

Northern Oil and Gas

Annual Report 1994

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***Message from the Honourable Ronald A. Irwin
Minister of Indian Affairs and Northern Development***

It is my pleasure to table the 1994 Northern Oil and Gas Annual Report.

Last year I informed Parliament that Canada was on the threshold of a new era in the North. With the successful reopening of Crown lands to oil and gas exploration, I believe we have crossed that threshold. We have made real progress this past year. Partnerships we have established with northerners will serve as the basis for a successful future for all Canadians as we continue our combined efforts to strengthen the northern economy.

Two calls for nominations in the southern Northwest Territories and the Mackenzie Valley indicated renewed industry interest for exploration activity in the mainland area. Two ensuing calls for bids were launched in 1994. The results for the southern Northwest Territories were announced in December, ending the year on a promising note. The results of the Mackenzie Valley Call for Bids will be announced in 1995.

Reopening the mainland to oil and gas exploration was a tangible result of the joint efforts of both the northern communities and DIAND departmental officials. The outcome will be much-needed employment and business opportunities for community residents.

It is very encouraging to see renewed interest from the petroleum industry. I am optimistic that this endeavour will increase the private sector's awareness and interest in the unique opportunities the North offers to investors. It is also heartening to see that northern Aboriginal peoples are equally interested in providing an opportunity for the petroleum industry to have a role in the North's future economic well-being.

This past year the Government has provided clear evidence of its commitment to economic renewal in all regions of Canada, including north of 60° latitude. This includes the proclamation of Bill C-25 amending the *Canada Petroleum Resources Act* to allow production from the Norman Wells oil field to continue for as long as the field is commercially viable. It also included the proclamation of Bill C-6 transferring responsibility to the National Energy Board for several regulatory functions pertaining to oil and gas.

With current major undertakings in the areas of land claim settlements, devolution and sustainable development amid fiscal restraint, this new era will no doubt present many challenges. As the North moves into the 21st century, established partnerships will require an ongoing commitment to building a future which demonstrates that the North is both a place where tradition and innovation can be supportive of each other and where both are equally valued.



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Overview of Northern Oil and Gas Activities

Although exploration activity across the North remained very low in 1994, there were significant signs of hope for the future. The implementation of the Gwich'in and Sahtu land claim settlement agreements and the co-operation of both First Nations and the Deh Cho in Fort Liard resulted in the first issuance of oil and gas rights in some 25 years in the southern Northwest Territories and the central Mackenzie Valley.

Fort Liard, in the southern Northwest Territories, is immediately north of northeastern B.C. where exploration has been intensifying in recent years. A call for nominations led to a call for bids on eight parcels totalling almost 150 000 hectares. Eight licences were awarded for work bids totalling over \$22 million. This is expected to lead to exploration activity in the region beginning with seismic work in 1995.

The central Mackenzie Valley contains the large Norman Wells oil field. The 1994 call for nominations in this region attracted industry interest and five parcels, totalling some 527 000 hectares, were put up for competitive bidding. The call will close in April 1995.

No exploratory programs (including geophysical and geological surveys and exploratory drilling) were conducted north of 60 ° in 1994. All drilling activity was concentrated around development of existing fields at Pointed Mountain and Cameron Hills.

Northern oil and natural gas exploration expenditures have fallen considerably since peaking at close to \$1 billion in the mid-1980s; they amounted to approximately \$9 million in 1994. Royalties received from industry on northern oil and natural gas production amounted to \$7.4 million during 1994.

A small but important adjustment was made to the *Canada Petroleum Resources Act* giving force to the Norman Wells Amending Agreement of 1994. The Amending Agreement extends the term of the 1944 Norman Wells Proven Area Agreement between Imperial Oil and the Government of Canada, and marginally adjusts the boundaries of the area covered by the original agreement. This is expected to maximize production from the field and to lead to a \$30 million drilling program.

In May 1993, the federal government and the Yukon Territorial Government signed the Canada Yukon Oil and Gas Accord for the transfer to Yukon of responsibilities for the administration and regulation of onshore oil and natural gas exploration and development in the territory. Implementation of the agreement requires passage of legislation by both Parliament and the Yukon legislature. In 1994, work continued on the development of draft legislation.

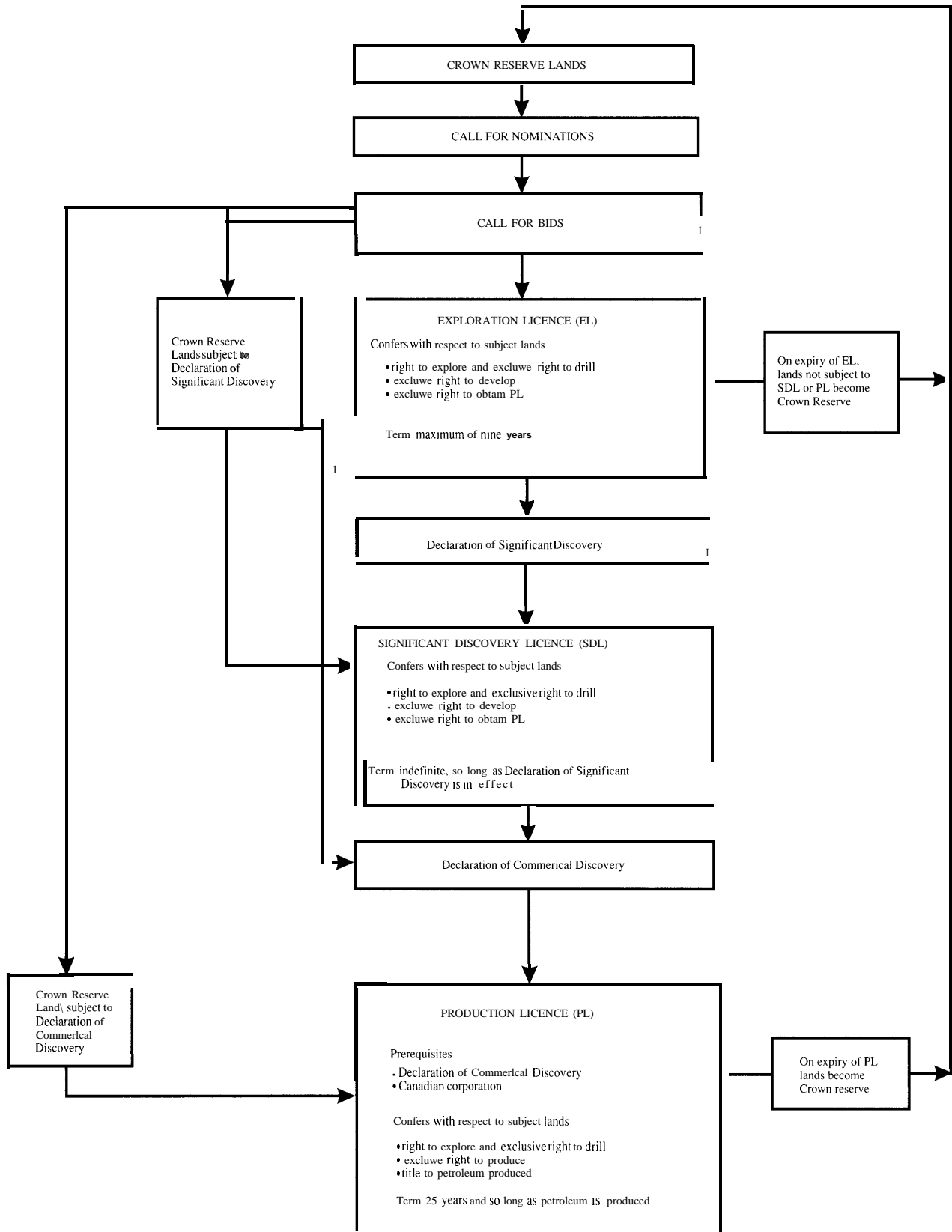
After implementation, Yukon will exercise provincial-type authority over all oil and natural gas activity within its boundaries. The Accord also provides a commitment to negotiate shared management of oil and gas resources in the **Beaufort** Sea.

In May 1994, a Bill to amend the *Canada Oil and Gas Operations Act*, the *Canada Petroleum Resources Act* and the *National Energy Board Act* was proclaimed. Bill C-6 authorizes the National Energy Board to provide advice to the Ministers, officers and employees of government departments, ministries and agencies. It also transfers from the Oil and Gas Committee to the National Energy Board, the authority to hear appeals, hold inquiries and make orders with respect to conservation matters.

Discovered resources in the mainland territories, the Mackenzie Delta-Beaufort Sea, and the Arctic Islands total some 346 million cubic metres of oil and 813 billion cubic metres of natural gas. Overall, the North is estimated to hold about 28 percent of Canada's total ultimate recoverable conventional light crude oil resource potential of 7 443 million cubic metre. As well, it holds 32 percent of our ultimate recoverable conventional natural gas resource potential of 16.5 trillion cubic metres.

However, compared to the 159 000 odd wells drilled in Alberta, only some 1 100 wells have been drilled to date in the North. Moreover, compared to southern Canada the North has seen relatively small production of its oil and natural gas. As a result, while the North holds about 25 percent of Canada's remaining discovered conventional oil and 25 percent of remaining discovered gas, the importance of the northern basins is even more evident when one considers undiscovered conventional oil and gas resources. The North is estimated to contain roughly 40 percent of Canada's undiscovered conventional light crude oil potential and 40 percent of its undiscovered conventional gas potential.

Resource Management Regime under the Canada Petroleum Resources Act



Oil and Gas Management

The prudent management of oil and gas resources north of 60° latitude in the Northwest Territories and in Yukon is a federal responsibility. This responsibility is exercised in a manner that balances northern and national interests by promoting both investment in petroleum exploration and resource management policies which foster sustainable development.

Petroleum resource management on Crown lands north of 60° latitude is exercised under two federal statutes: the *Canada Petroleum Resources Act (CPRA)* and the *Canada Oil and Gas Operations Act (COGOA)*.

The CPRA governs the allocation of Crown lands to the private sector, tenure to the allocated rights, and the setting and collection of royalties. It is administered by the Minister of Indian Affairs and Northern Development.

The COGOA regulates the industrial activities with respect to resource conservation, environmental protection and safety of workers. It is administered by the National Energy Board.

Rights Issuance

In 1994, rights issuance resumed for the first time in 25 years in the mainland Territories. Two calls for nominations, one in the southwest corner of the Northwest Territories and one in the central Mackenzie Valley, were successful in attracting industry interest.

The rights issuance process itself is conducted within a sustainable development framework. Decision making is open and transparent, incorporating the views of the governments of the Northwest Territories and Yukon, numerous federal government departments and appropriate First Nations.

Calls For Nominations

The 1994 Southern Northwest Territories Call for Nominations was the product of extensive consultation and co-operation with the Fort Liard Band Council. Pre-bid conditions relating to the environment and local benefits were

developed in partnership. Traditional knowledge of the environment and use of the land were used to exclude certain areas from development. Working together, a balance of the three objectives of sustainable development- environmental protection, economic growth and social stability, was achieved.

Likewise, the 1994 Mackenzie Valley Call for Nominations was launched in the spirit of the recently concluded land claims settlement agreements with the Gwich'in and Sahtu First Nations and with their full support. The land claims agreements define the ways the Gwich'in and Sahtu peoples will assert rights over land and natural resources, define ownership, wildlife harvesting rights and participation in land and resource management, and effectively create certainty through co-management.

The annual call for nominations in the Mackenzie Delta and Beaufort Sea area failed to attract posting requests

Calls for Bids

Eight parcels comprising some 149 8 17 hectares were identified by industry in the 1994 Southern Northwest Territories Call for Nominations which closed July 13, 1994. The ensuing Call for Bids closed November 30, 1994, attracting work proposal bids totalling \$22 681 389 for the eight parcels.

Winning bidders were selected on the basis of the total proposed amount to be spent doing exploratory work on the parcel during the first four years of the **licence** term. Drilling a well during this period is required to continue tenure for an additional three years. Tenure is not related to whether the total bid amount has been spent. The winning bidders will be awarded exploration **licences** in January 1995.

Five parcels comprising some 526 526 hectares were identified in the 1994 Mackenzie Valley Call for Nominations. The ensuing Call for Bids will close April 24, 1995. The parcels are all located in the Mackenzie and Peel Plains area where historical exploration has shown that the northern extension of the prolific western Canada sedimentary basin underlies the area. Imperial's large oil field at Norman Wells, the fourth

largest producing oil field in Canada, is located in this region. The bid selection criterion for these five parcels is the total amount proposed to be spent doing exploratory work during the first four or five years of the term of the licence.

Employment and Industrial Benefits

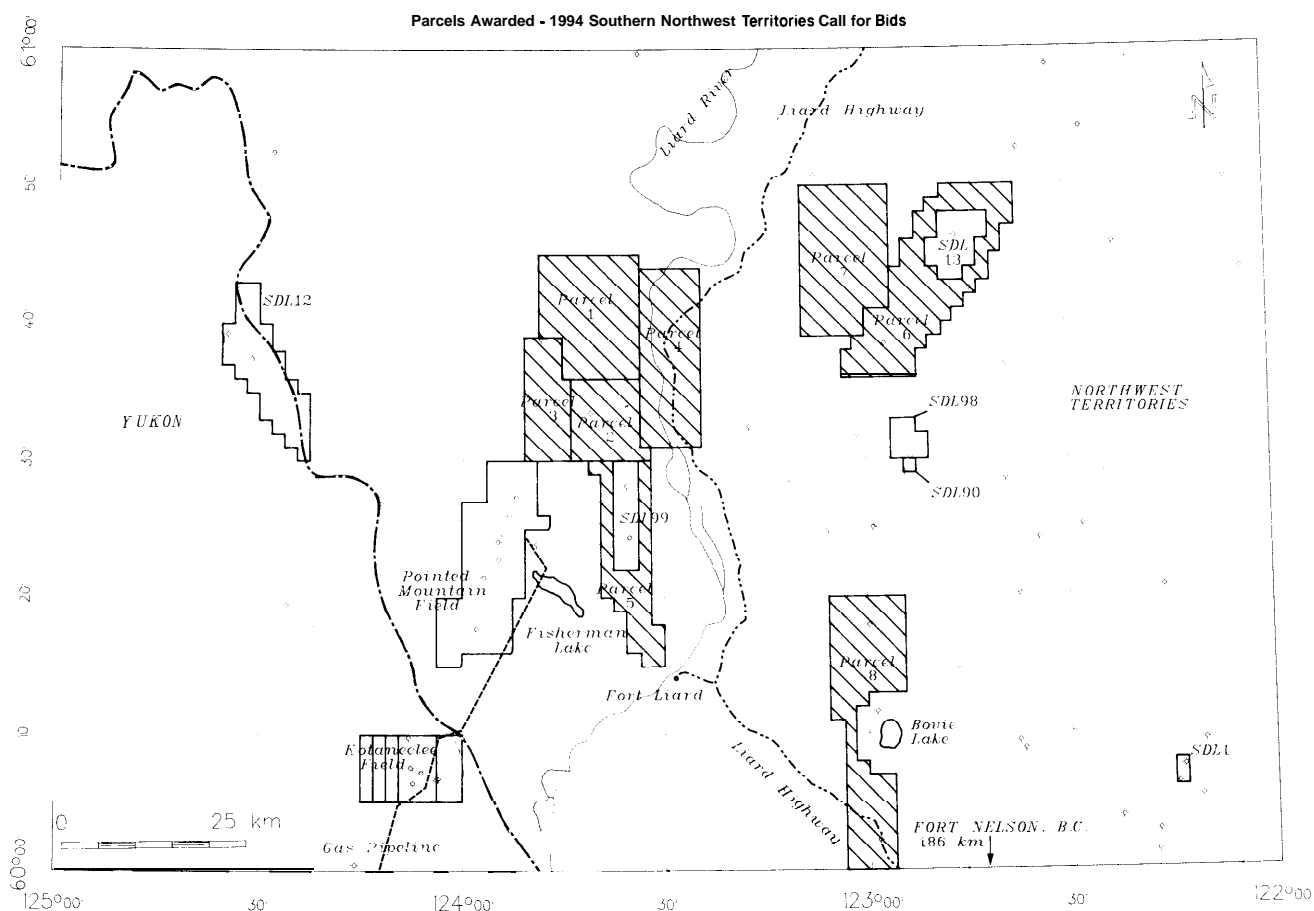
The provision of full and fair opportunities for Canadians to supply goods and services used in northern oil and gas activities is specifically defined in legislation, the *Canada Oil and Gas Operations Act* (COGOA). When exploration and development are undertaken in northern Canada, the proponent must ensure full and fair access to employment, training and business opportunities for northerners.

Although activity remained low in 1994, the amount invested in the North for exploration, production and development activities remained about the same as for 1993.

With the settlement of land claims in the North and a high level of industry activity in northern British Columbia, a positive environment is being established for the future of the petroleum industry in the North. The opening of new areas to exploration should lead to greater employment and business opportunities. Together with the territorial governments, the Department of Indian Affairs and Northern Development (DIAND) will continue to encourage full and fair access to these opportunities.

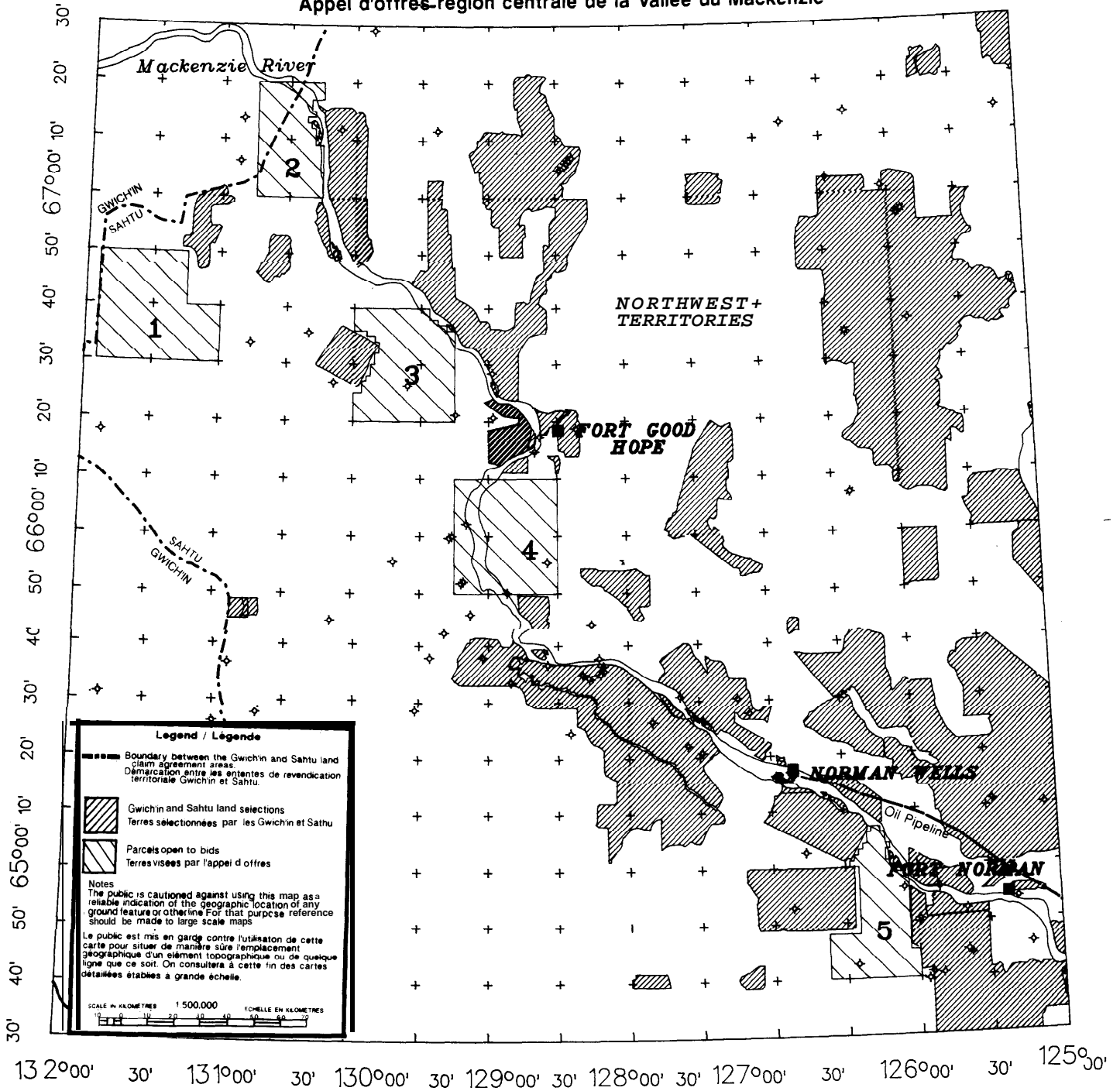
Details of Successful Bids: Southern Northwest Territories

Parcel	Winning bidders	Bid submitted
1	Ranger Oil Limited (100%)	\$1838 075
2	Ranger Oil Limited (100%)	\$3 529 000
3	Amoco Canada Petroleum Company Ltd. (50%) Chevron Canada Resources Limited (50%)	\$1278 934
4	Ocelot Energy Inc. (100%)	\$1 500 000
5	Chevron Canada Resources Limited (100%)	\$1201200
6	Shell Canada Limited (100%)	\$1768 600
7	Paramount Resources Ltd. (100%)	\$2 800 000
8	Shell Canada Limited (100%)	\$8 765 580



Central Mackenzie Valley Call for Bids
1994

Appel d'offres-région centrale de la Vallée du Mackenzie



Land Status at Year End. 1994

Region	Active licences* ¹	Lands relinquished (millions of ha)	Lands issued (millions of ha)	Lands active (millions of ha)	Pending lands* ² (millions of ha)
Mainland Territories	53	0	0* ³	0.2	0
Mackenzie Delta and Beaufort Sea	72	0	0* ³	1.1	0.9
Arctic Islands and Eastern Arctic Offshore	23	0	0	1.3	2.5
Total	148	0	0*³	2.6	3.4

Land Holdings at Year End

	1990	1991	1992	1993	1994
Number of licences active* ¹	132	147	149	151	148
Lands issued in licences (millions of ha)	0.1	0.3	0* ³	0* ³	0
Lands relinquished or surrendered (millions of ha)	1.1	1.3	0.2	0	0* ³
Lands active (millions of ha)	3.8	2.7	2.6	2.6	2.6

*¹ Includes exploration, significant discovery and production licences.

*² Includes areas such as Cape Bathurst and Baffin Bay.

*³ Less than 0.1.

Gross Oil and Gas Revenues Received in 1994 (in dollars)

	Issuance fees	Rentals	Registration fees	Royalties	Total
January	0.00	0.00	0.00	942 525.08	942 525.08
February	0.00	0.00	0.00	68 354.20	68 354.20
March	0.00	399.23	325 .00	976 852.00	977 576.43
April	0.00	0.00	0.00	459 018.71	459 018.71
May	0.00	0.00	325 .00	671468.58	67 1 468.58
June	0.00	5 979.00	42.75	591 741.60	597 763.35
July	10 500.00	0.00	70.50	702 829.71	1 563 415.97 ^{*1}
August	0.00	0.00	0.00	792 227.35	792 227.35
September	20.00	1 440.00	10.25	5 11 782.66	713 356.91 ^{*2}
October	0.00	0.00	93.75	495 460.28	495 554.03 --
November	0.00	0.00	0.00	601 605.89	601 605.89
December	6 750.00	0.00	0.00	695 356.16	702 106.16
Total \$	17 270.00	7 818.23	627.25	7 455 222.42	8 531 057.66

^{*1}Includes \$850 0 15.76 in forfeiture payments

^{*2}Includes \$200 104.00 in forfeiture payments

Active Northern Exploration Licences

EL317

Representative: Pembina
 Effective date: October 5, 1986
 Expiry date: n/a
 Status: Under work prohibition order
 Area: 175810ha

EL358

Representative: Chevron
 Effective date: December 16, 1991
 Expiry date: December 15, 2000
 Status: One well to be drilled before December 16, 1996
 Work bid: \$3 200 000
 Area: 140 088 ha

EL329

Representative: Amoco
 Effective date: September 5, 1987
 Expiry date: n/a
 Status: Under work prohibition order
 Area: 349 982 ha

EL359

Representative: Shell
 Effective date: December 16, 1991
 Expiry date: December 15, 1999
 Status: One well to be drilled before December 16, 1995
 Work bid: \$1 555 880
 Area: 37 322 ha

EL344

Representative: Imperial Oil
 Effective date: June 1, 1987
 Expiry date: n/a
 Status: Maintained under application for significant discovery
 Area: 7 787 ha

EL360

Representative: Shell
 Effective date: December 16, 1991
 Expiry date: December 15, 1999
 Status: One well to be drilled before December 16, 1995
 Work bid: \$6 556 728
 Area: 36 765 ha

EL355

Representative: Imperial Oil
 Effective date: August 1, 1990
 Expiry date: n/a
 Status: Maintained under application for significant discovery
 Area: 15 351 ha

EL361

Representative: Shell
 Effective date: December 16, 1991
 Expiry date: December 15, 1999
 Status: Drilling commitment fulfilled
 Work bid: \$45 223 000
 Area: 36 756 ha

Exploration

No exploratory program (including geophysical and geological surveys and exploratory drilling) was conducted north of 60° in 1994. All drilling activity was concentrated on the development of existing fields at Pointed Mountain and Cameron Hills.

Development and Production

Norman Wells

The Norman Wells oil field is Canada's fourth largest producing oil field in terms of remaining reserves, with estimated ultimate recoverable reserves of 37.5 million cubic metres (236 million barrels). Oil was discovered there in 1920. A small refinery has been operated since 1930 by Imperial Oil, which holds a two-thirds interest and the federal government holds the remaining one-third. A project to expand the facilities began in 1983. About half of the recoverable hydrocarbon reserves have been produced to date and production is expected to continue for the next 25 years.

In 1992, Imperial Oil received approval to amend the Norman Wells Development Plan to include a three-year hydrocarbon miscible flood project. The project is assessing the technical merits of hydrocarbon miscible flooding in the Norman Wells pool using propane as the flooding medium. Imperial Oil started up the project in February 1993.

In 1994, the volume of oil produced from the field was 1.73 million cubic metres (10.9 million barrels), a decrease of 3.4 percent from 1993. Production peaked in July with an average daily production rate of 4991 cubic metres. Cumulative oil production to the end of 1994 was 21.3 million cubic metres. The volume of gas produced decreased slightly from 133.6 million cubic metres in 1993 to 124 million cubic metres in 1994.

At the end of the year, there were 168 production wells, 156 injection wells (150 water injected, 6 propane injected), and 3 observation wells in the field.

Bent Horn

Oil production from the Bent Horn field in the Arctic Islands **totalled** some 53 thousand cubic metres (333 thousand barrels) in 1994. A total of 48.5 thousand cubic metres (305 thousand barrels) were shipped **from** Cameron Island during the summer in the *M.V. Arctic*, a double-hulled tanker.

Kotaneelee

In February 1991, production resumed at the Kotaneelee gas field in the southern Yukon, which had been shut-in since 1980. Natural gas production in 1994 amounted to 47 1.1 million cubic metres (16.6 **Bcf**).

Pointed Mountain

Natural gas production from the Pointed Mountain gas field in the southern part of the Northwest Territories amounted to 63.6 million cubic metres (2.2 **Bcf**) in 1994. Amoco re-entered two existing wells in the field with the hope of increasing production. The bottom hole portions of both wells were abandoned, but from these two wells the company subsequently completed two sidetracked wells, one of which was placed on production, and the other was plugged.

Cameron Hills

There was no production from the Cameron Hills oil field in 1994. Paramount drilled two more development wells during the year.

Well Activity

Well Name	Latitude/ Longitude	Activity	Status/ Result	Total Depth(m)
Paramount et al Cameron I-74	60°03'35"N/ 117°28'19"W	development, Rig: Phelps 4E, Flint No.718	PLUGGED & SUSPENDED spud: 0 1.27-94 rig release: 02.14.94 well termination date: n/a	1644
Paramount et al Cameron C-75	60°04'02"N/ 117°29'12"W	development, Rig: Phelps 4E, Flint No 7 18	PLUGGED & SUSPENDED spud: 02.17.94 rig release: 03.20.94 well termination date: n/a	1590
PanAm Pointed Mountain K-45	60°24'33"N/ 123°53'51"W	development Rig: Drive Rig 41	ABANDONED re-entry: 06.10.94, Nahanni formation abandoned lower zone: 06.19.94	4100
PanAm Pointed Mountain K-45A	60°24'33"N/ 123°53'51"W		SHUT-IN spud: sidetrack 06.20.94 Rig Release: 07.27.94 Workover: 09.04.94 Rig Release: 09.08.94	2823
PanAm Pointed Mountain P-53	60°22'45"N/ 123°54'33"W	development Rig: Drive Rig 41	ABANDONED Re-entry: 07.27.94 to abandon lower portion and prepare for sidetrack and re-entry to the Nahanni formation. Lower Zone abandon: 09.03.94	4371
PanAm Pointed Mountain P-53A	60°22'45"N/ 123°54'33"W		PRODUCTION Spud:08. 10.94 sidetracked from 3690 and open hole completed Nahanni Rig Release: 09.03.94	4104
Imperial Atertak E-4 1	69°25'55"N/ 132°42'38"W		ABANDONED 03.17.94	1984
Imperial Pikiolok M-26	69°25'55"N/ 132°37'26"W		ABANDONED 03.19.94	1986
Esso Ivik J-26	69°35'42"N/ 134°20'38"W		ABANDONED 03.22.94	3648

Statistical Summary^{*1}

Activity Status

	1990	1991	1992	1993	1994
Licences issued ^{*2}	4	24	5	2	0
Wells spudded	12	9	2	0	0
Metres drilled	15 811	15 325	2 560	0	0
Wells terminated	14	9	2	0	4
Geophysical programs run	8	6	4	2	0
Reflection seismic (km)	4 552	3 641	5 822	340	0
Rig-months	12	12	2	0	0

Discovered Resource Inventory, 1994^{*3}

	Crude Oil (millions of m ³)	Natural Gas (billions of m ³)
Mainland Territories	39	35
Mackenzie Delta and Beaufort Sea	240	360
Arctic Islands and Eastern Arctic Offshore	66	416
Total	345	811

^{*1}Exploration, development, production and resource inventory statistics courtesy of the National Energy Board. Resource estimates are expressed as best current estimates.

^{*2}Includes exploration, significant discovery and production licences.

^{*3}Discovered resource totals are estimates of original recoverable volumes and do not reflect production; totals have been rounded; crude oil includes condensates.

Oil and Gas Production

	1990	1991	1992	1993	1994
Oil production (thousands of m ³)					
Norman Wells	1841.0	1 894.0	1 850.0	1 790.0	1 730.0
Bent Horn	24.0	32.6	28.2	56.9	52.9
Total	1 865.0	1 926.6	1 878.2	1 846.9	1 782.9
Gas production (millions of m ³)					
Pointed Mountain	74.0	90.0	86.7	99.6	63.6
Norman Wells	126.0	130.0	128.0	133.6	123.9
Kotaneelee	0	227.2	506.9	492.3	471.1
Total	200.0	447.2	721.6	725.5	658.6

Mainland Territories

Activity Status

	1990	1991	1992	1993	1994
Wells spudded					
Exploratory/delineation	11	7	0	0	0
Development	0	1	0	0	4
Total	11	8	0	0	4
Wells terminated*					
Exploratory/delineation	12	7	0	0	0
Development	0	1	0	0	4
Total	12	8	0	0	4
Metres drilled	14 197	12 153	0	0	0
Exploratory/delineation	14 197	11517	0	0	0
Development	0	636	0	0	0
Rigs active	6	5	0	0	0
Geophysical programs run	2	5	1	1	0
Reflection seismic (km)	181	321* ²	1867* ²	55	0
Money spent (millions of dollars)					
Geophysical/geological	2.8	2.5	1.1	0.5	0
Exploratory/delineation/ Workovers * ³	26.3	18.8	7.7	4.9	0
Development drilling	0	3.7	0	0	4
Production facilities	0	0	8.6	5.6	8.8
Total money spent (millions of dollars)	29.1	25.0	17.4	11.0	12.8

*¹In the Mainland Territories, where exploratory operations are generally restricted to the winter months, a well is deemed to be terminated in the year in which it reaches total depth, even though it may be re-entered in the following year for testing.

*²Includes three-dimensional seismic equivalent.

*³Includes extended production tests.

Resource Status

	1990	1991	1992	1993	1994
Discovered resources* ¹					
Gas (billions of m ³)	35.5	22.7	22.7	34.6	35.0
Oil (millions of m ³)	37.7	39.1	39.1	39.4	40.0
Gas and oil production					
Pointed Mountain gas (millions of m ³)	74	90	87	100	100.0
Norman Wells gas (millions of m ³)	126	130	128	134	134.0
Norman Wells oil (thousands of m ³)	1841	1894	1850	1790	1790.0
Kotaneeleegwa (millions of m ³)	0	227	507	492	493.0

Land Status

	1990	1991	1992	1993	1994
Licences issued* ²	1	12	2	0	0
Active licences	45	51	53	53	53
Lands issued in licences (millions of ha)	0	0* ³	0* ³	0	0
Lands relinquished or surrendered (millions of ha)	0.4	0.5	0* ³	0	0
Lands active (millions of ha)	0.6	0.2	0.2	0.2	0.2

*¹ Includes new discoveries and revisions to previous estimates.

*² Includes exploration, significant discovery and production licences.

*³ Less than 0.1.

Mackenzie Delta and Beaufort Sea

Activity Status

	1990	1991	1992	1993	1994
Wells spudded					
Exploratory/delineation	1	1	2	0	0
Wells terminated**					
Exploratory/delineation	2	1	2	0	0
Metres drilled					
Exploratory/delineation	1614	3 173	2 560	0	0
Rigs active	2	1	1	0	0
Rig-months	2	2	2	0	0
Geophysical programs run	6	1	3	1	0
Reflection seismic (km)	4 371* ²	3 320	3 955* ²	285	0
Money spent (millions of dollars)					
Geophysical/geological	16.6	4.2	8.8	4	0
Exploratory/delineation/workovers	18.9	4.9	10.1	0	0
Total money spent (millions of dollars)	35.5	9.1	18.9	4	0

Resource Status

	1990	1991	1992	1993	1994
Discovered resources* ³					
Gas (billions of m ³)	356.6	357.0	356.0	359.5	360.0
Oil (millions of m ³)	240.7	241.4	228.0	240.0	240.0

*¹ In the Beaufort Sea, where operations are seasonal and could take place over a number of seasons for a given well, a well is deemed to be terminated in the year in which it reaches total depth.

*² Includes three-dimensional seismic equivalent.

*³ Includes new discoveries and revisions to previous estimates.

Land Status

	1990	1991	1992	1993	1994
Licences issued ^{*1}	3	12	3	2	0
Active licences	64	73	73	73	72
Lands issued in licences (millions of ha)	0.1	0.3	0 ^{*2}	0 ^{*2}	0
Lands relinquished or surrendered (millions of ha)	0.7	0.8	0.2	0 ^{*2}	0 ^{*2}
Lands active (millions of ha)	1.9	1.2	1.1	1.1	1.1

^{*1} Includes exploration, significant discovery and production licences.

^{*2} Less than 0.1.

Arctic Islands and Eastern Arctic Offshore

Activity Status^{*1}

	1990	1991	1992	1993	1994
Money spent (millions of dollars)					
Geophysical/geological	0	0	0	0.4	0
Exploratory/delineation/workovers	0	2.7	4.2	n/a	0
Production facilities	0	0	0.2	0	0
Total money spent (millions of dollars)	0	2.7	4.4	n/a	n/a

Resource Status

	1990	1991	1992	1993	1994
Discovered resources ^{*2}					
Gas (billions of m ³)	416.4	416.4	416.4	416.4	416.4
Oil (millions of m ³)	65.7	65.7	65.7	65.7	65.7
Oil production					
Bent Horn (thousands of m ³)	24.0	32.6	28.2	56.9	48.5

Land Status

	1990	1991	1992	1993	1994
Licences issued ^{*3}	0	0	0	0	0
Active licences	23	23	23	23	23
Lands issued in licences (millions of ha)	0	0	0	0	0
Lands relinquished or surrendered (millions of ha)	0	0	0	0	0
Lands active (millions of ha)	1.29	1.3	1.3	1.3	1.3

^{*1} No drilling or geophysical activity to report since 1989.

^{*2} Includes new discoveries and revisions to previous estimates.

^{*3} Includes exploration, significant discovery and production licences.

Acts and Regulations

An amendment was made to the *Canada Petroleum Resources Act* giving force to the Norman Wells Amending Agreement of 1994. The Amending Agreement extends the term of the 1944 Norman Wells Proven Area Agreement between Imperial Oil and the Government of Canada, and marginally adjusts the boundaries of the area covered by the original agreement. This is expected to maximize production from the field and to lead to a \$30 million drilling program.

Many of the regulatory initiatives of 1994 are being carried forward into 1995 under the National Energy Board as a result of Bill C-6. On May 12, 1994, Bill C-6 received Royal Assent. This amended the *Canada Oil and Gas Operations Act*, the *Canada Petroleum Resources Act* and the *National Energy Board Act* and made consequential amendments to other Acts. Bill C-6 resulted in the transfer of oil and gas regulatory functions to the National Energy Board.

The Drake Point F- 16 Royalty Regulations were revoked in 1994.

With the passage of Bill C-6, the National Energy Board will carry forward into 1995 the following regulatory amendment initiatives:

- Canada Oil and Gas Geophysical Regulations
- Canada Oil and Gas Drilling Regulations
- Canada Oil and Gas Installation Regulations
- Canada Certificate of Fitness Regulations
- Canada Oil and Gas Production and Conservation Regulations
- Canada Oil and Gas Diving Regulations
- Offshore Installation Manager Regulations
- Canada Oil and Gas Operations Regulations

The regulatory amending initiatives which remain the responsibility of the Department of Indian Affairs and Northern Development and which are being carried forward into 1995 are:

- The Frontier Land Registration Regulations
- Canada Oil and Gas Land Regulations
- Frontier Lands Petroleum Land Division and Survey Regulations

Environmental Measures

Environmental Reviews

Environmental assessments were carried out for the redrilling of two gas wells located in the Pointed Mountain field, for drilling two wells in the Cameron Hills area and for the abandonment of three wells near Tuktoyaktuk.

Northern Oil and Gas Action Program

The Northern Oil and Gas Action Program (NOGAP) was a multi-disciplinary research and planning program established in 1984 to increase the federal government's ability to respond to future northern hydrocarbon development proposals. Although NOGAP was terminated in 1994, it was successful in supporting studies that responded to the specific research and monitoring recommendations of the Beaufort Sea Steering Committee.

Beaufort Sea Steering Committee

The Beaufort Sea Steering Committee (BSSC) presented its final report to the Minister in 1991. The report addresses the concerns identified by the Inuvialuit Environmental Impact Review Board regarding oil spill preparedness. Substantial progress has been made since 1991 to implement the recommendations of the BSSC. An implementation plan was developed that identified appropriate government departments, Aboriginal organizations and industry groups responsible for implementing the committee's recommendations. Scientific workshops have successfully addressed the routine aspects of oil and gas development.

A computerized atlas entitled *An Environmental Atlas for Beaufort Sea Oil Spill Response*, which identifies sensitive ecosystems and coastal features in offshore exploration areas, has been completed. The digital map files are in **QUIKMap** format which are linked to the associated attribute information that is stored in D-Base files. The report entitled *Beaufort Sea Oily Waste Disposal Sites* is available from Environment Canada for use 'in case of an oil spill. This report identifies potential disposal sites in the vicinity of the Beaufort coast.

Beaufort Region Environmental Assessment and Monitoring

The Beaufort Region Environmental Assessment and Monitoring (BREAM) program was a NOGAP-funded initiative that identified the most important research and monitoring priorities related to future hydrocarbon development in the Beaufort Sea, Mackenzie Delta and Mackenzie Valley. When the BREAM program concluded in 1994, a final report and an annotated guide were prepared. The report focusses on BREAM research and monitoring recommendations, as well as those of the Beaufort Environmental Monitoring and the Mackenzie Environmental Monitoring Programs. The annotated guide includes the final reports of the series from these two programs and BREAM.

Arctic Seas Strategic Plan

The Arctic Seas Strategic Plan (ASSP) outlines the responsibilities of government in responding to spills in Arctic marine waters. It establishes lead and support roles for various agencies depending on the source and location of the spill. Oil spill contingency plans within the framework of the ASSP are to be updated and improved by the various agencies.

Environmental Studies Research Fund

The Environmental Studies Research Fund (ESRF), under the **Canada Petroleum Resources Act**, funds environmental and social studies related to the exploration and development of oil and gas resources on **frontier** lands. The focus is on studies that provide information required for regional or national regulatory decision making. Board members represent federal government departments, regional petroleum boards, petroleum industry organizations and the general public. The program is funded from levies on interest holdings on frontier lands. The ESRF administration is presently completing a program of six studies which were initiated over the past four years. No new studies have been supported in 1994 and all current studies are expected to be published by mid-1 995. A published report is available for each study funded by the program.

Following a program review by a task force, it was recommended that ESRF be maintained as a mechanism for joint industry-government research, but the levy should be reduced to zero until activities in frontier lands increase.

Program on Energy Research and Development

The Program on Energy Research and Development (PERD) funds energy research directed to wealth generation, industrial development, productivity and the safety. In 1994, the National Energy Board was allocated \$2.1 million by PERD to promote research and development initiatives relevant to oil and gas activities. Some 60 projects were undertaken with this funding, 20 of which focused on issues specific to oil and gas activities in the North. The remainder of the projects were of a more generic nature with applicability throughout Canada's North. Among projects pertaining to northern oil and gas activities were:

- fate and behaviour of oil in cold water and in broken ice
(Bent Horn, Norman Wells and Amauligak oils were investigated)
- Molikpaq ice load data analysis
- consensus on ice loads
- terrain stability and northern pipelines
- Beaufort Sea region granular resource management

Other government departments are allocated the remaining \$14 million of PERD Task 6 funding. Many of the projects they undertake respond to oil and gas research and development priorities for oil and gas activities in northern frontier areas as identified by DIAND and the National Energy Board.

Sources of Information

Many sources of information on oil and gas, environmental and land use matters originate with the **Department of Indian Affairs and Northern Development**. To obtain specific information, please include the appropriate contact listed in the sources below with the general mailing address for the department.

Northern Oil and Gas Directorate
Department of Indian Affairs and Northern Development
OTTAWA, Ontario, Canada K1 A 0H4

Information on the resource management regime, calls for nominations and bids and other related information is available from:

Chief, Rights Issuance and Policy-Telephone (8 19) 994-1 606

Information on registration procedures and regulations, exploration, significant discovery and production licences, transfers, notices and maps is available from:

Manager, Rights Administration and Registrar-Telephone (8 19) 953-8490

Information on northern exploration history and geological/geophysical activities is available from:
Senior Geophysicist-Telephone (8 19) 953-8722

Other relevant departmental information and publications such as *Land Use Regulations, Environmental Operating Guideline Handbooks* and land claim settlement agreements are available from the department's Enquiries Kiosk, by calling (819) 997-0380 or by Fax (819) 953-3017.

Northern Oil and Gas Directorate
Department of Indian Affairs and Northern Development

Street Address: 6th Floor, 10 Wellington Street, Hull, Quebec
Telephone: (819) 997-0877
Fax: (819) 953-5828

Internet: <http://www.inac.gc.ca>

Other Sources of Information

National Energy Board (NEB)

Cadillac Fair-view Building 3 11-6th Ave. SW,
Calgary AB T2P 3H2
Telephone: (403) 292-4800 Fax: (403) 292-5503

Through the offices of the NEB information on the following is available:

- the **Regulatory Support Office** has information on exploration, development, production, pipeline transportation and export;
- the **Resource Evaluation Branch** provides access to released geological and geophysical reports;
- the **Engineering Branch** provides access to released well history reports and records;
- and the **Environmental Directorate** has information relating to the Environmental Studies Research Fund

The Geological Survey of Canada's **Institute of Sedimentary and Petroleum Geology**, provides public viewing and sampling facilities for cores and samples, and information on wells drilled North of 60° at its offices at 3303-33rd Street NW, Calgary AB T2L 2A7.

Telephone: (403) 292-7000 Fax: (403) 292-5377

Information on wells drilled in the Baffin Bay – Davis Strait region is available from:

Core Storage and Laboratory,

Atlantic Geoscience Centre, Bedford Institute of Oceanography,
Dartmouth NS B2Y 4A2

Telephone: (902) 426-6 127 Fax: (902) 426-6 186

Information concerning Program on Energy Research and Development (PERD) is available from:

Office of Energy Research and Development,

Natural Resources Canada,
580 Booth Street, Ottawa ON K1A 0E4

Telephone: (613) 995-8860 Fax: (613) 995-6146