



Northern Oil and Gas Annual Report 2000

The management of oil and gas resources on Crown lands North of 60⁰ of latitude in the Northwest Territories, Nunavut and the northern offshore is a federal responsibility carried out by the Northern Oil and Gas Directorate of the Department of Indian Affairs and Northern Development.

Petroleum resource management on Crown lands is exercised under federal legislation. The *Canada Petroleum Resources Act* governs the granting of Crown exploration and production rights; regulations under this Act set the royalty regime. The *Canada Oil and Gas Operations Act* governs the regulation of petroleum operations and associated benefits requirements. Land, royalty and benefits matters are managed by the Directorate on behalf of the Minister of Indian Affairs and Northern Development while the National Energy Board takes the lead role in approval of operations.

Information on the northern oil and gas regime may be found on the web at:
<http://www.ainc-inac.gc.ca/oil/>



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*Message from the Honourable Robert D. Nault
Minister of Indian Affairs and Northern Development*

The year 2000 was an exciting year for northern oil and gas development setting the stage for future activity. The Department of Indian and Northern Affairs worked closely with industry and the new Mackenzie Valley boards to encourage close cooperation during the assessment and regulatory stages of project approvals in the Fort Liard area. Department officials also worked closely with government officials and the designated Inuit association including the NTI in Nunavut to build awareness of the potential benefits oil and gas development can bring to that territory.

New production from three gas fields was realized in the Fort Liard area. All three projects were subject to the new regulatory processes in the Mackenzie Valley and provided useful lessons on achieving sustainable development in the North. Fort Liard developed effective partnerships with the producing companies. Service companies and individuals from other communities in the North also benefited from employment and business opportunities.

The department received records bids for exploration rights in the Mackenzie Delta and Beaufort Sea area. This was the second year for strong interest in this region. Rapidly increasing exploration in and around the Mackenzie Delta brought significant employment and business benefits and introduced a strong sense of optimism and opportunity in the adjacent communities. Further south, the Central Mackenzie Valley call for bids also attracted significant work commitment bids on six of the eight parcels offered.

A call for nominations covering areas in the Arctic Islands in Nunavut provided a reminder of the potential of the high Arctic. With the support of the Territorial Government and the Nunavut Tunngavik Inc. the call signals to industry that Nunavut is “open for business”.


Northern petroleum resources are becoming an important part of the equation for new continental energy supplies. Prospects for pipelines to export Arctic gas heightened during the year as industry announced feasibility studies, including the development of the Mackenzie Delta reserves. As 2000 drew to a close, these activities added to the momentum of exploration in the North.

The exploration and development of oil and gas resources holds significant potential for the North and Canada. This potential will only be realized through systematic exploration. Exploration offers badly needed employment and economic development opportunities to northern communities.

It is with great pleasure I table before Parliament the 2000 Northern Oil and Gas Annual report.

Canada's Frontier Lands



 Area under the responsibility of the
Minister of Indian and Northern Affairs Canada
Zone qui relève de la compétence du ministre des
Affaires indiennes et du nord canadien

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OVERVIEW OF NORTHERN OIL AND GAS ACTIVITIES

Overview of oil and gas trends

Rising prices through 2000 continued the trend set in 1999 creating a climate for major investment in the upstream petroleum sector. At the beginning of the year oil prices stood 25 percent higher than at the beginning of 1999 and remained strong throughout the year. Gas prices continued to strengthen through the first three quarters of 2000, and were nearly 50 percent higher than in 1999. As the heating season began in Fall 2000, North American markets reacted to tight supply and natural gas prices took off reaching unprecedented highs in December 2000 with spot prices peaking at \$14².

	<u>Commodity Prices</u>		
	<u>1998</u>	<u>1999</u>	<u>2000</u>
Oil ¹	127.46	172.16	279.36
Gas ²	1.92	2.77	4.80

Natural gas has an advantage over other hydrocarbon fuels in terms of heating efficiency, and lower costs of transportation and processing. It is the fuel of choice for new electricity generation and its increasing use is an important factor in constraining

Green House Gas emissions. Responding to these factors, rapidly increasing demand combined with production constraints in currently producing basins has focussed the industry on developing new supply regions.

Large discovered but undeveloped reserves in Canada's Arctic, in particular the Mackenzie Delta, help position Canada to meet a large proportion of the projected North American demand. This has spurred industry to review the economics of building a natural gas pipeline from the Mackenzie Delta to southern markets. In Spring of 2000, a consortium of companies with gas reserves in the Delta, namely Imperial Oil, Gulf Canada, Shell Canada and Mobil Canada, announced a feasibility study of development of Mackenzie Delta gas and the construction of a Mackenzie Valley pipeline. These companies report discovered resources of 5.8 trillion cubic feet (tcf) of gas in three fields onshore in the Mackenzie Delta. The National Energy Board identifies a total of 9 tcf of discovered resources in the region. Total regional endowment is 56 tcf.

¹Average Oil Prices: C\$ per m³ at Edmonton

²Average Natural Gas Prices: AECO (C\$ per GJ)

source: Natural Resources Canada

Overall, the North is estimated to hold about 19 percent of Canada's remaining recoverable conventional light crude oil resources and some 30 percent of potential. In terms of natural gas, the North holds 25 percent of the remaining discovered resource and, conservatively, 30 percent of potential¹.

Speculation on the construction of pipelines to export Arctic gas has been heightened further by the recent announcement by BP Amoco, Exxon Mobil and Phillips, producers in the Prudhoe Bay region of Alaska, that they are conducting a feasibility study for exporting gas reserves. The study will focus on pipeline route evaluation and selection and will assess economic viability with a view to filing an application with Canadian and US regulatory agencies. There is a potential for important synergies between projects.

With the outlook for natural gas prices favourable, it is likely that one or both of these projects will be realized. Successful pipeline development would establish northern Canada as an important part of North America's future energy growth.

throughout the year from activity lows in 1998 and first half 1999. A marked switch towards gas-directed drilling occurred across North America.

Exploration Activity in the North

Overall, drilling levels North of 60° declined slightly from 1999 although still higher than the levels of previous years. Nine new exploratory wells were commenced in 2000. Metres drilled totalled 29 190 m, including 6 330 m drilled for production wells, down from 44 707 m in 1999. Three wells (one exploratory and two delineation) were drilling in the NWT on January 1, 2000 and were completed by the end of the month. Winter 1999-2000 drilling season ended on March 25th (in the central Mackenzie Valley). One well (CFOL C-31) was drilling from late summer into winter 2000-2001. At year end, two wells were drilling in the southern NWT.

A total of 17 geological and geophysical programs were run in the North in 2000. These comprised 1 554 km of 2D seismic and 307 km² of 3D seismic; 18 123 km of aeromagnetic survey; 27 km of gravity survey and three industry-led geological field parties.

¹(Source: *Canadian Energy Supply and Demand to 2025*, National Energy Board, 1999).

Southern Northwest Territories (Deh Cho)

Drilling across Canada continued to build

In the southern Northwest Territories near Fort Liard, the companies that drilled successful gas wells in 1998-1999 concentrated on development and pipeline construction. Construction during the Winter of 2000 was undertaken to allow gas production to commence from three new fields. The extended pipeline infrastructure to develop these fields and their performance will stimulate future exploration in this area.

A delineation well was drilled on Suncor's SDL 013, an undeveloped gas discovery made in 1961; Suncor Netla P-16 was drilled to 2099 m and subsequently plugged and abandoned. Paramount et al Fort Liard I-46 was the second of two wells drilled to delineate Paramount's 1999 discovery at Fort Liard F-36. This well was plugged and suspended at 2055 m.

Three exploration wells were commenced in Fall of 2000. Paramount et al drilled Mount Coty I-02 on EL381. This well was drilled to 1744 m, plugged and suspended. Paramount et al Fort Liard N-01 was drilled at the southern end of EL381 close to the border with British Columbia. As with the I-02 well, N-01 was targeted to the Mississippian Mattson Formation and was drilling at year end. Canadian Forest Oil was continuing to drill the C-31 well in the foothills northwest of Fort Liard. The objective of the well is the middle Devonian Nahanni Formation.

Fourteen geological and geophysical programs were run in the mainland NWT (excluding the Mackenzie Delta). A total of 788 km of 2D seismic and 116 km² of 3D seismic were shot.

Central Mackenzie Valley (Sahtu and Gwich'in)

The Central Mackenzie Valley saw increased drilling. AEC West with Renaissance Energy (now Husky Energy Ltd.) drilled five wells. Four of these were on EL387 midway between Fort Good Hope and Norman Wells. These wells tested targets in the Carcajou reef complex of the middle Devonian Kee Scarp Formation. The wells were drilled to total depth of between 650 and 860 m. The Tate G-18 well was drilled to 2030 m on EL392 to test prospects bordering the Keele Arch structure south of Tulita. The wells were plugged and abandoned.

Northrock and partners drilled two wells on EL391 southwest of Tulita. The more northerly well East Mackay I-77 spudded in December of 1999 and was drilled to 2400 m to test early to middle Devonian targets. The southern well Fall Stone F-01 was drilled to 1400 m and tested shallower targets in the Cretaceous. Both wells reached their planned depth and were plugged and abandoned. The company announced that neither well encountered commercial hydrocarbons.

Mackenzie Delta (Inuvialuit Settlement Region)

In the Mackenzie Delta, two seismic programs comprising 135 km of 2D and 191 km² of 3D seismic were shot by PetroCanada on ELs 395/396 and a test program was undertaken by Gulf on Parsons lake. Towards the year end, Petro-Canada were mobilizing equipment to spud the first new exploration well in the Mackenzie Delta in a decade. This well is the first of 14 wells which will be required to validate new exploration licences issued this year and in 1999. Multiple wells on certain licences are to be expected if exploration results are encouraging.

Offshore Nunavut

Exploration in the Labrador Sea offshore Greenland and in Davis Strait saw the drilling of an offshore well on the Fylla Prospect southwest of Nuuk, Greenland. The prospective oil and gas basin extends into Canadian waters offshore Baffin Island, Nunavut where the 1980

gas discovery at Hekja remains undeveloped. One seismic program associated with the offshore Greenland exploration, comprising 631 km of marine seismic, was shot in summer 2000 in Canadian waters as part of a regional evaluation of basin potential.

Overview of Northern Oil and Gas Activities, 2000

Lands held under licence as of year end (millions of hectares).....	5.3
Licences active as of year end	
(includes exploration, significant discovery and production licences).....	179.0
Licences issued during the year	21.0
Natural gas production (millions of cubic metres).....	769.2
Oil production (thousands of cubic metres).....	1434.3
Oil and gas revenues received in 2000 (\$ millions)	
(royalties, rentals, fees, deposit forfeitures).....	14.8

OIL AND GAS MANAGEMENT

Rights Issuance

With renewed exploration at an early stage it is important to sustain industry's interest by issuing new exploration rights on a regular basis. To this end, the department is promoting regular annual calls in the Central Mackenzie Valley, the Beaufort Sea/Mackenzie Delta and Arctic Islands of Nunavut. The department is also working towards establishing measures that would meet the needs and provide economic opportunities for those areas without a land claim settlement, primarily in the Southern Northwest Territories.

Crown rights are issued pursuant to an open, competitive bidding process. The bid criterion used is currently the dollar value of work proposed for the first period of the licence. A work program requirement of one well in the first period applies.

Mackenzie Delta/Beaufort Sea

Rights issuance in the Mackenzie Delta/Beaufort Sea region has been an annual event for a decade.

In the Mackenzie Delta, a Call for Nominations was launched in February 2000 with the support of the Inuvialuit and Gwich'in and closed on March 31, 2000. A call for bids on ten nominated parcels was launched in April 2000 and remained open for four months. The single bid criterion was the dollar value of work proposed during the first five year period of the nine year licence. The call for bids was published, in accordance with the *Canadian Petroleum Resources Act*, in

Part I of the *Canada Gazette*.

The Call for Bids closed August 14, 2000 with work expenditure bids totalling \$467 million spread among nine of the ten parcels offered. The highest bid for each parcel was accepted. Multiple bids were received for some of the parcels.

Consultation with the Inuvialuit and the Gwich'in on environmental considerations and the terms and conditions of the call preceded the start of this successful rights issuance process.

The Inuvialuit also held a sale of oil and gas rights earlier this year on Inuvialuit lands in the Mackenzie Delta. The sale resulted in \$75 million in bonuses on top of work commitments.

Central Mackenzie Valley

A Call for Nominations by industry was launched for the Central Mackenzie Valley on January 14, 2000 and closed

on February 29, 2000. The Call for Bids published, in accordance with the *Canada Petroleum Resources Act*, in Part I of the *Canada Gazette*, was launched on April 1, 2000 and closed July 31, 2000.

The bid criterion was the dollar value of the work proposed in the first four years of the eight year licence period. Successful bids totalling \$57.47 million were received for the six of the eight parcels.

In accordance with the provisions of the Sahtu and Gwich'in land claims settlement

agreements, the department continued to seek the views of the Sahtu and Gwich'in by consulting them prior to rights issuance to seek their views on the terms and conditions of the issuance and related matters. Both land claim settlements include requirements for companies to meet with the Sahtu and Gwich'in prior to exercising their exploration rights to discuss the proposed work, including how the communities can benefit from the employment and business opportunities.

Arctic Islands of Nunavut

During 2000, the department completed the consultation process with the Government of Nunavut and Nunavut Tunngavik Inc. to launch the first Call for Nominations in Nunavut. The Call was open at year end.

The Arctic Islands region contains several areas with high potential for both oil and gas, proven by existing discoveries. The department is optimistic that regular annual calls in Nunavut will stimulate private sector investments in developing these resources.

Interests Issued in 2000

Fifteen new exploration licences were issued as a result of successful Calls for Bids in the Central Mackenzie Valley and the Beaufort Sea/Mackenzie Delta areas.

Three significant discovery licences, SDL118, SDL119 and SDL120 were issued effective February 22, 2000 following the Declaration of Significant Discovery made on February 22, 2000, in respect of the Ranger Fort Liard P-66A discovery well. The interest owners of Exploration Licence EL363 made

application on May 3, 1999 for a significant discovery licence pursuant to the Act. One of the significant discovery licences, SDL118, was also subject to a Declaration of Commercial Discovery and a production licence, PL10, was issued to Ranger Oil Limited and Canadian Forest Oil Ltd. effective April 26, 2000.

In addition to the issuance of PL10, three more production licences were issued. A Declaration of Commercial Discovery made in respect of certain lands within significant discovery licence SDL99 led to the issuance of production licence PL9 on March 27, 2000 to Chevron Canada et al.

Following a Declaration of Commercial Discovery made in respect to Exploration Licence EL381, the interest owners, having made applications on January 18, 2000 for production licences, were issued production licences, PL7 and PL8. The effective date of these two production licences was January 18, 2000. The representative for the licences is Paramount Resources Ltd.

Northern Benefits

The oil and gas sector has the potential to become a significant component of the northern economy. Many direct and indirect employment and business supply and services opportunities are created during the exploration and development phases. The oil and gas sector already contributes to the wage and business economy in many northern communities. The seasonal or part-time nature of exploration jobs also fits well with the mixed traditional/wage economy in the North.

When oil and gas exploration and development

are undertaken in the NWT, Nunavut and offshore area, the proponent must ensure full and fair access to employment, training and business opportunities for Northerners and northern businesses, and give first consideration in hiring to qualified individuals residing in regional communities.

Inuvik, Fort Liard, Tulita and Norman Wells are realizing the economic benefits of oil and gas exploration activity. Fort Liard and Inuvik, in particular have experienced high levels of employment and local business activity as a result of petroleum exploration and development.

The department has established an oil and gas group in Yellowknife to facilitate the benefits plan approval process and to assist with pathfinding for regulatory and environmental approvals for activities within the NWT.

Environmental Considerations

Consultations

Before issuing calls for nominations, consultations are held with northern Aboriginal groups to identify areas of environmental sensitivity, including ones holding special interest for cultural or spiritual reasons. Environmental considerations also play an important role when issuing land use permits, water licences and all work authorizations. DIAND also consults with other federal departments and territorial government agencies. The terms and conditions of the calls for nominations and bids reflect the results of this consultation process.

Regulatory Road Map

New institutions of public government established under land claim agreements such as the Mackenzie Valley Land and Water Board, the Mackenzie Valley

Environmental Impact Review Board, the Inuvialuit Environmental Screening Committee and the Inuvialuit Environmental Review Board, along with federal agencies such as the National Energy Board, Canadian Environmental Assessment Agency, Fisheries and Oceans and Environment Canada have prominent roles in the new regulatory environment.

Environmental Studies Research Fund (ESRF)

Under the *Canada Petroleum Resources Act*, the ESRF finances environmental and social studies related to the exploration and development of oil and gas resources on frontier lands. The program is funded through levies paid by interest holders. Levies have not been imposed since 1994 as no new projects were initiated.

However, in October 2000, the ESRF management Board established the content and budget for the 2001 program. The program recommended by the ESRF Board has been approved by the Minister of Natural Resources Canada and the Minister of DIAND.

The program has an estimated value of \$1.1 million, which includes a number of environmental studies related to the east coast, as well as the North. A project to review northern research abstracts and reports over the past 20 years and identify gaps in research has been contracted to the Arctic Institute of North America.

Expenditures & Royalties

Exploration activities, well abandonments and field development drilling resulted in expenditures of \$ 66.1 million in 2000.

Royalties from industry on northern oil and natural gas production amounted to about \$13.4 million during the same period.

From this amount, the Sahtu and Gwich'in First Nations receive a share of royalties in fulfilment of royalty-sharing provisions in their land claim settlement agreements.

DEVELOPMENT AND PRODUCTION

Mackenzie Valley (Sahtu)

Norman Wells

The Norman Wells oil field, operated by Imperial Oil, extends beneath the Mackenzie River at 65°20' N latitude. The oil reservoir is a reef of the Devonian Kee Scarp Formation. The field is the starting point of the Norman Wells oil pipeline. Operated by Enbridge Inc., this 300 mm (12") line runs for 866 km south from the Norman Wells field to Zama, Alberta. Daily throughput on the line is currently about 4 200 m³ (27 000 barrels). This is about half of potential line capacity with upgrades.

Cumulative production from Norman Wells field reached 30.7 x 10⁶ m³ (193.2 million barrels) out of recoverable reserves of about 37.5 x 10⁶ m³ (250 million barrels). Production in 2000 was 1434.3 x 10³ m³ (9.0 million barrels), continuing a gentle declining trend.

Eight production wells were drilled in the field between June and August 2000. All wells were drilled from artificial island number five in the Mackenzie River to total depths of 635 m to 970 m. Five of the wells are now on production, the remainder are injectors. The wells were placed to optimize recovery from part of the field and to prolong its the productive life.

Mackenzie Delta (Inuvialuit Settlement Region)

Ikhil

The Ikhil gas field lies in the Mackenzie Delta, 50 km north of Inuvik, N.W.T. Originally discovered in 1983, the field remained undeveloped until 1999. The reservoir is in the

Taglu sands (Reindeer Formation) of Eocene age at a depth of about 1100 m. Gas is delivered through a buried 120 mm (6") pipeline to Inuvik where it is used for electricity generation and town supply. AltaGas is the current operator of the project. Cumulative production since start-up in July 1999 is 14.3 x 10⁶ m³ (0.5 billion cubic feet) of gas. Production in 2000 was 10.0 x 10⁶ m³ (0.4 billion cubic feet). The field is currently producing from two wells.

Southern Northwest Territories

Pointed Mountain

The Pointed Mountain gas field, operated by BP Amoco, began production in 1972. Production is from the Devonian Nahanni Formation at a depth of between 3900 m and 4200 m. Production peaked at close to 1.0 x 10⁹ m³ per year in the mid-1970s. Flow diminished to 17.1 x 10⁶ m³ (0.6 billion cubic feet) by the end of 2000. Gas from P-53, the sole well still producing, merges with gas from recent upstream developments near Fort Liard to enter Westcoast Energy's raw gas pipeline to Fort Nelson, British Columbia, where it is processed.

Paramount Fort Liard "F-36" (Field Code G006)

Paramount Resources and Berkeley Petroleum received National Energy Board approved in January 2000 to develop their 1999 gas discovery well Paramount Fort Liard F-36. The well is 25 km southeast of Fort Liard NWT. Gas is produced from the Mississippian Mattson Formation about 2000 m below surface. Twenty-four kilometres of 324 mm (12") pipeline (the "Shiha Pipeline") carries the gas south to a processing plant near Maxhamish

Lake, British Columbia.

The well came on production in April 2000 and had produced $66.3 \times 10^3 \text{ m}^3$ (2.3 billion cubic feet) of sweet gas by end 2000. A second of two delineation wells (1-46) was drilled in 2000 to test the boundaries of this discovery.

Chevron Fort Liard "K-29"
(Field Code G007)

Chevron received National Energy Board approval in January 2000 to develop their 1999 gas well Fort Liard K-29 on the previously drilled Liard Anticline in the foothills northwest of Fort Liard NWT and west of the Liard River. The gas reservoir is the Devonian Nahanni Formation in an overthrust structure about 3000 m below surface. The gas is slightly sour.

The K-29 well has proved to be prolific with cumulative production over eight full months to end 2000 of $407.3 \times 10^6 \text{ m}^3$ (14.4 billion cubic feet). A second well, M-25, 8 km south of K-29, was brought on stream in November bringing combined first year production for the field to $490.1 \times 10^6 \text{ m}^3$ (17.3 billion cubic feet).

Gas flows through a new producer-owned, 46 km long pipeline to BP Amoco's Pointed Mountain facility where it joins the current northern terminus of the Westcoast pipeline system. A water disposal line connects the field to the Mackay Lake O-80 well, drilled in 1999, which was converted for water disposal.

Ranger Fort Liard "P-66A"
(Field Code G008)

In February 2000, the National Energy Board approved the development plan submitted by Ranger Oil for the 1998 Fort Liard P-66A discovery. The discovery lies in the foothills west of the Liard River and 15 km north of the Chevron K-29 well. The gas is in the Devonian Nahanni Formation at depths of 3000 m and is slightly sour.

Production began from P-66A in May 2000 with cumulative production to the end of December reaching $60.1 \times 10^6 \text{ m}^3$ (2.1 billion cubic feet). A decline in produced gas and increasing water production were becoming evident towards year end. The gas produced flows through a new pipeline link to a point near the K-29 well where the gas streams co-mingle. The field is now operated by Canadian Natural Resources Ltd.

Oil and Gas Production					
	1996	1997	1998	1999	2000
Oil Production (thousands of m³)					
Norman Wells	1631.8	1584.6	1561.7	1549.1	1434.3
Gas Production (millions of m³)					
Norman Wells ^{1*}	132.4	135.5	132.8	126.5	125.6
Pointed Mountain (G003)	47.2	33.9	25.2	21.0	17.1
Ikhil (G005)	-	-	-	3.3	10.0
Paramount Fort Liard (G006 - "F-36")	-	-	-	-	66.3
Chevron Fort Liard (G007 - "K-29")	-	-	-	-	490.1
Ranger Fort Liard (G008 - "P-66A")	-	-	-	-	60.1

^{1*} Note: Field code "G00X" assigned by the National Energy Board

Oil and Gas Revenues Received (\$)					
	1996	1997	1998	1999	2000
Royalty	13 967 952	9 887 982	6 967 456	7 138 169	13 433 264
Rentals	7 525	7 818	7 818	3 245	2 800
Issuance/Registration Fees	14 907	22 464	2 052	16 766	51 589
Work Deposit Forfeitures	649 000	0	0	289 874	1 342 385
Total	14 639 384	9 918 264	6 977 326	7 448 054	14 830 038

Discovered Resource Inventory		
	Crude Oil (millions of m ³)	Natural Gas (billions of m ³)
Mainland Territories [*]	39	28 ^{**}
Mackenzie Delta and Beaufort Sea	161	255
Arctic Islands and offshore Eastern Nunavut	65	416
Total	265	699

(Sources: National Energy Board, 1999; DIAND)

^{*} includes Yukon

^{**} resource numbers not adjusted for recent discoveries

STATISTICAL OVERVIEW

Land Status					
	1996	1997	1998	1999	2000
Number of Licences Issued					
Mainland Territories	11	7	0	0	12
Mackenzie Delta & Beaufort Sea	0	2	5	5	9
Arctic Islands & Eastern Arctic Offshore	0	0	0	0	0
Total	11	9	5	5	21
Number of Licences Active					
Mainland Territories	74	81	73	68	79
Mackenzie Delta & Beaufort Sea	68	70	70	75	81
Arctic Islands & Eastern Arctic Offshore	23	23	23	23	23
Total	165	174	166	166	183
Lands Issued in Licences (in millions of hectares)					
Mainland Territories	0.5	0.6	0	0	0.8
Mackenzie Delta & Beaufort Sea	0	0.2	0 ^{1*}	0.31	0.7
Arctic Islands & Eastern Arctic Offshore	0	0	0	0	0
Total	0.5	0.8	0	0.31	1.5
Lands Relinquished or Surrendered (in millions of ha)					
Mainland Territories	0	0	0.1 ^{2*}	0.4	0.2
Mackenzie Delta & Beaufort Sea	0.1	0	0	0	0
Arctic Islands & Eastern Arctic Offshore	0	0	0	0	0
Total	0.1	0	0.1^{2*}	0.4	0.2
Lands Held Under Licence (in millions of ha)					
Mainland Territories	1	1.6	1.6	1.4	2.2
Mackenzie Delta & Beaufort Sea	0.9	1.1	1.1	1.3	1.8
Arctic Islands & Eastern Arctic Offshore	1.3	1.3	1.3	1.2	1.2
Total	3.2	4	4	3.9	5.2

^{1*}Less than 0.1 million hectares.^{2*} Adjustment to Mainland Territories by deletion of eight licences totalling 25 529 hectares in Yukon.

Exploration Licences						
No.	Area (in ha)	Representative^Y	Issue	Dates (y.m.d.) Well to be Drilled by		Work Bid \$
Eastern Arctic Offshore						
EL 297 ^{1*}	931 640	CanNat Resources Inc.	1998.07.14	2008.07.14	2008.07.14	
Beaufort Sea/Mackenzie Delta						
EL317 ^{2*}	175 810	Talisman Energy Inc.	1986.10.05	n/a		n/a
EL329 ^{2*}	349 982	BP Canada Energy Resources	1987.09.05	n/a		n/a
EL384 ^{3*}	85 761	AEC West Ltd.	1997.01.06	2006.01.05	2006.01.05	
EL385 ^{3*}	128 327	AEC West Ltd.	1997.01.06	2006.01.05	2006.01.05	
EL393	72 474	Burlington Resources Canada	1999.09.18	2004.09.17	2008.09.17	35 550 000
EL394	73 155	Burlington Resources Canada	1999.09.18	2004.09.17	2008.09.17	42 375 000
EL395	72 311	Petro-Canada	1999.09.18	2004.09.17	2008.09.17	51 848 860
EL396	75 511	Petro-Canada	1999.09.18	2004.09.17	2008.09.17	53 444 900
EL403	75 650	Shell Canada	2000.08.15	2005.08.14	2009.08.14	35 000 000
EL404	73 608	BP Canada Energy	2000.08.15	2005.08.14	2009.08.14	76 675 288
EL405	76 307	Petro-Canada	2000.08.15	2005.08.14	2009.08.14	46 454 620.66
EL406	72 523	Petro-Canada	2000.08.15	2005.08.14	2009.08.14	81 876 595.84
EL407	71 515	Anadarko Canada Corp.	2000.08.15	2005.08.14	2009.08.14	2 421 350.84
EL408	93 944	Anderson Resources	2000.08.15	2005.08.14	2009.08.14	77 550 668.80
EL409	80 104	Anderson Resources	2000.08.15	2005.08.14	2009.08.14	56 988 788.96
EL410	95 073	Anderson Resources	2000.08.15	2005.08.14	2009.08.14	21 654 432.96
EL411	69 348	Anderson Resources	2000.08.15	2005.08.14	2009.08.14	67 875 764.64
Mainland - Southern NWT						
EL363	9 864	Canadian Forest Oil/Canadian Natural Resources Limited	1995.01.23	1999.01.22	T 2002.01.22	3 529 000
EL365	20 635	Canadian Forest Oil	1995.01.23	1999.01.22	T 2002.01.22	1 500 000
EL367	24 382	Paramount Resources	1995.01.23	1999.01.22	T 2002.01.22	1 768 600
EL368	23 085	Paramount Resources	1995.01.23	1999.01.22	T 2002.01.22	2 800 000
EL369	25 737	Paramount Resources	1995.01.23	1999.01.22	T 2002.01.22	8 765 580

Exploration Licences							
No.	Area (in ha)	Representative ^Y	Issue Expiry	Dates (y.m.d.) Well to be Drilled by			Work Bid \$
Mainland - Southern NWT							
EL380	25 606	Canadian Forest Oil	1996.04.10	2000.04.09 T 2003.04.09			2 200 000
EL381	21 236	Paramount Resources	1996.04.10	2000.04.09 T 2003.04.09			6 250 000
EL382	25 335	Paramount Resources	1996.04.10	2000.04.09 T 2003.04.09			1 100 000
EL383	25 515	Paramount Resources	1996.04.10	2000.04.09 T 2003.04.09			1 224 400
Mainland - Central Mackenzie Valley							
EL372	88 693	Canadian Forest Oil	1995.05.18	1999.05.17 T 2003.05.17			3 215 000
EL373	99 560	Devlan Exploration	1996.03.27	2001.03.26 2005.03.26			1 226 000
EL374	138 170	Devlan Exploration	1996.03.27	2001.03.26 2005.03.26			1 042 000
EL375	3 508	Murphy Oil Company	1996.03.27	2000.03.26 T 2004.03.26			2 806 000
EL386	114 737	Devlan Exploration	1997.05.05	2001.05.04 2005.05.04			1 072 000
EL387	128 575	AEC West Ltd.	1997.05.05	2001.05.04 T 2005.05.04			9 482 688
EL388	30 696	Murphy Oil Company	1997.05.05	2001.05.04 T 2005.05.04			2 831 080
EL389	46 738	Canadian Abraxas	1997.05.05	2001.05.04 T 2005.05.04			3 101 015
EL390	50 938	Canadian Forest Oil	1997.05.05	2001.05.04 T 2005.05.04			6 200 000
EL391	71 816	Northrock Resources	1997.05.05	2001.05.04 T 2005.05.04			4 000 000
EL392	133 518	AEC West Ltd.	1997.05.05	2001.05.04 T 2005.05.04			8 466 460
EL397	134 565	Northrock Resources Ltd.	2000.08.01	2004.07.31 2008.07.31			16 580 000
EL398	133 480	AEC West Ltd.	2000.08.01	2004.07.31 2008.07.31			1 000 000
EL399	120 496	Paramount Resources	2000.08.01	2004.07.31 2008.07.31			8 400 000
EL400	118 060	Canadian Natural Resources Limited	2000.08.01	2004.07.31 2008.07.31			17 500 000
EL401	128 584	EOG Resources Canada Inc.	2000.08.01	2004.07.31 2008.07.31			12 750 000
EL402	128 718	Anderson Resources	2000.08.01	2004.07.31 2008.07.31			1 243 789

Y These representatives are current to date of draft i.e. March 2001

^{1*} Amended per s. 26 (4) of the CPRA, originally issued pursuant to the Canada Oil and Gas Land Regulations.

^{2*} Under work prohibition orders.

^{3*} Land exchange for Cape Bathurst former permits.

T Well requirement met as of year end. The drilling of one exploratory or delineation well prior to the end of Period 1 of the term is a condition precedent to obtaining tenure to Period 2.

Well Activity

2000 DRILLING STATISTICS

OPERATOR	WELL NAME	LATITUDE	LONGITUDE	CLASS ¹	TD (m)	SPUD DATE	RR DATE	STATUS ²	RIG	LICENCE ³
Southern Territories										
Suncor	Well: Suncor Netla P-16	60.76599	-122.78532	DL	2099	21-Dec-99	13-Jan-00	P&A	Akita #37	SDL13
Paramount	Well: Paramount et al Fort Liard I-46	60.09235	-123.38156	DL	2055	12-Nov-99	15-Jan-00	P&S	Drive #642	EL 381
Paramount	Well: Paramount et al Mount Coty I-02	60.19278	-123.50522	EX	1744	16-Oct-00	04-Dec-00	P&S	Akita #51	EL383
Canadian Forest Oil	Well: CDN Forest et al North Liard C-31	60.50009	-123.61004	EX	2730	04-Aug-00	12-Jan-01	P&A	Akita #58E	EL363
Paramount	Well: Paramount et al North Liard N-01	60.01454	-123.26625	EX	1940	12-Dec-00	16-Jan-01	P&S	Precision #379	EL381
Central Mackenzie Valley										
Northrock Resources Ltd/IFR Well:	Northrock et al East Mackay I-77	64.77822	-125.71952	EX	2400	21-Dec-99	24-Jan-00	P&A	Akita #51	EL391
Northrock Resources Ltd/IFR Well:	Northrock et al Fall Stone F-01	64.67367	-125.77161	EX	1400	27-Jan-00	12-Feb-00	P&A	Akita #51	EL391
AEC(WEST)	Well: AEC(West) Renaissance Tate G-18	64.45481	-125.29254	EX	669	17-Feb-00	09-Mar-00	P&A	Akita #14	EL392
AEC(WEST)	Well: AEC(West) Renaissance Carcajou O-74	65.56335	-128.23314	EX	760	22-Feb-00	11-Mar-00	P&A	Akita #14	EL387
AEC(WEST)	Well: AEC(West) Renaissance Carcajou D-07	65.58613	-128.52755	EX	2030	02-Mar-00	23-Mar-00	P&A	Akita #14	EL387
AEC(WEST)	Well: AEC(West) Renaissance Carcajou P-16	65.59916	-128.28838	EX	748	23-Feb-00	23-Mar-00	P&A	Akita #14	EL387
AEC(WEST)	Well: AEC(West) Renaissance Carcajou O-47	65.61328	-128.63654	EX	860	26-Feb-00	25-Mar-00	P&A	Akita #14	EL387
Imperial	Well(J-36X)	65.26983	-126.88317	EV	710	26-Jun-00	04-Jul-00	I	Akita #51	PAA
Imperial	Well(K-37X)	65.26986	-126.88319	EV	765	04-Jul-00	13-Jul-00	PR	Akita #51	PAA
Imperial	Well(L-36X)	65.26986	-126.88325	EV	783	14-Jul-00	20-Jul-00	I	Akita #51	PAA
Imperial	Well(I-35X)	65.26986	-126.88328	EV	807	22-Jul-00	30-Jul-00	PR	Akita #51	PAA
Imperial	Well(M-37X)	65.26986	-126.88333	EV	962	31-Jul-00	10-Aug-00	PR	Akita #51	PAA
Imperial	Well(L-34X)	65.26986	-126.88336	EV	700	11-Aug-00	18-Aug-00	I	Akita #51	PAA
Imperial	Well(K-33X)	65.26989	-126.88342	EV	635	19-Aug-00	24-Aug-00	PR	Akita #51	PAA
Imperial	Well(M-31X)	65.26983	-126.88344	EV	968	26-Aug-00	02-Sep-00	PR	Akita #51	PAA

¹ Class: EX=exploratory; DL=delineation; DV=development

² Status: P&S=plugged and suspended; P&A=plugged and abandoned; PR=production; I=injection

³ Licence: EL=Exploration Licence; SDL=Significant Discovery Licence; PAA=Proven Area Agreement-Norman Wells

SOURCES OF INFORMATION

Northern Oil and Gas Directorate

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 K1A 0H4**

Information on the resource management regime, calls for nominations and bids and other related information is available from: Rights Issuance and Policy - Telephone (819) 953-8529.

Information on registration procedures and regulations, exploration, significant discovery and production licences, transfers, notices and maps is available from: Rights Administrator/Registrar - Telephone (819) 953-8490.

Information on northern exploration history and geological/geophysical activities is available from: Senior Petroleum Geologist - Telephone (819) 953-8722.

Information on Benefits Plan requirements associated with new exploration programs on land in the Northwest Territories is available from the department's Northwest Territories Regional office - Telephone (867) 669-2618; and for Nunavut and northern offshore the information is available from the Northern Oil and Gas Directorate - Telephone (819) 994-1606.

**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/oil/index.html>**

**Oil and Gas Division
Northwest Territories Regional Office
Department of Indian Affairs and Northern Development
Street Address: 4914-50th Street, P.O. Box 1500,
Yellowknife, NWT X1A 2R3
Telephone: (867) 669 2618
Fax: (867) 669-2409**

Other Sources of Information

Through the offices of the National Energy Board at the address below, information on the following is available:

- C** The Regulatory Support Office has information on exploration, development, production, pipeline transportation and export;
- C** The Frontier Information Office provides access to maps, technical information, geological and geophysical reports, well history reports and records; and
- C** The Environmental Directorate has information relating to the Environmental Studies Research Funds.

**National Energy Board (NEB)
444 Seventh Avenue SW
Calgary AB T2P 0X8
Telephone: (403) 292-4800
Fax: (403) 292-5503**

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:

**Institute of Sedimentary and Petroleum Geology
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
Geological Survey of Canada Atlantic
Bedford Institute of Oceanography
P.O. Box 1006
Dartmouth NS B2Y 4A2
Telephone: (902) 426-6127
Fax: (902) 426-4465
Email: hardy@agc.bio.ns.ca**

Other Sources of Information

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

**Office of Energy Research and Development
Natural Resources Canada
14th Floor (14D4)
580 Booth Street
Ottawa ON K1A 0E4
Telephone: (613) 995-8860
Fax: (613) 995-6146**