 026 Young, S.C. *Bibliography on the Fate and Effects of Arctic Marine Oil Pollution*. March 1986. 212 p.
- 030 HOWARD, L.H. *Icebergs: A Bibliography Relevant to Eastern Canadian Waters*. May 1986. 277 p.
- 050 FINLEY, J.C. and C.R. GOODWIN. *The Training and Employment of Northern Canadians: An Annotated Bibliography*. November 1986. 206 p.
- 130 HUNTER, S.P. and J.H. VANDERMEULEN. *Bibliography of Aquatic Oil Pollution Fate and Effects*. December 1994. CD-Rom.
- 136 Coastal Resource Inventory: Great Northern Peninsula. Not published.

Environmental Effects and Monitoring

- 001 MCLAREN, P.L. and R.A. DAVIS. *Distribution of Bowhead Whales in the Beaufort Sea*. Summer 1983. February 1985. 62 p.
- 005 THOMAS, D.J., W.S. DUVAL, C.S. JOHNSTON, G.S. LEWBEL, A. BIRDSALL, M.S. HUTCHESON, G.D. GREENE, R.A. BUCHANAN and J.W. MACDONALD. *Effects Monitoring Strategies and Program for Canada's East Coast*. May 1985. 88 p.
- 009 HARWOOD, L.A. and A. BORSTAD. *Bowhead Whale Monitoring Study in the Southeast Beaufort Sea*. July-September 1984. August 1985. 99 p.
- 021 TIDMARSH, W.G., R. ERNST, R. ACKMAN and T. FARQUHARSON. *Tainting of Fishery Resources*. January 1986. 174 p.
- 025 KINGSLEY, M.C.S. *Distribution and Abundance of Seals in the Beaufort Sea, Amundsen Gulf & Prince Albert Sound*. 1984. February 1986. 16 p.
- 028 THOMSON, D.H., D.B. FISSEL, J.R. MARKO, R.A. DAVIS and G.A. BORSTAD. *Distribution of Bowhead Whales in Relation to Hydrometeorological Events in the Beaufort Sea*. March 1986. 119 p.
- 036 NORTON, P. and L.A. HARWOOD. *Distribution, Abundance and Behavior of White Whales in the Mackenzie Estuary*. June 1986. 73 p.

- 057 DUVAL, W.S. (ed.). *Distribution, Abundance and Age Segregation of Bowhead Whales Relative to Industry Activities and Oceanographic Features in the Beaufort Sea, August-September 1985*. March 1987. 117 p.
- 060 YUNKER, M.B. and R.W. DRINNAN. *Dispersion and Fate of Oil from Oil-based Drilling Muds near Sable Island, N.S.* January 1987. 169 p.
- 063 DRINNAN, R.W., M. YUNKER, A. GILLAM, N. CHARCHUK and S.R.H. DAVIS. *Options for Treatment and Disposal of Oil-based Mud Cuttings in the Canadian Arctic*. February 1987. 167 p.
- 066 NENNINGER, R.D. *Monitoring a Sump Containing Drilling Mud with High Salt Content*. March 1987. 47 p.
- 075 CROSS, W.E. and B. HUMPHREY. *Monitoring the Long-Term Fate and Effects of Spilled Oil in an Arctic Marine Subtidal Environment*. August 1987. 120 p.
- 080 ERNST, R.J., W.M.N. RATNAYAKE, T.E. FARQUHARSON, R.G. ACKMAN and W.G. TIDMARSH. *Tainting of Finfish by Petroleum Hydrocarbons*. September 1987. 150 p.
- 089 FORD, J.K.B., J.C. CUBBAGE and P. NORTON. *Distribution, Abundance, and Age Segregation of Bowhead Whales in the Southeast Beaufort Sea, August-September, 1986*. November 1987. 53 p.
- 090 WAINWRIGHT, P.F. and B. HUMPHREY. *Analysis of Sediment Data from the Beaufort Shorebase Monitoring Program, 1982-1984*. March 1988. 78 p.
- 093 HARDY BBT LIMITED and STANLEY ASSOCIATES ENGINEERING LTD. *Handling and Disposal of Waste Drilling Fluids from On-Land Sumps in the Northwest Territories and Yukon*. February 1988. 58 p.
- 101 ERICKSON, P., B. FOWLER, and D. THOMAS. *Oil-based Drilling Muds: Off Structure Monitoring-Beaufort Sea*. June 1988. 188 p.
- 102 NAKASHIMA, D.J. and D.J. MURRAY. *The Common Eider of Eastern Hudson Bay: A Survey of Nest Colonies and Inuit Ecological Knowledge*. November 1988. 174 p.
- 109 LAWRENCE, M.J. and S.L. DAVIES (eds.). *Wildlife and Wildlife Habitat Restoration and Compensation in the Event of an Oil Spill in the Beaufort Sea*. March 1993. 88 p.
- 110 HURLBUT, S.E., D.P. FRENCH and B.J. TAYLOR. *Evaluation of the Potential Effects of Major Oil Spills on Grand Banks Commercial Fish Species as a Result of Impacts on Eggs and Larvae*. January 1991. 53 p.
- 117 SEKERAK, A.D., N. STALLARD and W.B. GRIFFITHS. *Distribution of Fish and Fish Harvests in the Nearshore Beaufort Sea and Mackenzie Delta During Ice-Covered Periods, October-June*. November 1992. 157 p.

- 118 THOMAS, D.J. *Considerations in the Design of Effects Monitoring Strategies: Beaufort Sea Case Study*. January 1992. 54 p.
- 121 S.L. ROSS ENVIRONMENTAL RESEARCH LIMITED and LEDREW, FUDGE AND ASSOCIATES. *The Risk of Tainting Flatfish Stocks During Offshore Oil Spills*. January 1993. 67 p.
- 122 MACKINNON, D.S. and P.A. LANE. *Saltmarsh Revisited – The Long-Term Effects of Oil and Dispersant on Saltmarsh Vegetation*. September 1993. 24 p.
- 123 DUVAL, W.S. *Proceedings of a Workshop on the Beaufort Sea Beluga February 3–6, 1992, Vancouver, B.C.* March 1993. 26 p.
- 134 RICHARD, P.R., A.R. MARTIN and J.R. ORR. *Study of Summer and Fall Movements and Dive Behaviour of Beaufort Sea Belugas, Using Satellite Telemetry. 1992–1995*. 34 p.
- 137 HATCH ASSOCIATES LIMITED and GRIFFITHS MUECKE ASSOCIATES. *Workshop on Cumulative Environmental Effects Assessment and Monitoring on the Grand Banks and Scotia Shelf*. 2000. 61 p.
- 138 MONTEVECCHI, W.A., F.K. WIESE, G. DAVOREN, A.W. DIAMOND, F. HUETTMANN, J. LINKE. *Seabird Attraction to Offshore Platforms and Seabird Monitoring from Offshore Support Vessels and other Ships Literature Review and Monitoring Design*. 1999. 56 p.
- 139 THOMSON, DENIS H., JACK W. LAWSON and ANNE MUECKE. *Proceedings of a Workshop to Develop Methodologies for Conducting Research on the Effects of Seismic Exploration on the Canadian East Coast Fishery, Halifax, Nova Scotia, September 7–8 2000*. April 2001. 92 p.
- 142 ERIN CONSULTING LTD. and OCL SERVICES LTD. *Sheens Associated with Produced Water Effluents – Review of Causes and Mitigation Options*. March 2003. Calgary. 46 p.
- 143 MORTENSEN, PÅL B., LENE BUHL-MORTENSEN, SUSAN E. GASS, DONALD C. GORDON JR., ELLEN L.R. KENCHINGTON, CYNTHIA BOURBONNAIS and KEVIN G. MACISAAC. *Deep-Water Corals in Atlantic Canada: A Summary Of ESRF-Funded Research (2001–2003)*. December 2004. Calgary. 43 p.
- 144 CHRISTIAN, JOHN R., ANNE MATHIEU, DENIS H. THOMSON, DAVID WHITE and ROBERT A. BUCHANAN. *Effect of Seismic Energy on Snow Crab (Chionoecetes opilio)*. November 2003. Calgary. 106 p.
- 145 RACCA, ROBERTO G., DAVID E. HANNAY, R. BRUCE MURRAY, WILLIAM B. GRIFFITHS, and MICHAEL MULLER. *Testing Fish Deterrents for Use Under-Ice in the Mackenzie Delta Area*. March 2004. Calgary. 118 p.

- 146 BUCHANAN, ROBERT A., JOANNE A. COOK and ANNE MATHIEU. *Environmental Effects Monitoring for Exploration Drilling*. December 2003. Calgary. 86 p.
- 147 DILLON CONSULTING LIMITED with DMT CORDAH. *Pollution Prevention Opportunities in the Offshore Oil and Gas Sector – Final Report*. October 2003. Calgary. 73 p.
- 148 DILLON CONSULTING, BMT CORDAH LTD. *Standardizing the Reporting of Air Emissions to Ambient Air from Atlantic Canada Offshore Petroleum Activities*. March 2003. 52 p.
- 149 TRUDEL, K. 2004. *Workshop on Dispersant Use in Eastern Canada*. Environmental Studies Research Funds, Report No. 149, Calgary Alberta, 109 p.
- 150 MARTEC LIMITED, CEF CONSULTANTS LTD, DRDC ATLANTIC, ST. FRANCIS XAVIER UNIVERSITY. *Effects of Pipelines/Gathering Lines on Snow Crab and Lobster*. December 2004, Calgary, 61 p.
- 151 LEE, K., H. BAIN, and G.V. HURLEY, (eds.). 2005. *Acoustic Monitoring and Marine Mammal Surveys in the Gully and Outer Scotian Shelf Before and During Active Seismic Programs*. December 2005. Calgary, 154 p + appendices.
- 152 ELLIS & ASSOCIATES. *Drilling Waste Management – Recommended Best Practices*. January 2005. Calgary. CD-Rom.
- 154 AMEC EARTH & ENVIRONMENTAL. *Inuvialuit Settlement Region Drilling Waste Disposal Sumps Study*. February 2005. Calgary. CD-Rom.
- 155 DILLON CONSULTING LIMITED and SALMO CONSULTING. *Beaufort-Delta Cumulative Effects Project*. February 2005. Calgary. CD-Rom.
- 156 MOULTON, V.D., and B.D. MACTAVISH. *Recommended Seabird and Marine Mammal Observational Protocols for Atlantic Canada*. March 2004. Calgary. 80 p.
- 158 CHRISTIAN, JOHN R., ANNE MATHIEU, and ROBERT A. BUCHANAN, *Chronic Effects of Seismic Energy on Snow Crab (Chionoecetes opilio)*. March 2004. 45 p.
- 159 KEMPER, J. TODD. *Vegetation Changes on Seismic Lines from Recent (2000–2001) and Historic (1970–1986) Seismic Programs in the Mackenzie Delta Area*. May 2006. 29 p.

Environmental Loading and Design

- 111 MADDOCK, B., G. KHNG and M. GERIN. *Verification of CSA Code for Fixed Offshore Steel Structures*. October 1992. 92 p.

- 112 ALLYN, N., W.J. CICHANSKI and P. ADEBAR. *Verification of CSA Code for Fixed Offshore Concrete Structures*. November 1992. 62 p.
- 116 TRAYNOR, S. and S.R. DALLIMORE. *Geological Investigations of Proposed Pipeline Crossings in the Vicinity of Taglu and Niglintgak Islands, Mackenzie Delta, NWT*. May 1992. 115 p.
- 131 ALLYN, N., et al. *Environmental Loading Studies for the CSA Offshore Structures Code*. January 1995. 86 p.
- 135 DALLIMORE, S.R. and J.V. MATTHEWS, JR. *The Mackenzie Delta Borehole Project*. April 1997. CD-Rom.

Frontier Social and Economic Issues

- 002 GARDNER, M. *Interaction Between the Fisheries & the Oil and Gas Industry off the East Coast of Canada*. March 1985. 70 p.
- 003 CLELAND DUNSMUIR CONSULTING LTD., COMMUNITY RESOURCE SERVICES COOPERATIVE LTD., MARITIME RESOURCE MANAGEMENT SERVICES and H. MILLS. *Petroleum-Related Socio-Economic Issues – Atlantic Canada*. March 1985. 101 p.
- 004 USHER, P.J., D. DELANCEY, G. WENZEL, M. SMITH and P. WHITE. *An Evaluation of Native Harvest Survey Methodologies in Northern Canada*. April 1985. 249 p.
- 015 GARDNER, M. *Construction Projects – Frame of Reference for Oil & Gas Developments in Atlantic Canada*. November 1985. 86 p.
- 024 DPA GROUP INC. and INTERGROUP CONSULTING ECONOMICS LTD. *Northern Employment and Training in the Oil and Gas Industry*. March 1986. 105 p.
- 040 STOREY, K., J. LEWIS, M. SHRIMPTON and D. CLARK. *Family Life Adaptations to Offshore Oil and Gas Employment*. July 1986. 207 p.
- 046 CONSTABLE, G.A., R.M. GRIGGS, N.E. MILLBANK and M.S. SINCLAIR. *Business Opportunities Related to Oil and Gas Exploration and Production in Northern Canada*. August 1986. 269 p.
- 047 IDP CONSULTANTS LTD. *Public Information on Oil and Gas Activities*. September 1986. 170 p.
- 067 Pinfold, T. *An Evaluation of the Utility of Large-Scale Economic Models for Socio-Economic Impact Assessment*. March 1987. 34 p.
- 071 ATLANTIC CONSULTING ECONOMISTS LIMITED. *Local Business Adaptation to East Coast Offshore Energy Development*. July 1987. 57 p.

- 085 GROVES, S., W.G. GREEN and J.R. HARPER. *Queen Charlotte Islands Coastal Zone: Digital Mapping and Linked Data-Base System*. September 1988. 115 p.
- 087 STOREY, K. and M. SHRIMPSON. *Planning for Large-Scale Construction Projects: A Socio-Economic Guide for Communities, Industry and Government*. October 1987. 78 p.
- 153 FEDIRCHUK, GLORIA J., S. LABOUR, N NICHOLLS, FMA HERITAGE RESOURCES CONSULTANTS. *Traditional Knowledge Manual Volume 1 & 2: Literature Review and Evaluation and Using Traditional Knowledge in Impact Assessments*. August 2005. Calgary.

Ice – Icebergs – Ice Detection

- 008 RYAN, J.P., M. HARVEY and A. KENT. *The Assessment of Marine Radars for the Detection of Ice and Icebergs*. August 1985. 127 p.
- 011 GAMMON, P.H. and J.C. LEWIS. *Methods for the Fracturing of Icebergs*. July 1985. 91 p.
- 014 BUCKLEY, T., B. DAWE, A. ZIELINSKI, S. PARASHAR, D. MACDONALD, H. GASKILL, D. FINLAYSON and W. CROCKER. *Underwater Iceberg Geometry*. September 1985. 216 p.
- 016 ROSSITER, J.R., L.D. ARSENAULT, E.V. GUY, D.J. LAPP, E. WEDLER, B. MERCER, E. MCLAREN, and J. DEMPSEY. *Assessment of Airborne Imaging Radars for the Detection of Icebergs*. September 1985. 320 p.
- 022 RYAN, J.P. *Enhancement of the Radar Detectability of Icebergs*. January 1986. 83 p.
- 035 HARVEY, M.J. and J.P. RYAN. *Further Studies on the Assessment of Marine Radars for the Detection of Icebergs*. June 1986. 82 p.
- 038 MARKO, J.R., D.B. FISSEL and J.R. BIRCH. *Physical Approaches to Iceberg Severity Prediction*. July 1986. 104 p.
- 042 ANDERSON, D.G., D. MCDONALD, P. MITTEN, S. NICHOLLS and D. TAIT. *Management of Small Ice Masses*. August 1986. 195 p.
- 044 HAY & COMPANY CONSULTANTS INC. *Motion and Impact of Icebergs*. September 1986. 146 p.
- 045 CANPOLAR CONSULTANTS LTD. *Iceberg Detection by Airborne Radar: Technical Review and Proposed Field Program*. September 1986. 235 p.
- 048 DAVIDSON, L.W., W.I. WITTMAN, L.H. HESTER, W.S. DEHN, J.E. WALSH and E.M. REIMER. *Long-Range Prediction of Grand Banks Iceberg Season Severity: A Statistical Approach*. October 1986. 163 p.

- 052 DE MARGERIE, S., J. MIDDLETON, C. GARRET, S. MARQUIS, F. MAJAESS and K. LANK. *Improvement of Iceberg Drift Forecast – Grand Banks*. November 1986. 86 p.
- 081 WARBANSKI G. and E. BANKE. *Evaluation of a Modified Water Cannon System to Control Small Iceberg Masses*. August 1987. 142 p.
- 091 KLEIN, K., J.P. RYAN and M. HOUSE. *Ryan Evaluation of Two Search Radar Systems for Detection of Ice Masses*. January 1988. 240 p.
- 104 TERRY, B.F., D.J. LAPP, C.L. BALKO, K.E. HANCOCK and P.A. LAPP. *Ice Data Management System*. July 1989. 151 p. + appendices.
- 113 FINLAYSON, D.J., J. BOBBITT, P. RUDKIN and I.J. JORDAN. *Iceberg Trajectory Model: Real-Time Verification*. March 1992. 47 p.
- 115 PILKINGTON, G.R., M.C. HILL, M. METGE and D. MCGONIGAL. *Beaufort Sea Ice Design Criteria –Acquisition of Data on EIFs*. October 1992. 154 p.
- 125 DAVIDSON, L.W. *Long-Range Ice Forecasting System (LRIFS) Applied for the Beaufort Sea*. May 1993. 58 p.
- 132 ROSSITER, J.R., et al. *Remote Sensing Ice Detection Capabilities – East Coast*. April 1995. 172 p.
- 133 DAVIDSON, S.H. and A. SIMMS. *Characterization of Iceberg Pits on the Grand Banks of Newfoundland*. February 1997. 162 p

Oil Spill Research and Countermeasures

- 006 BELORE, R.C. *Effectiveness of the Repeat Application of Chemical Dispersants on Oil*. June 1985. 66 p.
- 012 HARPER, J.R. and E.H. OWENS. *Shoreline Monitoring Programs for Oil Spills-of-Opportunity*. September 1985. 50 p.
- 013 ABDELNOUR, R., T. JOHNSTONE, D. HOWARD and V. NISBETT. *Laboratory Testing of an Oil-Skimming Bow in Broken Ice*. January 1986. 60 p.
- 018 S.L. ROSS ENVIRONMENTAL RESEARCH LTD. *Testing of an Oil Recovery Concept for Use in Brash and Mulched Ice*. January 1986. 43 p.
- 019 WOTHERSPOON, P., J. SWISS, R. KOWALCHUK and J. ARMSTRONG. *Oil in Ice Computer Model*. December 1985. 129 p.
- 031 HARPER, J.R. and B. HUMPHREY. *Stranded Oil in Coastal Sediments: Permeation in Tidal Flats*. April 1986. 23 p.

- 033 HARPER, J.R. *Practical Insights into Decision-Making for Shoreline Cleanup of Oilspills*. May 1986. 44 p.
- 034 BELORE, R.C. *Development of a High Pressure Water Mixing Concept for Use with Ship-Based Dispersant Application*. May 1986. 51 p.
- 051 S.L. ROSS ENVIRONMENTAL RESEARCH LTD. and ENERGETEX ENGINEERING. *Decision-Making Aids for Igniting or Extinguishing Well Blowouts to Minimize Environmental Impacts*. November 1986. 119 p.
- 053 MACNEILL, M.R. and R.H. GOODMAN. *Oil Motion During Lead Closure*. January 1987. 13 p.
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- 140 JACQUES WHITFORD ENVIRONMENT LIMITED 2001. *Atlas of Ecologically and Commercially Important Areas in the Southern Gulf of St. Lawrence*. 2001. CD-Rom.
- 141 Oil Pollution Seabird Mortality Assessment on the Sable Island Bank. Not published.

Sea Bottom Ice Scour

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- 157 SONNICHSEN, G.V., HUNDERT, T., POCKLTON, P. AND MYERS, R.
Documentation of Recent Iceberg Grounding Events and a Comparison with Older Events of Know Age - Northern Grand Banks, Canada, April 2006. 206 p.

Sediment Transport

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Waves

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