GM 26539

WELL HISTORY REPORT, ANTICOSTI NO 1

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Énergie et Ressources naturelles
Québec

"WELL HISTORY REPORT"

for

ATLANTIC RICHFIELD CANADA LTD.
ANTICOSTI NO. 1

Anticosti Island, Province of
Quebec, Canada

Latitude: 49°23'18" North

Longitude: 63°31'29" West

Prepared by: E. G. Petrie, P.Geol.
Atlantic Richfield Company
Frontier District
Dallas, Texas

October 31,1970

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ILLUSTRATIONS

SUMMARY

ARCO Anticosti No. 1 was drilled to obtain stratigraphic information and evaluate the hydrocarbon potential of all Lower Paleozoic sediments to the Precambrian basement.

The wildcat was drilled on Quebec Exploration License No. 439, under a farmout-option agreement with New Associated Developments Limited of Montreal. Under the agreement with New Associated, ARCO earns 261,000 net license acres and has a further option to acquire an additional 568,275 net license acres on the island.

The well is located on the southwest side of Anticosti Island next to the Gulf of St. Lawrence, province of Quebec, Canada. Gaspe Peninsula lies 50 miles south and Cape St. George, on the southeast extremity of Newfoundland, is approximately 200 miles from the subject wildcat. Mineral rights on Anticosti Island are owned by the Quebec government with Consolidated-Bathurst Limited holding most of the surface rights. New Associated Developments Limited holds approximately 1.2 million acres of exploration permits on the island. Transportation to the island is provided by Air Gaspe using a DC-3 or Piper equipment three days per week or by the "Anticosti" which sails from Rimouski on a weekly schedule. The island is a sportsman's paradise, with deer hunting and salmon fishing providing the major attractions.

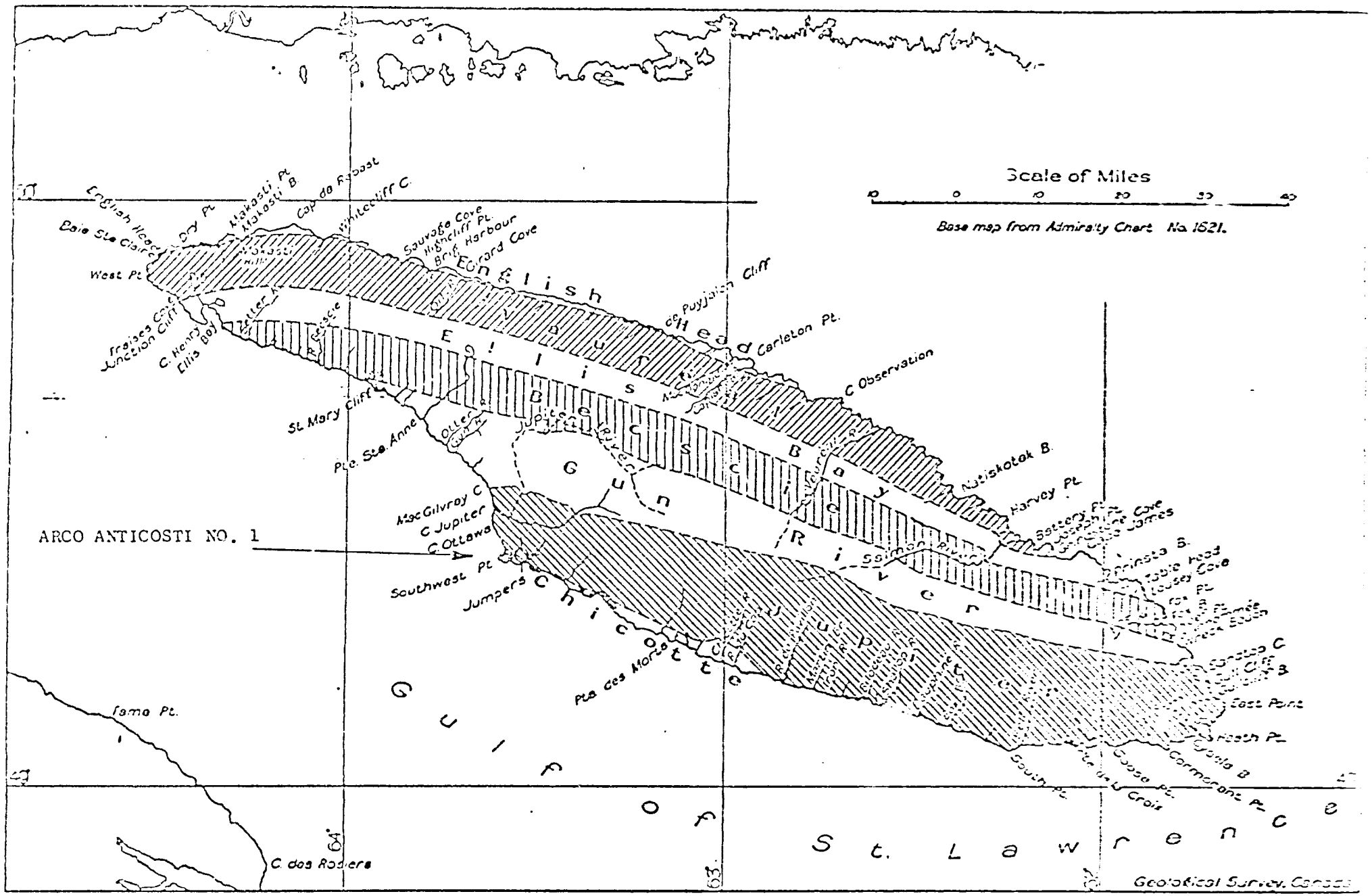
ARCO Anticosti No. 1 was drilled about 20 miles south of New Associated Developments-Consolidated Paper Anticosti No. 1. This stratigraphic test was cored to 5770' into the Lower Ordovician Beekmantown dolomite using a Heath and Sherwood rig in 1963. Cores bleeding small quantities of oil and gas were recovered from a number of different zones, particularly from fractured Beekmantown dolomites in the updip test.

Atlantic Richfield Canada Ltd., of Calgary and Edmonton, Alberta contracted Garnett Drilling of Edmonton to drill the wildcat. Equipment for the project was gathered in Edmonton from Fox Creek, Alberta, and transported to Montreal on 20 freight cars by the Canadian Pacific Railway. The equipment was then loaded aboard the freighter "Sir John A. Crosbie" of Chimo Shipping Ltd., and taken down the St. Lawrence River across the Gulf of St. Lawrence and off-loaded at Port Menier on Anticosti Island. From this point the drilling equipment and camp was moved to the drillsite by Kenworth transport trucks of Falcon Trucking of Edmonton, Alberta. The drilling operation commenced on July 19, 1970, and the rig was released on October 26, 1970 at final total depth of 12,620' in Precambrian granodiorite.

The wildcat encountered a thick section of gently dipping Silurian and Ordovician shelf carbonates and shales, with a thin remnant of probable Upper Cambrian quartzite overlying Precambrian granodiorite.

Attempts have been made to correlate the subsurface Silurian and Ordovician units encountered in the wildcat with Twenhofel's (1928)* and Bolton's (1961)** surface stratigraphy but have not met with great success. The stratigraphic subdivisions of the surface exposures were established primarily on the basis of the megafossil assemblages.

ANTICOSTI ISLAND



Map taken from Twenhofel, W.H. (1928) "Geology of Anticosti Island" Geological Survey of Canada, Memoir No. 154

Two diamond cores were taken of the Beekmantown dolomite and the intervals have been analyzed by Core Laboratories of Calgary. One core was taken of the Precambrian basement and will be later analyzed and age dated by the Geological Survey of Canada. One conventional drill stem test was run by Lynes United in the Beekmantown formation but failed to indicate commercial hydrocarbons. A full suite of mechanical logs was run by Schlumberger of Canada Ltd., including a Four-Arm High Resolution Dipmeter and a Continuous Velocity Survey, in conjunction with Century Geophysical of Canada Ltd.

* Twenhofel, W. H. (1928); "Geology of Anticosti Island", Geological Survey of Canada, Memoir 154, 481 pages.

** Bolton, T. E. (1961); "Ordovician and Silurian Formations of Anticosti Island, Quebec", Geological Survey of Canada, Paper 61-26, 18 pages.

GENERAL DATA

ARCO ANTICOSTI #1

Location: Anticosti Island, Quebec, Canada
Quebec Exploration License No: 439

Coordinates: Latitude - 49°23'18" North
Longitude - 63°31'29" West

Ground Elevation: 223'

K. B. Elevation: 234.60'

Total Depth: 12,620' Driller, in Precambrian
12,620' Logger

Contractor: Garnett Drilling Company, Edmonton, Alberta, Rig No. 5

Farmor: New Associated Developments Ltd., 1610 Sherbrooke Street West, Suite 56, Montreal 25, Quebec, CANADA

Spud: July 19, 1970

Rig Released: October 26, 1970

Casing Program:

Conductor Pipe: 17 3/4" at 158'.

Surface Casing: 9 5/8" at 1495'.

Abandonment Plugs: Plug No. 1: 12620' - 10850' - 750 sacks of cement
Plug No. 2: 7025' - 6775' - 175 sacks of cement
Plug No. 3: 1545' - 1445' - 75 sacks of cement

Shows: 6925'-6931' - Gas-cut mud. Well attempted to blow out. Mud weight increased from 9.1 to 9.4 lbs./gallon to control.

11221' - 11230' - Gas-cut mud. Gas readings on detector equipment increased significantly.

Lost Circulation Zones: None

DST Summary: DST No. 1 - 11206'-11297' - Ordovician Beekmantown.

Cored Interval Summary:

Core No. 1: 10903'-10962' (59); Recovered 59'; Ordovician Beekmantown.
Core No. 2: 10962'-11021' (59); Recovered 59'; Ordovician Beekmantown.
Core No. 3: 12610'-12620' (10); Recovered 6.8'; Precambrian granodiorite.

Mud Program: Baroid of Canada Ltd. A fresh water low solids mud system was used.

Mud Logger: Borst and Giddens (Canada) Ltd., 534-8th Ave., S.W., Calgary 2, Alberta.
Analyzer equipment was Honeywell Analytical Logging Chromatograph Model 101.

Drift Surveys: Teledrift and Totco.

Surveyors: Leblanc and Garneau, Rimouski, Quebec

Core Analysis and Slabbing: Core Laboratories Canada Ltd., P. O. Box 5670, Station "A", 6101 Sixth Street, S.W. Calgary, Alberta.

Drill Stem Testing: Lynes United Services, Chevron Bldg., #204-415-Third Street, S.W., Calgary 1, Alberta.

Logging: Schlumberger of Canada, Ltd., 8605 Coronet Road, Edmonton, Alberta.

Coring: Christensen Diamond Coring, Edmonton, Alberta.

Velocity Survey: Century Geophysical of Canada Ltd., Edmonton, Alberta

Logs Run:

TYPE	INTERVAL	SCALES
*Schlumberger Dual Induction Laterolog	12616'-1496'	2" & 5"
Schlumberger SP - Borehole Compensated - Sonic - Caliper	12620'-1496'	2" & 5"
**Schlumberger Formation Density Compensated - Gamma Ray	12618'-1496'	2" & 5"
Schlumberger Sidewall Neutron - Porosity - Gamma Ray	12618'-1496'	2" & 5"
Schlumberger Variable Density	12605'-1496'	5"
Schlumberger Four-Arm High Resolution Dipmeter	12620'-1496'	Long and short correlation used in computation
Century Geophysical Continuous Velocity Survey	12620'-1496'	
Borst and Giddens Mud Log	0-12620'	1"=50'

All logs were calibrated before surveys, and necessary repeat runs taken.
*Due to bimetallism in the drum a "ripple effect" is superimposed on the SP deflection.
**Due to mechanical breakdown the density log is not compensated for borehole irregularities.

Drill Stem Test Results

DST No. 1:

Interval: 11206'-11297' (91)

Formation: Lower Ordovician - Beekmantown

Preflow Period: 5 minutes

Initial Shut In: 60 minutes

Flow Period: 120 minutes

Final Shut In: 240 minutes

Results: Good initial air blow, increasing to very good steady blow throughout test. No gas to surface.

Recovery: Total 1700' fluid, consisting of 1250' mud and 450' very slightly gas-cut mud.

Pressures: Recorder No. 7400
IHP 5584 psi - FHP 5566 psi
Preflow 265 psi - IFP 473 psi - FFP 985 psi
ISIP 4955 psi - FSIP 4807 psi
Recorder No. 7200 - not operating
Temperature - no bottom hole thermometer available.

Core Descriptions:

Core No. 1:

Interval: 10903' - 10962' (59)

Recovery: 59'

Formation: Lower Ordovician-Beekmantown

Description: DOLOMITE; medium brownish grey mottled with medium dark grey, very fine crystalline to sucrosic, minor thin shale stringers and scattered pods of shale, burrows on few surfaces, stylolites, few calcite filled vugs forwards base. Some vertical fracturing with clear quartz crystals and minor slickensides. Porosity - essentially nil - few scattered and isolated patches with trace to poor intergranular porosity plugged with pyrobitumen. No shows.

Core No. 2:

Interval: 10962' - 11021' (59)

Recovery: 59'

Formation: Lower Ordovician - Beekmantown

Description: DOLOMITE; medium browish grey, mottled with medium grey, very fine crystalline to fine sucrosic, numerous stylolites, open vertical fractures. Calcite filled blebs and irregular dark brown shaly laminations in lower 15 feet. Essentially non-porous. Few thin bands of trace to very poor intergranular porosity. No shows.

Core No. 3:

Interval: 12610' - 12620' (10)

Recovery: 6.8'

Formation: Precambrian

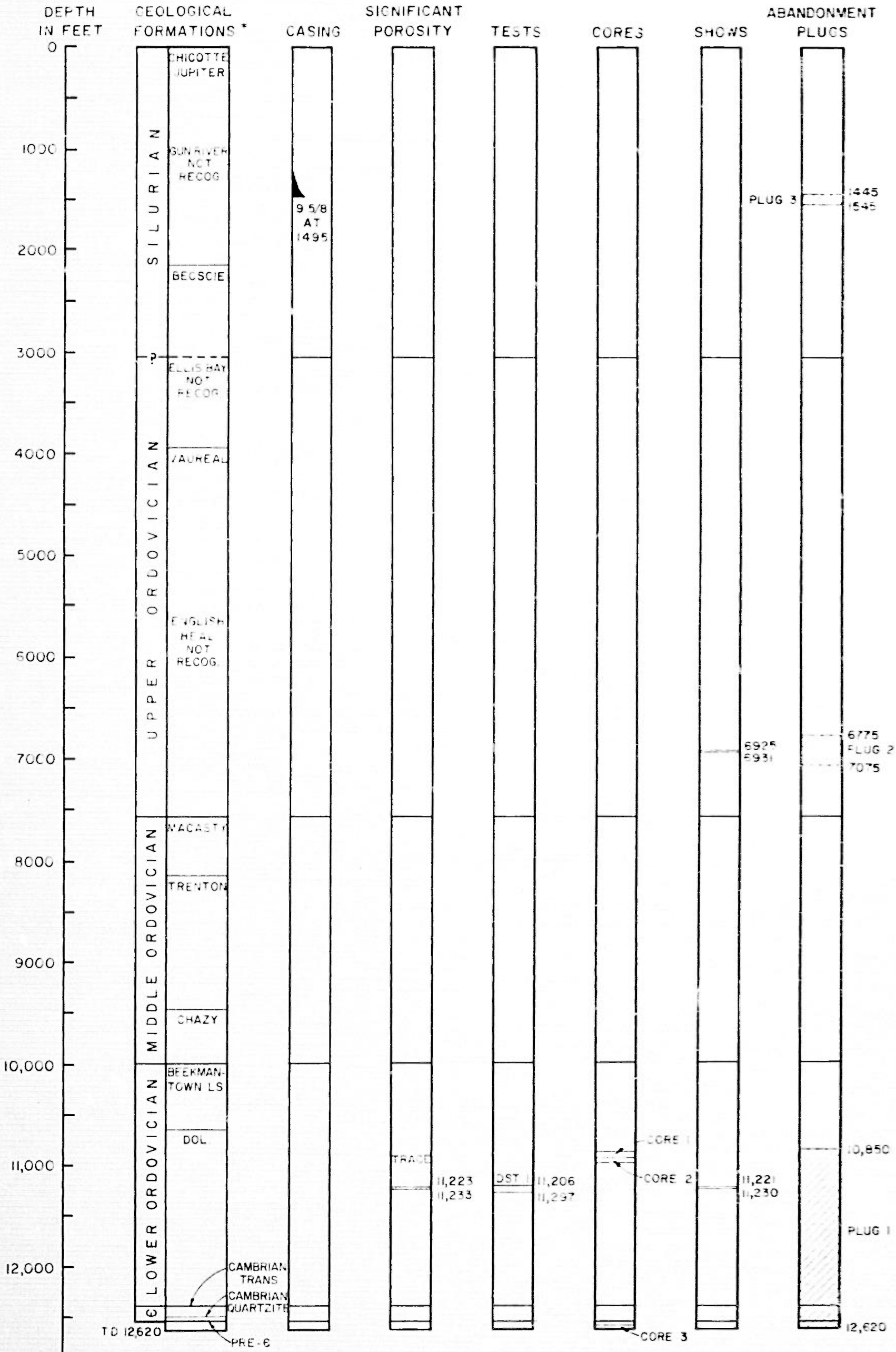
Description: Granodiorite; medium grey, coarse crystalline, clear quartz up to 35%, orthoclase feldspar 10%, plagioclase feldspar 45%, biotite 4%, green hornblende 5%, chlorite, pyrite, magnetite and zircon accessories estimated at 1%. Later alteration with introduction of quartz and pyrite. Several 45^{o} fractures up to 1mm wide filled with white quartz.

SUMMARY OF FORMATION TOPS

AGE	FORMATIONS (After Twenhofel, Bolton, Roliff*)	SAMPLES	INTERVAL	LOGS
	Chicotte - Jupiter	Spuds		
SILURIAN	Gun River	Not Recognized	2143	
	Beescie	2143?(-1906)		2150?(-1915)
UPPER ORDOVICIAN	Ellis Bay	Not Recognized	1817	
	Vaureal	3960?(-3725)		3967?(-3732)
	English Head	Not Recognized		
MIDDLE ORDOVICIAN	Macasty (Utica) Grey Shales	7605 (-7370)	3645	
	Trenton	8174 (-7939)	569	8175 (-7910)
	Chazy (Mingan)	9500 (-9265)	1326	9505 (-9270)
LOWER ORDOVICIAN	Beekmantown (Romaine)		510	
	Limestone	10,010 (-9775)		10,001 (-9766)
	Dolomite	10710 (-10475)	700	10,710 (10475)
CAMBRIAN ?	Transitional	12430 (-12195)	1720	12430 (-12195)
	Quartzite	12560 (-12325)	130	12560 (-12325)
PRECAMBRIAN	Granodiorite	12585 (-12350)	25	12585 (-12350)
	TOTAL DEPTH	12620	35	12620

*Roliff, W.A., (1968), "Oil and Gas Exploration - Anticosti Island, Quebec," The Geological Association of Canada, Proceedings, Vol. 19, p. 31-36.

ARCO ANTICOSTI NO. 1
WELL SUMMARY



*SAMPLES AND LOGS COMBINED

SAMPLE DESCRIPTIONS

To ensure good sample quality a Petrocraft Sample Boy was installed at the shale-shaker. Three sets of bagged cuttings were taken at lagged ten foot intervals from the base of surface casing to total depth. Two sets of cuttings have been washed, dried and bottled at the wellsite. One set of washed samples in vials is located in ARCO's Frontier District in Dallas, Texas and the second complete set of washed cuttings is with Atlantic Richfield Canada Ltd., 650 Guinness House, Calgary, Alberta.

In addition a complete set of unwashed cuttings have been forwarded to Dr. Yvon Globensky of the Quebec Department of Natural Resources, 1620 Boulevard De L'Entente, in Quebec City, P.Q., and another set to Mr. Michael Bell of the Department of Mines and Technical Surveys, Geological Survey of Canada, 601 Booth Street, Ottawa, Ontario.

Unwashed samples were also collected from surface casing to total depth at 30' intervals, immediately canned at the wellsite and shipped to ARCO's GeoScience Section in Dallas for Geochemical Analysis.

The following lithologic descriptions are taken from the stratigraphic log maintained by the various ARCO wellsite geologists assigned to Anticosti No. 1. The formation tops used are from samples. Sample quality is good throughout.

Spuds in Silurian Chicotte - Jupiter Formations
0 - 160 - No sample descriptions available.

160' - 525' - LIMESTONE; micritic, light tan, medium and coarse fragments of brachiopods and crinoids, other unrecognizable skeletal grains, interbedded green and grey shale, minor pyrite. Non-porous.

525' - 705' - LIMESTONE; micritic, light tan, hard with some softer streaks, argillaceous, several pyritized fossil fragments, minor green grey shale beds. Non-porous.

705' - 810' - SHALE; greenish grey to grey, soft, micaceous, flaky, few brachiopod shell fragments.

810'-1040' - LIMESTONE; light grey, medium to coarse crystalline, crinoidal grainstone in part, also contains brachs, bryozoans and ostracods, spar cement, some recrystallization ?. Non-porous.

1040'-1310' - LIMESTONE; light grey and minor medium grey, mainly micritic, brachiopods, and crinoids common, some skeletal grainstone, minor coral fragments, interbedded with greenish-grey, soft micaceous shale.

1310'-1355' - LIMESTONE; medium grey, skeletal wackestone, with crinoid and brachiopod debris, grading to greenish-grey shale, limy, pyritic, micaceous, also thin interbeds of fossiliferous limy mudstone.

1355'-1375' - LIME - MUDSTONE; medium grey-green, silty and argillaceous interbedded with green shale, micaceous and limy soft grey green siltstone.

1375'-1520' - LIME MUDSTONE and SKELETAL WACKESTONE; medium grey, interbedded with grey shale, soft, micaceous, fossiliferous. Clear calcite occurs probably as vein fillings. Several loose ostracods, some recrystallized grains. Lower 20' is sandy to sandstone, white to clear, siliceous, with traces spicular chert.

1520'-1560' - LIME MUDSTONE; light tan, few brachiopods.

1560'-1670' - No Samples - no cuttings over shaker started to build up mud with Baroid flosal.

1670'-2140' - LIME MUDSTONE; light and medium grey, partly siliceous, some is cream to light tan, hard and brittle, minor bands of silt size quartz, very minor interbeds of dark brown shale. Lower 50' contains bryozoans and crinoids and some pelsparite.

BECSCIE FORMATION - 2143' (-1908)

2140'-2220' - SHALE; bluish grey and green, soft, sub-waxy, micaceous, siliceous, limy, up to 5% fossil debris, brachs crinoids, bryozoans. Slightly pyritic.

2220'-2340' - LIME MUDSTONE and SKELETAL WACKESTONE; minor packestone and biosparite, with sandy streaks, fossil material mainly corals, brachs, bryozoans, crinoids, ostracods, minor shale breaks and interbedded fine grained biosparite. Non-porous.

2340'-3850' - LIME MUDSTONE and BIOSPARITE; light tan, fossil material mainly unrecognizable, interbeds medium and light green shale, micaceous, minor interbedded pyrite. Some recrystallized grains.

3850'-3960' - SHALE; green grey, very limy, soft, contains disseminated pyrite, minor thin interbeds of lime mudstone, light tan, slightly argillaceous. From 3925'-3935'; skeletal wackestone to packestone sparite, very fine crystalline, medium to dark brown, slightly pyritic and silty.

VAUREAL FORMATION - 3960 (-1817)

3960'-4640' - LIMESTONE; light to medium grey, textures range from skeletal wackestone to packstone and pelsparites, some highly recrystallized, with interbeds of light grey and tan shale, limy, soft, partly micaceous.

4640'-5250' - LIME MUDSTONE; light grey and medium grey, with interbeds of grey soft shale, pyritic. Skeletal sparite recrystallized. Traces of calcite filled hairline fractures.

5250'-6360' - SHALE and LIMESTONE; medium grey, slightly limy, soft, micaceous, pyritic and lime mudstone, grey tan, argillaceous, fragments of brachiopod shells. Some flakes of carbonaceous residue are probably from graptolites. Minor interbeds of pelletal wackestone, some recrystallization. Non-porous. Lower portion contains units of brown very calcareous sandstone, fine grained.

6360'-6800' - SHALE and SANDSTONE; shale grades to lime mudstone, grey to dark brown, very sandy to silty; sandstone, very fine grained to siltstone, grey, very limy, hard, slightly pyritic. Non-porous throughout.

6800'-6860' - SHALE; as above, becomes more blocky, more calcareous - argillaceous calcisiltite with shaly streaks, few spicules.

6860'-6925' - SHALE; medium grey, calcareous, few possible graptolites.

6925'-6931' - LIMESTONE; brown grey, argillaceous, minor pin point porosity, estimated at 4%. Gas recorder kick and gas cut mud.

6931'-6975' - SHALE; medium grey, calcareous, with abundant white coarse crystalline calcite filling fractures; minor bands of brown limestone.

6975'-7605' - SHALE and LIMESTONE; medium dark grey and grey brown; limestone is tan to buff brown, very fine crystalline, minor brachiopod fragments, few ostracods.

MACASTY (UTICA) - (-7370)

7605'-8035' - SHALE; dark grey, micaceous, calcareous, partly silty, few slickensides, traces calcite veining, minor streaks of brown dense limestone. Shale becomes slightly fissile, less calcareous towards base, pyritic.

8035'-8175' - SHALE; dark grey, slightly calcareous, fissile, occassional hard silty streaks and thin stringers of dense limestone, some small (chitenous) brachiopods, graptolites, few small white calcispheres, pyritic.

TRENTON FORMATION - 8174' (-7939)

8175'-8320' - LIMESTONE; light tan to medium brown, mottled, fine crystalline, some calcarenite, thin streaks of black carbonaceous shale, minor crinoids, brachs, ostracods, bryozoans, few traces of poor intercrystalline porosity at 8200, no staining, no shows.

8320'-8440' - LIMESTONE; brown and tan mottled, medium to coarse calcarenite, very fossiliferous, thin streaks of brown very fine crystalline dolomite, argillaceous, few brachs and ostracods.

8440'-8790' - LIMESTONE; medium brown-grey, very fine to medium calcarenite, some zones of calcilutite and calcisiltite, fossiliferous, mainly ostracods and brachs. Few beds of intrasparite, thin dark grey argillaceous streaks.

8790'-9080' - SHALE and LIMESTONE; medium green grey, uniform, splintery, interbeds of limestone as above. Few streaks of very fine calcareous sandstone to siltstone, few veins of calcite.

9080'-9180' - LIMESTONE; medium dark brown, very fine crystalline, argillaceous, thin dark grey shale streaks, calcareous, fissile.

9180'-9280' - LIMESTONE; medium dark brown, very fine crystalline, ostracods common, traces of calcite veins, minor chert nodules near base.

9280'-9500' - LIMESTONE; tan to brown, very fine crystalline, some chalky and shaly limestone, streaks of brown-grey calcareous shale. Minor ostracods, brachiopods, some stylolites and calcite veins.

CHAZY (MINGAN) FORMATION - 9500'-(-9265)

9500'-9510' - LIMESTONE; medium grey, also tan-grey mottled, very fine crystalline to chalky, sandy, also few oolite grains.

9510'-9565' - SANDSTONE; light grey,- white, fine and coarse grained, sub-angular to sub-rounded, calcite and silica cement, scattered feldspar, traces glauconite. Very faint yellow cut, some dead staining. Very tight. Minor bands of dolomite. Scattered pyrite.

9565'-9580' - DOLOMITE; with minor sandstone as above, grey to tan, very fine crystalline, silty, with interbeds of grey to white, fine and coarse grained sandstone. Non-porous. Very faint yellow cut.

9580'-9650' - SANDSTONE; medium and light grey, fine and coarse grained, as above traces glauconite, calcareous, faint light yellow cut in chlorethane.

9650'-9730' - SANDSTONE; minor sandy dolomite and limestone, as above, mainly tan-grey, very coarse grained, subangular to sub-rounded, very minor traces vug porosity in dolomite.

9730'-9890' - SANDSTONE; grey to white, fine to coarse grained, calcareous, sub-angular to sub-rounded, frosted with thin interbeds of tan to grey fine crystalline sandy limestone and light grey very fine crystalline, silty dolomite, streaks and interbeds of light grey fissile shale. Traces of brachiopods and other organic shreds in sandtone, few phosphate nodules. Very faint yellow cut in sandstone at 9850'.

9890'-10010' - DOLOMITE; medium grey, some tan, very fine crystalline, sandy, shaly with streaks of tan grey very fine crystalline dolomitic limestone. Traces of ostracods and brachiopods. Non-porous.

BEEKMANTOWN (ROMAINE) FORMATION - 10,010?(-9775)

10010'-10310' - LIMESTONE; tan to brown, argillaceous, very fine crystalline to chalky, with streaks of brown - black shale, minor ostracods, brachiopods, Calcite filled veins common. No porosity.

10310'-10360' - LIMESTONE; grey to brown, fine crystalline and chalky, with 30-40% light grey green calcareous shale. Traces of brachiopods and ostracods, pyrite. No porosity.

10360'-10410' - LIMESTONE; brownish grey, fine crystalline to very fine, argillaceous, minor skeletal grains, with 30%-40% pale grey and greenish grey calcareous shale. Few ostracods, minor chalky limestone, disseminated pyrite. No porosity.

10410'-10470' - LIMESTONE; medium grey and brownish grey, very fine crystalline, dolomitic, with 10-20% brownish grey and brown, very fine crystalline to sucrosic, calcareous, few isolated traces of poor porosity, some possible sulphur staining, includes 10% dark grey and grey calcareous shale interbeds.

10470'-10520' - LIMESTONE; medium brownish grey, slightly dolic, very fine crystalline to micritic, minor greenish-grey, argillaceous, up to 5% Dolomite; brownish grey, very fine crystalline and sucrosic, with up to 5% Shale, dark grey and greenish grey, micaceous.

10520'-10540' - LIMESTONE; medium brownish grey, dolomitic, micritic, traces of dolomite as above, 3% dark grey and green shale. Traces of evaporitic limestone? Drilling mud became frothy.

10540'-10710' - LIMESTONE; medium brownish grey, dolomitic, minor greenish-grey, argillaceous, very fine crystalline to micritic, few loose ostracods, brachiopod fragments and other unrecognizable skeletal debris. Minor chalky limestone. Few fragments of light grey chert at 10680'. Minor portion of light grey brown sucrosic dolomite. Non-porous.

BEEKMANTOWN DOLOMITE - 10710' (-10475)

10710'-10860' - DOLOMITE; light brownish-grey, some medium brown, slightly calcareous, very fine crystalline to micritic, up to 20% brownish grey micritic limestone, and 5-10% dark grey shale. Few pieces of crystalline dolomite with pyrobitumen staining. Few brachiopods and grey chert fragments at 10760.

10860'-10892' - DOLOMITE; light brown, very fine crystalline to sucrosic, minor dark grey shale, probably cavings. Rare traces sucrosic dolomite with trace to poor intergranular porosity, dead pyrobitumen staining. Few loose euhedral quartz crystals.

10892'-10903' - DOLOMITE; light brown, very fine crystalline and sucrosic, up to 5% of dolomite shows poor intergranular porosity, dead pyrobitumen staining. Loose clear euhedral quartz crystals.

10903'-10962' - Core No. 1 - Recovered 59' - DOLOMITE; medium brownish-grey, mottled with medium dark grey, very fine crystalline to sucrosic, minor thin shale stringers and scattered pods, few burrows. Stylolites are common. Few calcite filled vugs towards base. Vertical fracturing and minor slickensides. Minor clear quartz crystals in fracture planes. Porosity - essentially nil - few scattered isolated patches of very poor intergranular porosity plugged with pyrobitumen. No shows in core or from gas detector equipment.

10962'-11021' - Core No. 2 - Recovered 59' - DOLOMITE; medium brownish grey, mottled with medium grey, very fine crystalline to fine sucrosic, calcareous numerous shale filled stylolites, open vertical fractures, calcite filled blebs, irregular dark brown to grey shaly laminations in lower 15 feet. Essentially non-porous - few thin bands of trace to very poor intergranular porosity. No gas, oil or water shows in core or from gas detector equipment.

11021'-11060' - DOLOMITE; light brown, very fine crystalline - sucrosic, minor brown grey micritic limestone, dark grey and greenish-grey shale.

11060'-11130' - LIMESTONE; medium brown, lithographic, includes up to 30% chalky, traces very fine crystalline dolomite. Also rare traces sucrosic dolomite with very poor intergranular porosity.

11130'-11221' - LIMESTONE; light brown, very fine crystalline, minor chalky, up to 30% light brown, fine crystalline and sucrosic dolomite, slightly calcareous, traces of intergranular porosity. Well rounded medium grey and grey-green quartz pebbles 11200' - 11221'.

11221'-11230' - DOLOMITE; light grey-white and light brown, fine-medium crystalline, fair intergranular porosity, minor pyrobitumen staining. Excellent drilling break (12-14 minutes per foot to 2 minutes per foot) and increase in total gas from 62,000-118,000 p.pm. Chromatograph showed methane increase.

11230'-11300' - DOLOMITE; light brown, fine crystalline, up to 35% light brown and grey, very fine crystalline and minor chalky limestone. Poor to fair intergranular porosity in dolomite. Porosity is organic appearing - dissolution of fossil debris? Three drilling breaks within interval may also reflect some scattered porosity development. 11240-11245 (5'), 11247-250 (3'), 11282-11287 (5').

11300'-11335' - DOLOMITE; light brown, fine crystalline, minor chalky limestone, minor sucrosic dolomite, few well rounded quartz pebbles, non-porous.

11335'-11510' - DOLOMITE; mainly medium brownish grey, very fine crystalline, traces pyrite, few clear euhedral quartz crystals, non-porous.

11510'-11840' - LIMESTONE; medium brownish grey, micritic, with up to 40% light grey chalky limestone, minor brachiopod fragments, pyrite. No porosity throughout.

11840'-11860' - LIMESTONE; light and medium brownish grey to medium grey, micritic to lime wackestone, traces oolites and fossil debris, non-porous.

11860'-11895' - LIMESTONE; light and medium grey, fossiliferous lime wackestone, non-porous.

11895'-12010' - DOLOMITE; light to medium grey, fine and medium crystalline, traces very poor intercrystalline porosity. Minor dark grey lime mudstone and black silty, pyritic shale. Traces siliceous oolites at 12,000'. Minor pyrite and white chert fragments.

12010'-12085' - DOLOMITE; light and medium grey, fine and medium crystalline, with interbeds of dark grey lime mudstone, some grainstone, few ooliths. Non-porous generally. Trace inter crystalline porosity at 12075'.

12085'-12185' - DOLOMITE; light and medium grey, fine crystalline, interbedded with lime mudstone, dark brown to brown, up to 10% white, medium crystalline dolomite, probably vug or fracture filling. Minor pyrite. Non-porous.

12185'-12240' - DOLOMITE; light grey, fine crystalline, very hard, relict oolites, less than 15% light grey to white chert replaced as small nodules. Possibly 30-40% silica replaced dolomite and 15-20% chert in places. Probably dolomite filled fractures. Pyrite as minor accessory. Non-porous.

12240'-12290' - DOLOMITE; light to medium grey, very fine crystalline, few brown shale laminations, as above, 30-40% silica replaced.

12290'-12345' - DOLOMITE; light and medium grey, minor tan, siliceous, very fine crystalline, with interbeds of tan to brown lime mudstone, lower 10' contains very fine quartz grains and pyrite crystals in lime mudstone. Minor oolites partly replaced by silica and dolomite. Also dark brown shale, dolomitic, pyritic and micaceous. Non-porous.

12345'-12370' - DOLOMITE; light grey to grey, hard, fine crystalline, slightly cherty, contains coarse rounded and frosted quartz grains, some is dolomitized oosparite. Lower 5' is dark brown shale, pyritic, sli ly dolic.

12370'-12430' - DOLOMITE; tan to light grey, very fine crystalline, up to 30% coarse, rounded, "floating" quartz grains, slightly frosted. Several pieces of silicified oolites. Traces of pyrite infilled fractures. Non-porous.

CAMBRIAN - TRANSITIONAL ZONE - 12430' (-12195)

12430'-12560' - DOLOMITE; tan to light grey, hard, minor oolites, as above with 40% QUARTZITE; hard, finely interbedded, non-porous.

CAMBRIAN - QUARTZITE - 12560' (-12325)

12560'-12585' - QUARTZITE; light grey - white, very hard, tight. 10-20% DOLOMITE; as above.

PRECAMBRIAN - 12585' (-12350)

12585'-12610' - GRANODIORITE; light grey, abundant quartz, minor feldspars, biotite mica, chlorite.

12610'-12620' - CORE No. 3, Recovered 6.8' - GRANODIORITE; medium grey, coarse crystalline, clear quartz up to 35%, orthoclase feldspar 10%, plagioclase feldspar 45%, biotite 4%, green hornblende 5%, chlorite, pyrite, magnetite and zircon accessories estimated at 1%.

TOTAL DEPTH - 12620'

CORE ANALYSES

CORE LABORATORIES - CANADA, LTD.

CALGARY ALBERTA

Company	ATLANTIC RICHFIELD CANADA LTD.	Formation	ORDOVICIAN	Page	1 of 3
Well	ARCAN ANTICOSTI NO. 1	Drilling Fluid	WATER BASE MUD	File	CNP-4-5217
Field	WILDCAT, QUEBEC	Elevation		Date Report	OCT. 15/70
Location	49° 23' 30.00" N.LAT.	Analysis	FULL DIAMETER & RESIDUAL SATURATIONS	Analysts	RM JM CC
	63° 31' 30.00" W.LONG.	Remarks			

Sample Number	Interval Represented, Feet		Permeability to Air, Millidarcys			Permeability Feet	Porosity, Per Cent	Porosity Feet	Density, gm/cc		Residual Saturations, Per Cent Pore Space		Visual Examination
	Depth	Thick	K Max	K90°	KV				Bulk	Grain	Oil	Total Water	
	CORED INTERVAL 10903' - 11021'												
	CORE NO. 1 10903' - 10962' (REC. 59') (17 BOXES)												
-	10903.0-04.4	1.4	-	-	-	-	-	-	-	-	-	-	DENSE
1	10904.4-07.6	3.2	0.57	0.35	-0.01	1.82	2.1	6.72	2.76	2.82	0.0	54.8	DENSE F
2	10907.6-10.3	2.7	4.62	1.90	-0.01	12.47	1.0	2.70	2.79	2.82	0.0	14.0	DENSE F
3	10910.3-13.4	3.1	1.50	1.07	0.06	4.65	1.3	4.03	2.78	2.82	0.0	27.0	DENSE F
4	10913.4-16.6	3.2	1.20	0.27	0.16	3.84	0.4	1.28	2.81	2.82	0.0	27.9	DENSE F
5	10916.6-19.5	2.9	1.29	1.01	-0.01	3.74	0.3	0.87	2.81	2.82	0.0	32.5	DENSE F
6	10919.5-22.1	2.6	3.49	1.36	0.27	9.07	0.5	1.30	2.81	2.82	0.0	18.0	DENSE F
7	10922.1-25.2	3.1	3.59	2.39	0.25	11.13	0.3	0.93	2.81	2.82	0.0	19.7	DENSE F
8	10925.2-28.3	3.1	4.32	0.66	0.19	13.39	0.1	0.31	2.81	2.81	0.0	42.9	DENSE F
9	10928.3-31.1	2.8	1.13	0.66	0.23	3.16	0.4	1.12	2.81	2.82	0.0	43.9	DENSE F
10	10931.1-33.5	2.4	0.21	0.16	0.05	0.50	1.6	3.84	2.78	2.83	0.0	53.3	DENSE F
11	10933.5-36.4	2.9	0.37	0.29	0.07	1.07	2.4	6.96	2.76	2.82	Trace	32.7	DENSE F
12	10936.4-39.0	2.6	0.05	0.05	-0.01	0.13	1.1	2.86	2.80	2.84	0.0	47.8	DENSE F
13	10939.0-42.3	3.3	1.14	0.11	0.15	3.76	0.7	2.31	2.80	2.82	0.0	55.3	DENSE F
14	10942.3-45.3	3.0	0.23	0.07	0.11	0.69	0.2	0.60	2.81	2.82	0.0	57.9	DENSE F
15	10945.3-48.8	3.5	14.00	0.08	6.41	49.00	1.5	5.25	2.78	2.82	Trace	63.8	DENSE F
16	10948.8-52.0	3.2	25.30	0.38	9.05	80.96	0.7	2.24	2.81	2.83	0.0	51.7	DENSE F
17	10952.0-55.2	3.2	0.23	0.08	-0.01	0.74	1.0	3.20	2.79	2.82	0.0	61.4	DENSE F
18	10955.2-58.5	3.3	0.30	0.06	-0.01	0.99	0.3	0.99	2.81	2.81	0.0	25.7	DENSE F
19	10958.5-62.0	3.5	47.10	39.30	12.50	164.85	1.3	4.55	2.78	2.82	0.0	57.4	DENSE F
	CORE NO. 2 10962' - 11021' (REC. 59') (17 BOXES)												
20	10962.0-65.8	3.8	11.60	2.79	1.21	44.08	0.2	0.76	2.73	2.74	0.0	31.8	DENSE F
21	10965.8-69.5	3.7	0.52	0.13	0.17	1.92	0.0	0.00	2.74	2.73	0.0	Trace	DENSE F

CORE LABORATORIES CANADA, LTD.
CALGARY ALBERTA

Company ATLANTIC RICHFIELD CANADA LTD. Formation ORDOVICIAN Page 2 of 3
Well ARCAN ANTICOSTI NO 1 Drilling Fluid WATER BASE MUD File CNP-4-5217

Sample Number	Interval Represented, Feet		Permeability to Air, Millidarcys			Permeability Feet	Porosity, Per Cent	Porosity Feet	Density, gm./cc.		Residual Saturations, Per Cent Pore Space		Visual Examination
	Depth	Thick	K Max	K90°	KV				Bulk	Grain	Oil	Total Water	
CORE NO. 2 (Cont'd)													
22	10969.5-73.2	3.7	16.90	4.22	5.01	62.53	0.1	0.37	2.78	2.78	0.0	32.2	DENSE F
23	10973.2-77.0	3.8	7.38	0.48	1.08	28.04	0.1	0.38	2.77	2.78	0.0	37.1	DENSE VF BROKEN
24	10977.0-80.6	3.6	0.37	0.18	0.23	1.33	0.1	0.36	2.72	2.72	0.0	39.9	DENSE VF
25	10980.6-84.2	3.6	1.21	0.11	0.28	4.36	0.1	0.36	2.72	2.72	0.0	34.5	DENSE VF
26	10984.2-87.8	3.6	0.38	0.09	0.40	1.37	0.0	0.00	2.79	2.79	0.0	Trace	DENSE VF BROKEN
27	10987.8-91.2	3.4	0.73	0.37	0.56	2.48	0.1	0.34	2.79	2.79	0.0	26.2	DENSE F
28	10991.2-93.2	2.0	1.77	0.44	1.31	3.54	0.2	0.40	2.76	2.77	0.0	30.1	DENSE F
-	10993.2-21.0	27.8	-	-	-	-	-	-	-	-	-	-	DENSE

WELL: ARCAN ANTICOSTI #1

PAGE: 3 of 3

FORMATION:

FILE: CNP-4-5217

SUMMARY INTERVAL: 10903.0 - 11021.0

TOTAL FOOTAGE: 118.0

FOOTAGE ANALYZED 88.8

FOOTAGE NOT ANALYZED: TOTAL: 29.2 DENSE 29.2 LOST .0 DRILLED .0 *NABH .0 RUBBLE .0

SUMMARY OF ANALYZED CORE:

	FOOTAGE	% OF ANALYZED CORE	WEIGHTED AVERAGE POROS. %	POROSITY FEET	WEIGHTED AVERAGE PERM. MD.	PERM. FEET	WEIGHTED AVERAGE RESID OIL %	WEIGHTED AVERAGE TOT WATER %
TOTAL	88.8	100.00	.62	55.03	5.81	515.64	.00	36.22
BY PERM RANGES:								
LESS THAN 0.10 Md.	2.6	2.93	1.10	2.86	.05	.13	.00	47.80
0.10 0.49 Md.	22.0	24.77	.73	15.95	.30	6.69	.00	37.34
0.50 0.99 Md.	10.3	11.60	.69	7.06	.60	6.23	.00	25.67
1.00 9.99 Md.	36.2	40.77	.44	15.99	2.79	101.17	.00	32.50
GREATER THAN 9.99 Md.	17.7	19.93	.74	13.17	22.68	401.42	.00	46.87

*NOT ANALYZED BY REQUEST

BIT RECORD

BIT NO.	SIZE	MAKE	TYPE	DEPTH OUT	FEET	HOURS
1A	12 ¼	HW	OWV	162	162	20
2A	12 ¼	SEC	REAMER	158	158	13
3A	12 ¼	HW	ODV	810	652	30
A	12 ¼	HW	OWV	1130	480	38 ¼ Total
4A	12 ¼	REED	YSI	1495	365	24 ½
1	8 3/4	HW	XIG	2058	563	38 ¼
2	8 3/4	REED	STIAG	2795	737	40 ¼
3	8 3/4	HW	XIG	3480	685	41
4	8 3/4	REED	STIAG	4190	710	45 3/4
5	8 3/4	SMITH	SDGH	4960	770	45 ½
6	8 3/4	SEG	S44	5212	252	21 ¼
7	8 3/4	REED	SSIG	5499	287	34 ¼
8	8 3/4	HW	XDV	6010	510	38
9	8 3/4	REED	SMG	6664	659	57 ½
10	8 3/4	SMITH	SVH	7290	626	53 ¼
11	8 3/4	HW	SIG	7888	598	53 3/4
12	8 3/4	SEC	M44N	8218	330	33 ¼
13	8 3/4	SMITH	L44	8487	269	38 ½
14	8 3/4	HW	SDV	8693	206	41 ½
15	8 3/4	REED	SCM	8789	96	20 ¼
16	8 3/4	HW	SDV	9032	243	39 ¼
17	8 3/4	SMITH	SVH	9251	219	33
18	8 3/4	SEC	M44N	9420	169	27 ¼
19	8 3/4	SMITH	SDGH	9513	93	11 3/4
RR15	8 3/4	REED	SCM	9755	242	37 ½
20	8 3/4	SMITH	L4H	9790	35	9 ¼

BIT NO.	SIZE	MAKE	TYPE	DEPTH OUT	FEET	HOURS
21	8 3/4	SMITH	4JS	9908	118	25 ¼
22	8 3/4	SEC	M88	10045	137	31 3/4
23	8 3/4	HW	XDV	10203	158	37
24	8 3/4	SEC	S44	10358	155	35 3/4
25	8 3/4	HW	XDV	10432	74	19 3/4
26	8 23/32	CHRIST	MD41	10903	471	76 ¼
Core 1	8 23/32	CHRIST	DIAMOND	10962	59	10
Core 2	8 23/32	CHRIST	DIAMOND	11021	59	12
27	8 3/4	HW	X55R	11297	276	46 3/4
28	8 3/4	HW	X55R	11738	441	———
29	8 3/4	HW	X55R	12083	345	59
30	8 3/4	REED	YHWG	12083	0 Milled on Iron	3 ½
31	8 23/32	CHRIST	ND41	12137	54	20 ¼
32	8 3/4	HW	X55R	12394	257	53 ¼
33	8 3/4	HW	X55R	12534	140	41
34	8 3/4	HW	X55R	12610	76	———
Core 3	8 13/16	CHRIST	DIAMOND	12620	10	13

RN-X-19A

17.1.4 A

PROVINCE OF QUEBEC

Department of Natural Resources

QUEBEC MINING ACT

Notice of intention to abandon a well

To the Deputy Minister,
Department of Natural Resources,
Quebec.

We hereby declare that we have complied in every way with the Oil & Gas Regulations, and we wish to secure your permission to abandon, on or about the 26 day of October 19 70, the well known as:
ARCO ANTICOSTI NO. 1 No.
on Lot No. Range
Latitude 49°23'18" North, Longitude 63°31'29" West
Township or Anticosti Island Parish of
Seigniory Anticosti Island, Quebec,
County of Canada covered by Mining License No. 439

Reasons for abandonment: Failure to encounter commercial hydrocarbons

The following equipment: (rig, derrick, casing) will be removed to Rig, etc., to Port Menier then to Trois Rivieres.

Oil, gas and Water were encountered and will be shut off as follows:-
Oil:- Nil

Gas:- Plug No. 3: 1445-1545. 6925-6931 - gas cut mud. Plug No. 2: 6775-7025, 175 sx of cement. 11221-11230 - gas cut mud. Plug No. 1: 10850-12620, 750 sx of cement.
Water:- Nil

Safeguarding of oil and gas:-

The depth drilled to was 12620 feet and the following casings were inserted:-

String	Diameter	Weight	Free, set or cemented	Depth feet	Intention to withdraw, feet
1st	17 3/4"	48#	Cemented 180 sx	158	Nil
2nd	9 5/8"	36#	Cemented 800 sx	1495	Nil
3rd					
4th					

Ministère des Richesses Naturelles, Québec
30 NOV 1970
SERVICE DES GITES MINERAUX
No GM- J6539

ATLANTIC RICHFIELD CANADA LTD.

Signature of agent P. W. Stacke
Vice President

Address P.O. Box 2819, Dallas, Texas 75221

Date November 18 1970.

CORE LABORATORIES - CANADA, LTD.
CALGARY ALBERTA

Company	ATLANTIC RICHFIELD CANADA LTD.	Formation		Page	1 of 1
Well	ARCAN ANTICOSTI #1	Drilling Fluid		File	CNP-4-5217
Field	WILDCAT, QUEBEC	Elevation		Date Report	NOV. 20/70
Location	49°23'30.00" N.LAT. 63°31'30.00" W.LONG.	Analysis	NO ANALYSIS	Analysts	MH
		Remarks			

AST - APPEARS SIMILAR TO · * - BROKEN CORE (K90 USED FOR SUMMARY PURPOSES) · ** - PERMEABILITY > 5000 MD · — - PERMEABILITY < · FS - FINE SAND · MS - MEDIUM SAND · CS - COARSE SAND · CONG - CONGLOMERATE · DOL - DOLOMITE · SH - SHALE · LMY - LIMY · SHY - SHALY · BRK - BREAK · BIT - PYROBITUMEN · CARB - CARBONACEOUS · A - ANHYDRITE · FOSS - FOSSILIFEROUS · XLN - CRYSTALLINE · LAM - LAMINATIONS · V - VUGULAR · LV - LARGE VUGS · SV - SMALL VUGS · PPV - PIN POINT VUGS · I - INTERGRANULAR · STY - STYLOLITIC · HF - HORIZONTAL FRACTURE · VF - VERTICAL FRACTURE · SS - SMALL PLUG SAMPLE · SL/ - SLIGHTLY · V/ - VERY · W/ - WITH

Sample Number	Interval Represented, Feet: Depth	Thick	Permeability to Air, Millidarcys: K Max	K90°	KV	Permeability Feet	Porosity, Per Cent	Porosity Feet	Density, gm./cc.: Bulk	Grain	Residual Saturations, Per Cent Pore Space: Oil	Total Water	Visual Examination
CORE NO. 3 12,610' - 12,620' (REC. 10') (2 BOXES)													
-	12610.0-11.2	1.2	-	-	-	-	-	-	-	-	-	-	DENSE GRANITE
-	12611.2-11.8	0.6	-	-	-	-	-	-	-	-	-	-	REMOVED W. POOLE
-	12611.8-15.8	4.0	-	-	-	-	-	-	-	-	-	-	DENSE
-	12615.8-20.0	4.2	-	-	-	-	-	-	-	-	-	-	LOST CORE.

FORM NO. 50