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**INVESTIGATION OF GEOTHERMAL ENERGY RESOURCES
ATLANTIC PROVINCES**

John A. Leslie & Associates Limited
Consultant Geologists
Bedford, Nova Scotia

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INVESTIGATION OF GEOTHERMAL ENERGY RESOURCES
ATLANTIC PROVINCES

by

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Bedford, Nova Scotia

February 1984

Abstract

Data pertinent to the assessment of the geothermal energy resources of the Atlantic Provinces have been compiled and collected. Warm water in sedimentary basins and hot dry rock within Palaeozoic intrusives are considered as potential geothermal resources and, therefore, constituted the principal study areas.

The study has delineated areas with perhaps some low-grade geothermal energy potential or, at least, some areas which require further consideration. Continuing investigations are recommended so that the potential of these areas may be fully evaluated.

Résumé

L'auteur a rassemblé et groupé des données pertinentes pour l'évaluation des ressources en énergie géothermique. L'eau chaude des bassins sédimentaires et la roche sèche chaude des intrusions du Paléozoïque sont considérées comme des ressources possibles en énergie géothermique et, de ce fait, elles ont été les principaux d'objets d'étude.

L'étude a permis de délimiter des régions qui ont peut-être un potentiel en énergie géothermique basse température ou, du moins, certaines zones qui exigent un examen plus poussé. L'auteur recommande de poursuivre les travaux, de manière à évaluer pleinement le potentiel énergétique de ces régions.

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Map 1 Data Locations in pocket

INTRODUCTION

Data pertinent to the assessment of low-grade geothermal energy resources of the Atlantic Provinces have been compiled and collected during 1983-1984 by John A. Leslie & Associates Limited, geologists, Bedford, Nova Scotia. Warm water in sedimentary basins and hot dry rock within Paleozoic intrusives are considered as potential resources and therefore constituted the principal study areas. The investigation was undertaken for the Division of Gravity, Geothermics and Geodynamics, Earth Physics Branch, Energy, Mines and Resources, Canada, under contract number OSQ83-00014. Scientific direction was provided by Dr. M. J. Drury, Division of Gravity Geothermics and Geodynamics. Contract management was provided by Dr. R. G. Agarwal, Supply and Services Canada.

The current contract is the continuation of the geothermal investigations reported on in Earth Physics Branch open file reports numbers 81-9, 82-8, 83-19 and 83-20. Reference to these previous studies would provide interested parties with a more complete representation of the continuing program and the results to date. The 1983-1984 investigation mainly pertained to the acquisition of new

thermal data on an opportunity basis which have become available during the term of the contract. Analytical data and heat generation computations from previously collected samples, and compiled temperature data, are also reported.

Map 1 (in pocket) illustrates the locations of the various data.

ACKNOWLEDGEMENTS

The essential contributions of various companies, governments and universities and their personnel are gratefully acknowledged.

COMPILATION OF EXISTING DATA

Except for temperature data compiled for two Fredericton, New Brunswick, area drill holes (see Appendix I) no further temperature data have become available since those compiled and included in previous reports. Analyses of the radiogenic element content of diamond drill core and surface samples of the Pokiok and St. George batholiths have become available. These analyses and computed heat generation values (Earth Physics Branch) are contained in appendices II, III, IV and V. Statistical

analyses of the heat generation values are tabulated in Appendix VI.

ACQUISITION OF NEW DATA

Acquisition of new data involved temperature logging available drill holes. A total of 4,550 metres of temperature log were run at six localities in New Brunswick, Prince Edward Island and Nova Scotia. Drill holes to the required depths were not available in Newfoundland.

Readings were taken with temperature bridge Model BGT-1 employing a single thermistor probe. The station interval was five to twenty metres depending on the depth of the hole and the time available for logging. All collected temperatures and supporting data are tabulated in Appendix VII.

CONCLUSIONS AND RECOMMENDATIONS

The continuing investigation has added to the rather meagre regional data base. Thus, it has contributed to the overall assessment of the geothermal potential of the region. Temperature logs from the Fredericton area in New Brunswick and the New Glasgow-Stellarton area in Nova Scotia suggest that these areas of anomalous thermal

gradients may be geologically or, more specifically, structurally controlled within each particular sedimentary basin. The two areas continue to show potential for direct resource applications. Current groundwater flow and feasibility studies should provide data for a more complete evaluation of these areas and, hopefully, delineate targets for detailed exploration.

The temperature log of the drill hole into the St. George Batholith at Welsford, New Brunswick, (see also O.F.R. 83-19) indicates stability of temperatures twelve months after drilling. However, these temperatures and the resultant thermal gradient of 18 degrees Centigrade per kilometre do not seem to reflect the computed heat generation values. Initially, the rather low gradient was attributed to possible leaching of radiogenic elements. Yet, the analyses indicate this is not necessarily the case. It is now suggested that secondary geologic processes have redistributed and reconcentrated the radiogenic elements in an area of limited extent, thus having limited effect on the gradient. Adjacent larger areas of potential primary anomalous concentrations of these elements are, nevertheless, possible and require further

study.

It is recommended that the program to collect data on an opportunity basis continue. An improved economy accompanied by greater geologic activity could result in more opportunities to collect data either in areas of current study or in areas and geologic environments from which no data are now available.

Respectfully submitted



John A. Leslie, P. Eng., for
John A. Leslie & Associates Limited

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3. Leslie, John A. & Assoc. Ltd. (1983) Geothermal gradients in granite batholiths of New Brunswick: Energy, Mines and Resources Canada, Earth Phys. Br. O.F.R. No. 83-19.
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APPENDIX I
COMPILED TEMPERATURE DATA

COMPILED TEMPERATURE DATA

8

Note: Seru Nucleaire F - 1**Location:** Fredericton, N. B.**Latitude:** 46°1.9'**Longitude:** 66°07.4'**Total Depth:** 800.0 m**Source:** 300.0 m

<u>Depth (m)</u>	<u>Temp (°C)</u>	<u>Lithology/remarks</u>
0	0.267	0 - 5.0m: overburden.
5	2.519	
10	7.135	
15	6.774	
20	6.700	
25	6.696	
30	6.732	
35		
40	No data	
45	6.868	
50	6.952	
55	7.036	
60	7.113	
65	7.211	
70	7.287	
75	7.354	
80	7.472	
85	7.580	
90	7.695	
95	7.816	
100	7.890	
105	7.973	
110	8.058	
115	8.145	
120	8.233	
125	8.406	
130	8.508	
135	8.593	
140	8.663	
145	8.755	
150	8.917	

COMPILED TEMPERATURE DATA

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Hole: Seru Nucleaire F - 1
(Cont'd.)

Location:

Latitude:

Longitude:

Total Depth:

Source:

<u>Depth (m)</u>	Temp ("C)	Lithology/remarks
155	9.094	
160	9.259	
165	9.389	
170	9.463	
175	9.544	
180	9.619	
185	9.734	
190	9.889	
195	10.016	
200	10.169	
205	10.333	
210	10.463	
215	10.606	
220	10.765	
225	10.917	
230	11.054	
235	11.208	
240	11.336	
245	11.483	
250	11.621	
255	11.771	
260	11.908	
265	12.009	
270	12.131	
275	12.223	
280	12.302	
285	12.418	
290	12.506	
295	12.570	
300	12.610	End of log.

COMPILED TEMPERATURE DATA

10

Note: Silverwood Water Well**Location:** Silverwood, N. B.**Latitude:** 45°57.9'**Longitude:** 66°45.0'**Total Depth:** 255.0 m**Source:** 255.0 m

<u>Depth (m)</u>	<u>Temp (°C)</u>	<u>Lithology/remarks</u>
0	0.193	Well data not available.
5	6.635	
10	8.452	
15	8.602	Bedrock is greywacke and slate of Silurian age.
20	8.295	
25	8.239	
30	8.227	
35	8.218	
40	8.216	
45	8.218	
50	8.231	
55	8.246	
60	8.266	
65	8.295	
70	8.332	
75	8.369	
80	8.423	
85	8.473	
90	8.498	
95	8.575	
100	8.637	
105	8.700	
110	8.773	
115	8.840	
120	8.902	
125	8.991	
130	9.076	
135	9.152	
140	9.231	
145	9.344	
150	9.422	

COMPILED TEMPERATURE DATA

11

Note: Silverwood Water Well
(Cont'd.)

Location:**Latitude:****Longitude:****Total Depth:****Source:**

<u>Depth (m)</u>	<u>Temp (°C)</u>	<u>Lithology/remarks</u>
155	9.463	
160	9.547	
165	9.610	
170	9.705	
175	9.701	
180	9.880	
185	9.945	
190	10.030	
195	10.110	
200	10.189	
205	10.283	
210	10.355	
215	10.439	
220	10.517	
225	10.605	
230	10.690	
235	10.788	
240	10.878	
245	10.949	
250	10.979	
255	10.984	

Heat Generation Data, Welsford, New Brunswick

<u>Sample No.</u>	<u>Depth(m)</u>	<u>U(ppm)</u>	<u>Th(ppm)</u>	<u>K(°/o)</u>	<u>Heat Gen.(μWm⁻³)</u>
W100	10.66	13.50	36.90	4.64	6.51
W101	21.27	15.30	38.40	4.71	7.09
W102	30.55	12.50	35.00	4.67	6.13
W103	40.20	13.30	36.10	4.54	6.40
W104	50.63	15.00	37.70	4.74	6.97
W105	60.24	11.30	41.70	4.76	6.30
W106	70.20	12.30	41.10	4.60	6.50
W107	81.96	12.60	36.40	4.68	6.25
W108	90.35	12.00	37.90	4.64	6.20
W109	100.46	16.70	47.80	4.82	8.12
W110	110.23	18.00	39.00	4.79	7.83
W111	120.72	12.30	36.30	4.81	6.18
W112	130.20	18.20	38.10	4.49	7.79
W113	141.23	10.90	35.60	4.94	5.78
W114	150.20	16.10	35.40	4.82	7.09
W115	160.22	11.90	40.00	4.73	6.33
W116	170.37	14.00	35.70	4.61	6.56
W117	181.55	9.10	29.90	6.34	5.05
W118	191.41	11.40	40.30	4.88	6.24
W119	200.20	8.65	36.50	4.70	5.24
W120	209.95	11.60	35.60	4.66	5.94
W121	220.26	9.11	36.00	4.84	5.34
W122	230.20	9.89	28.10	3.91	4.90
W123	240.17	9.67	28.70	3.91	4.88
W124	250.20	18.30	36.60	4.39	7.70
W125	260.10	17.70	36.20	4.56	7.54
W126	270.45	20.30	41.50	4.93	8.61
W127	280.37	18.00	40.90	4.70	7.96
W128	290.07	18.90	39.50	4.46	8.07
W129	299.63	7.56	16.30	2.58	3.34
W130	310.37	27.30	44.20	4.61	10.57
W131	320.35	12.90	31.90	4.81	6.02
W132	330.05	22.50	46.90	4.32	9.50
W133	339.58	16.20	36.30	4.38	7.14
W134	350.02	18.50	38.80	4.36	7.91
W135	360.16	73.60	33.50	4.87	21.75
W136	369.92	21.80	34.10	4.45	8.43

APPENDIX III
HEAT GENERATION DATA - SURFACE SAMPLES, WELSFORD, NEW BRUNSWICK

<u>Sample No.</u>	<u>Location</u>	<u>U(ppm)</u>	<u>Th(ppm)</u>	<u>K(%)</u>	<u>Heat Gen. (μWm^{-3})</u>
W200	1,050 m N of DDH EPB20	11.90	31.30	4.36	5.68
W201	750 m N of DDH EPB20	14.70	40.10	4.51	7.04
W202	600 m N of DDH EPB20	13.80	37.30	4.55	6.61
W203	25 m S of DDH EPB20	14.70	36.00	4.69	6.76
W204	1,900 m NE of DDH EPB20	10.60	32.70	4.67	5.55

Heat Generation Data, McAdam, New Brunswick

<u>Sample No.</u>	<u>Depth(m)</u>	<u>U(ppm)</u>	<u>Th(ppm)</u>	<u>K(°/o)</u>	<u>Heat Gen.(μWm⁻³)</u>
P100	10.13	7.75	17.70	3.47	3.57
P101	20.27	9.53	17.80	3.78	4.07
P102	30.20	7.99	16.30	3.48	3.54
P103	39.99	6.05	16.50	3.77	3.08
P104	50.20	6.12	16.70	3.52	3.09
P105	60.20	8.25	20.90	3.75	3.95
P106	70.20	7.47	19.20	3.71	3.63
P107	80.20	5.70	11.90	3.70	2.66
P108	90.27	4.43	14.00	3.82	2.49
P109	100.20	9.53	16.00	3.93	3.95
P110	110.18	8.65	16.00	3.81	3.72
P111	120.23	9.16	19.90	3.67	4.11
P112	130.30	8.18	15.80	3.66	3.57
P113	140.26	8.77	19.10	3.44	3.93
P114	150.24	7.93	22.90	3.73	4.01
P115	160.17	9.07	14.10	3.63	3.67
P116	170.17	10.20	13.10	3.37	3.87
P117	180.22	8.43	13.30	3.69	3.46
P118	190.29	8.08	17.80	4.31	3.74
P119	200.15	7.37	20.70	3.77	3.71
P120	210.25	6.79	15.90	4.32	3.28
P121	220.24	8.37	17.50	3.90	3.76
P122	230.20	8.75	17.70	3.63	3.84
P123	240.38	8.47	19.90	3.17	3.88
P124	250.20	8.45	18.20	3.97	3.83
P125	260.20	7.88	21.30	3.62	3.87
P126	270.00	9.12	20.10	2.94	4.04
P127	280.30	10.30	20.40	3.06	4.38
P128	290.20	7.66	13.70	3.89	3.31
P129	300.40	8.23	16.00	3.15	3.54
P130	310.25	7.90	17.00	4.12	3.62
P131	320.26	8.81	18.40	3.17	3.86
P132	330.26	8.19	18.60	4.17	3.82
P133	340.22	7.59	17.10	3.88	3.53
P134	350.15	8.21	15.80	3.48	3.56
P135	360.26	7.82	18.20	3.52	3.63
P136	270.20	8.11	17.00	3.52	3.62
P137	380.25	6.69	17.20	3.13	3.23
P138	390.35	7.40	17.60	3.32	3.46

APPENDIX V
HEAT GENERATION DATA - SURFACE SAMPLES, MCADAM, NEW BRUNSWICK

<u>Sample No.</u>	<u>Location</u>	<u>U(ppm)</u>	<u>Th(ppm)</u>	<u>K(%)</u>	<u>Heat Gen. (μWm^{-3})</u>
P200	30 m N of DDH EPB319	3.30	20.10	3.75	2.62
P201	175 m NNW of DDH EPB319	2.94	16.60	3.59	2.27

APPENDIX VI

STATISTICAL ANALYSES - HEAT GENERATION VALUES
NEW BRUNSWICK GRANITE DRILLING PROJECT

	<u>McAdam</u>	<u>Welsford</u>
Number	39	37
Mean	3.638	7.194
Standard Deviation	0.374	2.823
Standard Error	0.040	0.464
Variance	0.136	7.752
Minimum	2.49	3.34
Maximum	4.38	21.75
Range	1.88	18.41
Sum x	141.88	266.16
Sum x^2	521.455	2,201.435
Sum x^3	1,933.533	22,985.741
Sum x^4	7,225.328	320,522.830
Coefficient of Variance	10.269	39.238
Skewness	-1.022	3.637
Kurtosis	1.434	16.334
t(H0:MU=0)	60.816	15.502
PR(t)	0.001	0.001

APPENDIX VII
COLLECTED TEMPERATURE DATA

COLLECTED TEMPERATURE DATA

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Hole: Welsford 1, EPB No. 320 Location: Welsford, N. B.

Latitude: 45°26.3' 12-Month Log - November 29, 1983

Longitude: 66°26.4' Thermistor No. 5326

Total Depth: 371.3 m Logged Depth: 370.0 m

<u>Vertical Depth(m)</u>	<u>Cable Resist.(ohms)</u>	<u>Corrected Resist.(ohms)</u>	<u>Temp.(°C)</u>	<u>Lithology/Remarks</u>
0	249	12,234	6.269	Logged about 12
5		10,670	9.420	months after hole
10		10,859	9.012	was drilled.
15		11,109	8.485	
20		11,356	7.978	Hole collared in
25		11,517	7.653	bedrock.
30		11,589	7.510	
35		11,725	7.242	0 - 6.1 m: BW Casing
40		11,759	7.176	
45		11,756	7.182	0 - 371.3 m: coarse
50	247	11,739	7.215	grained reddish
				granite with repeat-
55		11,716	7.260	ing altered and
60		11,691	7.309	unaltered phases.
65		11,662	7.366	
70		11,634	7.421	
75		11,603	7.482	
80		11,570	7.548	
85		11,539	7.609	
90		11,503	7.681	
95		11,470	7.748	
100	246	11,429	7.830	
105		11,393	7.903	
110		11,351	7.988	
115		11,317	8.057	
120		11,270	8.153	
125		11,233	8.229	
130		11,186	8.325	
135		11,150	8.400	
140		11,108	8.487	
145		11,068	8.571	
150	246	11,021	8.669	

COLLECTED TEMPERATURE DATA

Hole: Welsford 1, EPB No. 320 **Location:**
(cont'd.)

Latitude:

Longitude:

Thermistor No.

Total Depth:

Logged Depth:

Vertical Depth (m)	Cable Resist.(ohms)	Corrected Resist.(ohms)	Temp. (°C)	Lithology/Remarks
155		10,986	8.742	
160		10,941	8.838	
165		10,908	8.908	
170		10,856	9.018	
175		10,820	9.096	
180		10,774	9.195	
185		10,734	9.281	
190		10,692	9.372	
195		10,648	9.467	
200	245	10,609	9.553	
205		10,566	9.647	
210		10,523	9.743	
215		10,482	9.834	
220		10,438	9.931	
225		10,400	10.016	
230		10,356	10.115	
235		10,317	10.203	
240		10,274	10.301	
245		10,231	10.399	
250	245	10,195	10.482	
255		10,153	10.578	
260		10,106	10.686	
265		10,072	10.765	
270		10,025	10.875	
275		9,984	10.969	
280		9,942	11.068	
285		9,908	11.149	
290		9,862	11.258	
295		9,828	11.399	
300	245	9,781	11.452	

COLLECTED TEMPERATURE DATA

Note: Welsford 1, EPB No. 320 Location:
(cont'd.)

Latitude:

Total Depth: Logged Depth:

<u>Vertical Depth (m)</u>	<u>Cable Resist.(ohms)</u>	<u>Corrected Resist.(ohms)</u>	<u>Temp.(°C)</u>	<u>Lithology/Remarks</u>
305		9,749	11.528	
310		9,702	11.642	
315		9,664	11.734	
320		9,626	11.828	
325		9,587	11.923	
330		9,545	12.026	
335		9,510	12.113	
340		9,469	12.215	
345		9,439	12.290	
350	245	9,394	12.402	
355		9,357	12.496	
360		9,317	12.598	
365		9,281	12.690	
370		9,255	12.765	End of log.

COLLECTED TEMPERATURE DATA

Hole: G.S.C. Kelly Cross**Location:** Kelly Cross, P.E.I.**Latitude:** 46° 15.9'**Longitude:** 63° 26.7'**Thermistor No.** 5326**Total Depth:** 461.2 m**Logged Depth:** 400.0 m

<u>Vertical Depth (m)</u>	<u>Cable Resist.(ohms)</u>	<u>Corrected Resist.(ohms)</u>	<u>Temp.(°C)</u>	<u>Lithology/Remarks</u>
0	293	9,433	12.305	Interbedded sandstone, shale and
5		9,966	11.012	claystone of
10		10,389	10.041	Pennsylvanian age.
15		10,624	9.520	
20		10,795	9.149	
25		11,074	8.559	
30		11,844	7.010	
35		11,849	7.002	
40		11,848	7.004	
45		11,844	7.010	
50	291	11,839	7.020	
55		11,836	7.026	
60		11,835	7.028	
65		11,837	7.024	
70		11,834	7.030	
75		11,835	7.028	
80		11,830	7.038	
85		11,833	7.032	
90		11,829	7.040	
95		11,826	7.046	
100	290	11,796	7.104	
105		11,759	7.176	
110		11,709	7.273	
115		11,689	7.313	
120		11,669	7.352	
125		11,649	7.391	
130		11,613	7.462	
135		11,593	7.502	
140		11,568	7.552	
145		11,542	7.603	
150	290	11,516	7.655	

COLLECTED TEMPERATURE DATA

Hole: G.S.C. Kelly Cross (Cont'd.) Location:

Latitude:

Longitude: Thermistor No.

Total Depth: Logged Depth:

<u>Vertical Depth (m)</u>	<u>Cable Resist. (ohms)</u>	<u>Corrected Resist. (ohms)</u>	<u>Temp. (°C)</u>	<u>Lithology/Remarks</u>
155		11,496	7.691	
160		11,455	7.778	
165		11,433	7.826	
170		11,389	7.911	
175		11,364	7.960	
180		11,330	8.030	
185		11,304	8.084	
190		11,270	8.153	
195		11,241	8.212	
200	290	11,211	8.274	
205		11,178	8.342	
210		11,150	8.400	
215		11,122	8.458	
220		11,075	8.556	
225		11,047	8.614	
230		10,994	8.726	
235		10,996	8.785	
240		10,934	8.853	
245		10,903	8.919	
250	289	10,862	9.006	
255		10,840	9.050	
260		10,803	9.132	
265		10,778	9.186	
270		10,729	9.291	
275		10,685	9.387	
280		10,652	9.459	
285		10,624	9.520	
290		10,582	9.613	
295		10,550	9.683	
300	289	10,512	9.767	

COLLECTED TEMPERATURE DATA

Hole: G.S.C. Kelly Cross (Cont'd.) Location:

Latitude:

Longitude: Thermistor No.

Total Depth: Logged Depth:

<u>Vertical Depth (m)</u>	<u>Cable Resist.(ohms)</u>	<u>Corrected Resist.(ohms)</u>	<u>Temp. (°C)</u>	<u>Lithology/Remarks</u>
305		10,487	9.823	
310		10,445	9.916	
315		10,432	9.945	
320		10,372	10.080	
325		10,342	10.147	
330		10,292	10.260	
335		10,262	10.326	
340		10,230	10.401	
345		10,207	10.454	
350	288	10,165	10.551	
355		10,131	10.629	
360		10,076	10.756	
365		10,034	10.854	
370		10,000	10.933	
375		9,964	11.016	
380		9,934	11.087	
385		9,906	11.154	
390		9,864	11.253	
395		9,840	11.310	
400	288	9,804	11.396	End of log.

COLLECTED TEMPERATURE DATA

Hole: N.S.D.M.E. P-54 (Log 1) **Location:** New Glasgow, N. S.

Latitude: 45°35.3'

Longitude: 62°39.5'

Thermistor No. 5326

Total Depth: 1.017 m

Logged Depth: 950.0 m

Vertical Depth (m)	Cable Resist.(ohms)	Corrected Resist.(ohms)	Temp. (°C)	Lithology/Remarks
10	287	12,178	6.374	Logged through BQ
20		12,219	6.297	rods immediately
30		11,814	7.068	after cessation of
40		11,624	7.441	water circulation.
50	286	11,524	7.639	
60		11,368	7.953	0 - 3.0m: overburden
70		11,240	8.214	
80		11,129	8.444	3.0 - 1.017m: sand-
90		11,006	8.700	stone, siltstone and
100	285	10,893	8.940	shale interbedded
				with coal and shaly
110		10,701	9.353	coal of the Stellarton
120		10,531	9.725	Series of the Pictou
130		10,424	9.963	Group (Pennsylvanian
140		10,350	10.129	age).
150	285	10,282	10.282	
160		10,175	10.527	
170		10,075	10.758	
180		9,963	11.019	
190		9,832	11.329	
200	284	9,660	11.744	
210		9,520	12.088	
220		9,455	12.250	
230		9,354	12.504	
240		9,234	12.810	
250	283	9,043	13.305	
260		8,935	13.591	
270		8,810	13.927	
280		8,685	14.268	
290		8,582	14.553	
300		8,565	14.601	

COLLECTED TEMPERATURE DATA

Hole: N.S.D.M.E. P-54 (Cont'd.) Location:

Latitude:

Longitude: Thermistor No.

Total Depth: Logged Depth:

<u>Vertical Depth (m)</u>	<u>Cable Resist.(ohms)</u>	<u>Corrected Resist.(ohms)</u>	<u>Temp.(°C)</u>	<u>Lithology/Remarks</u>
310		8,363	15.174	
320		8,244	15.519	
330		8,115	15.899	
340		7,998	16.250	
350		7,879	16.614	
360		7,804	16.847	
370		7,703	17.162	
380		7,612	17.452	
390		7,605	17.474	
400		7,509	17.784	
410		7,351	18.305	
420		7,214	18.766	
430		7,409	18.112	
440		7,203	18.804	
450		7,150	18.985	
460		7,006	19.486	
470		6,925	19.774	
480		6,820	20.152	
490		6,815	20.170	
500		6,752	20,400	
510		6,670	20.703	
520		6,620	20.890	
530		6,617	20.901	
540		6,557	21.127	
550		6,507	21.318	
560		6,458	21.507	
570		6,410	21.693	
580		6,378	21.818	
590		6,331	22.003	
600		6,288	22.174	

COLLECTED TEMPERATURE DATA

Hole: N.S.D.M.E. P-54 (Cont'd.) Location:

Latitude:

Longitude: Thermistor No.

Total Depth: Logged Depth:

<u>Vertical Depth (m)</u>	<u>Cable Resist. (ohms)</u>	<u>Corrected Resist. (ohms)</u>	<u>Temp. (°C)</u>	<u>Lithology/Remarks</u>
610		6,254	22.310	
620		6,226	22.422	
630		6,188	22.576	
640		6,159	22.694	
650		6,109	22.899	
660		6,089	22.981	
670		6,045	23.164	
680		6,012	23.303	
690		5,975	23.458	
700		5,931	23.645	
710		5,904	23.760	
720		5,868	23.915	
730		5,852	23.985	
740		5,818	24.132	
750		5,775	24.320	
760		5,700	24.653	
770		5,689	24.702	
780		5,644	24.904	
790		5,614	25.039	
800	284	5,576	25.214	
850		5,388	26.092	
900		5,218	26.918	
950	289	4,995	28.048	End of log.

COLLECTED TEMPERATURE DATA

Hole: N.S.D.M.E. P-54 (Log 2) Location: New Glasgow, N. S.

Latitude: 45°35.3'

Longitude: 62°39.5' Thermistor No. 5326

Total Depth: 1,017.0 m Logged Depth: 750.0 m

Vertical Depth (m)	Cable Resist.(ohms)	Corrected Resist.(ohms)	Temp.(°C)	Lithology/Remarks
0	292	11,614	7.460	Logged through NQ rods six hours after removal of BQ rods.
10		11,403	7.882	
20		11,341	8.008	
30		11,275	8.143	
40		11,214	8.268	0 - 3.0m: overburden
50	291	11,154	8.392	
60		11,071	8.565	3.0 - 1,017m: sand-
70		10,979	8.757	stone, siltstone and
80		10,956	8.806	shale interbedded
90		10,817	9.102	with coal and shaly
100	289	10,740	9.268	coal of the Stellarton Series of the Pictou
110		10,650	9.463	Group (Pennsylvanian
120		10,570	9.639	age).
130		10,456	9.891	
140		10,360	10.105	
150	290	10,249	10.358	
160		10,143	10.601	
170		10,025	10.875	
180		9,856	11.273	
190		9,648	11.774	
200	290	9,604	11.881	
210		9,535	12.051	
220		9,438	12.293	
230		9,290	12.666	
240		9,045	13.300	
250	288	8,942	13.572	
260		8,783	14.000	
270		8,672	14.304	
280		8,589	14.534	
290		8,499	14.787	
300	289	8,359	15.185	

COLLECTED TEMPERATURE DATA

Hole: N.S.D.M.E. P-54 (Cont'd.) Location:

Latitude:

Longitude: Thermistor No.

Total Depth: Logged Depth:

<u>Vertical Depth (m)</u>	<u>Cable Resist. (ohms)</u>	<u>Corrected Resist. (ohms)</u>	<u>Temp. (°C)</u>	<u>Lithology/Remarks</u>
310		8,194	15.666	
320		8,031	16.151	
330		7,907	16.528	
340		7,838	16.740	
350	289	7,765	16.968	
360		7,627	17.404	
370		7,533	17.706	
380		7,477	17.888	
390		7,410	18.109	
400	289	7,352	18.301	
410		7,300	18.475	
420		7,237	18.688	
430		7,179	18.885	
440		7,136	19.034	
450	289	7,034	19.388	
460		6,951	19.681	
470		6,891	19.895	
480		6,816	20.166	
490		6,764	20.356	
500	289	6,729	20.485	
510		6,663	20.729	
520		6,623	20.878	
530		6,586	21.017	
540		6,548	21.162	
550	289	6,506	21.322	
560		6,461	21.495	
570		6,417	21.665	
580		6,371	21.845	
590		6,333	21.995	
600	289	6,294	22.150	

COLLECTED TEMPERATURE DATA

Hole: N.S.D.M.E. P-54 (Cont'd.) Location:

Latitude:

Longitude: Thermistor No.

Total Depth: Logged Depth:

<u>Vertical Depth (m)</u>	<u>Cable Resist. (ohms)</u>	<u>Corrected Resist. (ohms)</u>	<u>Temp. (°C)</u>	<u>Lithology/Remarks</u>
610		6,263	22.274	
620		6,229	22.410	
630		6,194	22.551	
640		6,166	22.665	
650	290	6,135	22.792	
660		6,099	22.940	
670		6,062	23.094	
680		6,020	23.269	
690		5,988	23.403	
700	290	5,950	23.564	
710		5,917	23.705	
720		5,898	23.786	
730		5,860	23.950	
740		5,824	24.106	
750		5,791	24.251	End of log.

COLLECTED TEMPERATURE DATA

Hole: N.S.D.M.E. Glen Rd. 83-1

Location: Glen Road,
Antigonish Co., N.S.

Latitude: 45°33.0'

Longitude: 62°01.7'

Thermistor No. 5326

Total Depth: 846.7 m

Logged Depth: 590.0 m

<u>Vertical Depth (m)</u>	<u>Cable Resist.(ohms)</u>	<u>Corrected Resist.(ohms)</u>	<u>Temp.(°C)</u>	<u>Lithology/Remarks</u>
0	290	8,880	13.738	0 - 12.0m: overburden
10		9,977	10.986	
20		11,274	8.145	12.0 - 580m: Upper
30		11,304	8,084	Windsor red sandstone
40		11,342	8.006	and siltstone, minor
50		11,504	7.679	carbonate.
60		11,157	8.385	
70		11,128	8.446	580.0 - 591.0: salt
80		11,089	8.527	breccia
90		11,087	8.531	
100	290	11,051	8.606	591.0 - 846.7m: anhydrite
110		11,019	8.673	
120		10,953	8.813	
130		10,888	8.950	
140		10,823	9.090	
150		10,766	9.212	
160		10,670	9.420	
170		10,617	9.536	
180		10,571	9.637	
190		10,538	9.709	
200	289	10,392	10.034	
210		10,336	10.160	
220		10,301	10.240	
230		10,211	10.445	
240		10,147	10.592	
250		10,079	10.749	
260		9,993	10.949	
270		9,879	11.217	
280		9,727	11.582	
290		9,725	11.587	
300	289	9,651	11.767	

COLLECTED TEMPERATURE DATA

Note: N.S.D.M.E. Glen Rd. 83-1 Location:
(Cont'd.)

Latitude:

Longitude: _____ Thermistor No. _____

Total Depth: Logged Depth:

Vertical Depth (m)	Cable Resist.(ohms)	Corrected Resist.(ohms)	Temp. (°C)	Lithology/Remarks
310		9,568	11.970	
320		9,470	12.213	
330		9,400	12.388	
340		9,314	12.605	
350		9,199	12.899	
360		9,099	13.158	
370		9,018	13.371	
380		8,935	13.591	
390		8,847	13.826	
400	289	8,752	14.084	
410		8,673	14.301	
420		8,560	14.615	
430		8,500	14.784	
440		8,415	15.025	
450		8,323	15.289	
460		8,240	15.531	
470		8,155	15.781	
480		8,071	16.031	
490		7,996	16.257	
500	289	7,917	16.497	
510		7,841	16.731	
520		7,767	16.962	
530		7,700	17.172	
540		7,629	17.397	
550		7,552	17.645	
560		7,465	17.928	
570		7,397	18.153	
580		7,341	18.338	
590		7,319	18.411	Hole blocked. End of log.

COLLECTED TEMPERATURE DATA

Hole: Suncor AP83-0372**Location:** Stellarton, N.S.**Latitude:** 45°33.7'**Longitude:** 62°36.9'**Thermistor No.** 5326**Total Depth:** 850.4 m**Logged Depth:** 740.0 m

<u>Vertical Depth (m)</u>	<u>Cable Resist. (ohms)</u>	<u>Corrected Resist. (ohms)</u>	<u>Temp. (°C)</u>	<u>Lithology/Remarks</u>
0	238	12,917	5.033	0 - 21.7m: well water casing.
20		12,455	5.861	
40		12,206	6.322	
60		11,942	6.821	0 - 6.1m: overburden
80		11,759	7.176	
100	238	11,470	7.748	6.i - 850.4m: sand-
120		11,252	8.190	stone, siltstone and
140		11,001	8.711	shale interbedded
160		10,716	9.320	with coal and shaly
180		9,766	11.488	coal of the
200	239	9,524	12.078	Stellarton Series of
				the Pietou Group of
220		9,268	12.722	Pennsylvanian age.
240		9,240	12.794	
260		8,862	13.786	
280		8,686	14.265	
300	241	8,481	14.837	
320		8,251	15.498	
340		8,063	16.055	
360		7,893	16.571	
380		7,692	17.198	
400	242	7,525	17.733	
420		7,358	18.281	
440		7,183	18.872	
460		6,978	19.585	
480		6,820	20.152	
500	245	6,659	20.744	
520		6,528	21.238	
540		6,384	21.795	
560		6,233	22.394	
580		6,133	22.800	
600	248	6,017	23.282	

COLLECTED TEMPERATURE DATA

Hole: Suncor AP83-0372 (Cont'd.) Location:

Latitude:

Longitude: Thermistor No.

Total Depth: Logged Depth:

<u>Vertical Depth (m)</u>	<u>Cable Resist. (ohms)</u>	<u>Corrected Resist. (ohms)</u>	<u>Temp. (°C)</u>	<u>Lithology/Remarks</u>
620		5,886	23.838	
640		5,784	24.280	
660		5,661	24.828	
680		5,557	25.300	
700	250	5,484	25.639	
720		5,403	26.021	
740		5,382	26.121	Hole blocked. End of log.

COLLECTED TEMPERATURE DATA

Hole: NSDME Pt. Edward 83-1

Location: Point Edward, N. S.

Latitude: 46°09.7'

Longitude: 60°15.6'

Thermistor No. 5326

Total Depth: 780 m.

Logged Depth: 750 m.

<u>Vertical Depth (m)</u>	<u>Cable Resist. (ohms)</u>	<u>Corrected Resist. (ohms)</u>	<u>Temp. (°C)</u>	<u>Lithology/Remarks</u>
10	239	12,897	5.071	0 - 2.5 m: overburden
20		11,509	7.669	
30		11,513	7.661	
40		11,468	7.752	2.5 - 4.7 m: Carboniferous limestone.
50		11,400	7.888	
60		11,365	7.959	
70		11,333	8.036	
80		11,293	8.106	
90		11,251	8.192	
100	239	11,201	8.297	
		11,151	8.398	4.7 - 780.0 m:
110		11,097	8.510	Carboniferous red
120		11,033	8.644	pebble to cobble
130		10,967	8.783	conglomerate with
140		11,043	8.623	sandstone, minor
150		10,981	8.753	limestone.
160		10,925	8.871	
170		10,843	9.046	
180		10,815	9.106	
190		10,765	9.214	
200	239			
		10,665	9.431	
210		10,618	9.533	
220		10,508	9.775	
230		10,407	10.001	
240		10,281	10.285	
250		10,139	10.610	
260		10,076	10.756	
270		9,972	10.898	
280		9,900	11.168	
290		9,821	11.356	
300	243			

COLLECTED TEMPERATURE DATA

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Note: Pt. Edward 83-1 (cont'd.) **Location:****Latitude:****Longitude:** **Thermistor No.****Total Depth:** **Logged Depth:**

<u>Vertical Depth(m)</u>	<u>Cable Resist.(ohms)</u>	<u>Corrected Resist.(ohms)</u>	<u>Temp.(°C)</u>	<u>Lithology/Remarks</u>
310		9,795	11.418	
320		9,715	11.611	
330		9,637	11.800	
340		9,583	11.933	
350		9,506	12.123	
360		9,452	12.258	
370		9,390	12.413	
380		9,308	12.620	
390		9,244	12.786	
400	245	9,193	12.915	
410		9,119	13.107	
420		9,047	13.295	
430		9,013	13.384	
440		8,941	13.581	
450		8,908	13.661	
460		8,858	13.797	
470		8,798	13.960	
480		8,744	14.107	
490		8,668	14.315	
500	246	8,600	14.503	
510		8,544	14.660	
520		8,480	14.840	
530		8,402	15.062	
540		8,376	15.136	
550		8,307	15.335	
560		8,249	15.504	
570		8,193	15.669	
580		8,143	15.815	
590		8,073	16.025	
600	247	8,013	16.205	

COLLECTED TEMPERATURE DATA

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Hole: Pt. Edward 83-1 (cont'd.) Location:

Latitude:

Longitude: Thermistor No.

Total Depth: Logged Depth:

<u>Vertical Depth(m)</u>	<u>Cable Resist.(ohms)</u>	<u>Corrected Resist.(ohms)</u>	<u>Temp. (°C)</u>	<u>Lithology/Remarks</u>
610		7,953	16.387	
620		7,899	16.552	
630		7,835	16.750	
640		7,785	16.905	
650		7,732	17.071	
660		7,690	17.204	
670		7,632	17.388	
680		7,680	17.235	
690		7,530	17.716	
700	249	7,465	17.928	
710		7,419	18.079	
720		7,369	18.244	
730		7,319	18.411	
740		7,269	18.579	
750		7,223	18.726	End of log.