NEW BRUNSWICK COOPERATIVE COAL DRILLING PROGRAM

COAL FROM THE SALMON HARBOUR-MIDLAND AREAS OF THE MINTO COALFIELD OF NEW BRUNSWICK

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INTRODUCTION

In December, 1973 the Department of Natural Resources, New Brunswick, through the Deputy Minister Mr. R.L. Bishop requested the assistance of the Fuels Research Centre in a coal resource evaluation program. The program was a cooperative program undertaken by DNR and the New Brunswick Electric Power Commission involving drilling and sampling in the Grand Lake Coal Basin directed to obtaining "an accurate picture of the remaining reserves, regardless of depth, in this area[1].

Certain coal samples from the program were received at FRC in February and April, 1974. To this time information concerning the physical and chemical properties of the coal has been conveyed to those concerned with the project by letters. Because of the increasing interest in this coalfield a formal report is now considered a more appropriate form of communicating and recording the coal data.

This report includes certain drill hole information reported by DNR (Table 1) and the analyses of selected samples (Table 2) as conducted by the Energy Research Laboratories (formerly, Fuels Research Centre). Analyses of the ash of three of the samples are given in Table 3.

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[1] Letter, dated 18 December, 1973, Mr. R.L. Bishop to Dr. D.S. Montgomery.

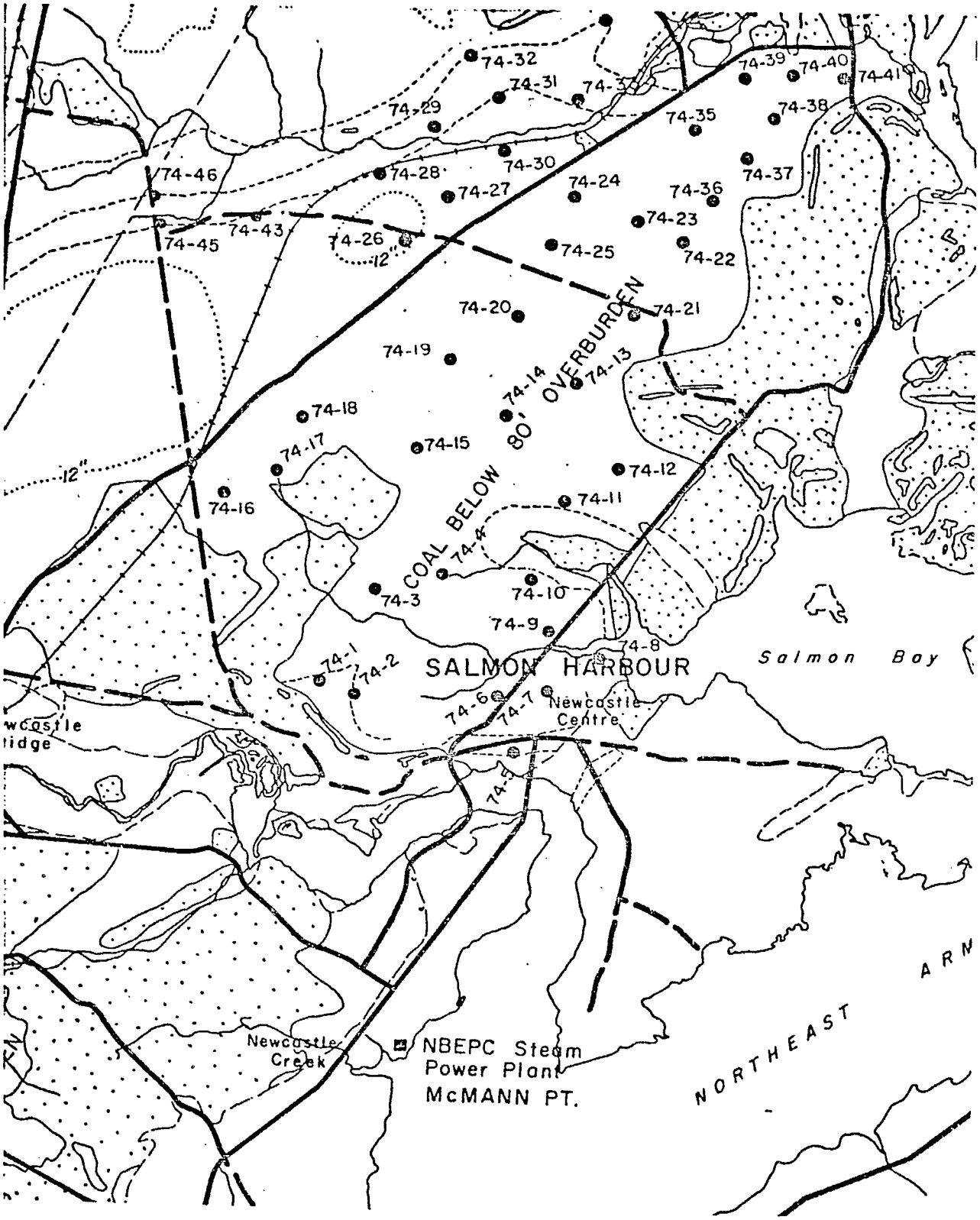

Figure 1

Location of Drill Sites of the New Brunswick Cooperative Drilling Program

Table 1

DRILL HOLE DATA AND STRIP RATIOS

Salmon Harbour-Midland-Hardwood Ridge-Evans Road Areas

Drill Hole No.	Thickness			Strip Ratio	Total Depth (feet)
	Coal (inches)	Bone Coal (inches)	Overburden (feet)	0.96 x Depth ' / Coal Thickness '	
74-1	20	3	82	47.1	91
74-2	18		79	50.6	90
74-3	18		103	62.6	110
74-4	18	3	73	46.7	82
74-5	23.5	2.5	83	40.4	88
74-6	17		105	70.6	111
74-7	21.5		99	52.8	103
74-8*					
74-9	17	2	104	70.3	113
74-10	21	1	91	49.9	101
74-11	23	6	94	47.0	103
74-12	24	12	103	49.5	113
74-13	23	4	92	46.0	100
74-14	16	3	113	81.6	123
74-15	12		104	99.4	111
74-16	16	4	98	70.7	103
74-17	15	7	109	83.3	113
74-18	13-15	3	129	106.0	129
74-19	20	3.5	118	67.5	123
74-20	10.5		121	131.5	128
74-21	20	3	99	56.7	103
74-22	18		89	57.0	98
74-23	25	5	125	57.5	132
74-24	21		130	71.0	137
74-25	17	2	131	88.6	137
74-26*					
74-27	12	1	130	124.8	133
74-28	9		106	135.0	111
74-29	6		59	133	63
74-30	10	1	46	53.2	52
74-31	3		69	264	78
74-32	15		64	49.3	73

Table 1 (cont'd)

Drill Hole No.	Thickness			Strip Ratio $\frac{0.96 \times \text{Depth}'}{\text{Coal Thickness}'}$	Total Depth (feet)
	Coal (inches)	Bone Coal (inches)	Overburden (feet)		
74-33	10		57	65.9	62
74-34	14		50	40.6	56
74-35	20		104	59.7	107
74-36	17	2	96	65.0	103
74-37	14		89	72.9	98
74-38	20		101	58.1	108
74-39	15		73	55.7	79
74-40	10		91	106	97
74-41	18		95	60.8	104
74-42*					
74-43	18		134	84.2	137
74-44*					
74-45	18		115	73.6	124
74-46	5		101	230.0	106
74-47	8		98	140.0	106
74-48	14	3	110	90.4	118

* Not Drilled

TABLE 2

Analyses of Coal Samples From New Brunswick Cooperative Coal Drilling Program

Drill Hole No.	74-1		74-2		74-3		74-4		74-9		74-11	
FRC No.	2651-74		2652-74		2653-74		2654-74		2655-74		2656-74	
B-Mark	B-17-74		B-18-74		B-19-74		B-20-74		B-21-74		B-22-74	
Field Mark	DDH M-1-74		DDH M-2-74		DDH M-3-74		DDH M-4-74		DDH M-9-74		DDH M-11-74	
	As Rec'd	Dry	As Rec'd	Dry	As Rec'd	Dry	As Rec'd	Dry	As Rec'd	Dry	As Rec'd	Dry
Proximate Analysis												
Moisture ..... %	0.82	0.00	0.97	0.00	0.90	0.00	0.88	0.00	0.87	0.00	1.04	0.00
Ash ..... %	12.03	12.13	13.21	13.34	10.34	10.43	9.13	9.20	14.29	14.42	11.23	11.35
Volatile Matter ... %	34.67	34.96	34.59	34.93	36.60	36.93	35.97	36.29	34.29	34.59	36.98	37.37
Fixed Carbon ..... %	52.48	52.91	51.23	51.73	52.16	52.64	54.02	54.51	50.55	50.99	50.75	51.28
Ultimate Analysis												
Carbon ..... %	72.31	72.91										
Hydrogen ..... %	4.84	4.88										
Sulphur ..... %	6.65	6.70	7.25	7.32	6.56	6.62	4.91	4.95	6.68	6.74	4.78	4.83
Nitrogen ..... %	0.89	0.90										
Ash ..... %	12.03	12.13										
Oxygen ..... %	2.46	2.48										
Calorific Value												
Btu/lb Gross	13270	13380										
Free Swelling Index	6-1/2		5		6		5-1/2		5		5	
Grindability Index	68											
Ash Fusibility												
Initial °F	2000											
Spherical °F	2040											
Hemispherical °F	2120											
Fluid °F	2260											

Table 2 (continued)

Drill Hole No.	74-41		74-5		79-6		74-7		74-16		74-17	
FRC No.	2657-74		3096-74		3097-74		3098-74		3099-74		3100-74	
B-Mark	B-23-74		B-46-74		B-47-74		B-48-74		B-49-74		B-50-74	
Field Mark	DDH M-41-74		DDH 5-74		DDH 6-74		DDH 7-74		DDH 16-74		DDH 17-74	
	As Rec'd	Dry	As Rec'd	Dry	As Rec'd	Dry	As Rec'd	Dry	As Rec'd	Dry	As Rec'd	Dry
Proximate Analysis												
Moisture ..... %	1.16	0.00	0.76	0.00	0.85	0.00	0.96	0.00	1.01	0.00	1.04	0.00
Ash ..... %	10.69	10.82	11.91	12.00	17.38	17.53	12.89	13.01	13.99	14.13	10.22	10.33
Volatile Matter ... %	32.88	33.27	36.64	36.92	33.20	33.48	34.67	35.01	36.23	36.60	39.03	39.44
Fixed Carbon ..... %	55.27	55.91	50.69	51.08	48.57	49.99	51.48	51.98	48.77	49.27	49.71	50.23
Ultimate Analysis												
Carbon ..... %												
Hydrogen ..... %												
Sulphur ..... %	2.23	2.26	4.84	4.88	10.30	10.39	6.19	6.25	5.82	5.88	6.80	6.87
Nitrogen ..... %												
Ash ..... %												
Oxygen ..... %												
Calorific Value												
Btu/lb Gross												
Free Swelling Index	7-1/2		5-1/2		5		4-1/2		5		4-1/2	
Grindability Index												
Ash Fusibility												
Initial °F												
Spherical °F												
Hemispherical °F												
Fluid °F												

TABLE 2 (continued)

Drill Hole No.	74-18		74-23		74-27		74-28		74-32		74-36	
FRC No.	3101-74		3102-74		3103-74		3104-74		3105-74		3106-74	
B-Mark	B-51-74		B-52-74		B-53-74		B-54-74		B-55-74		B-56-74	
Field Mark	DDH 18-74		DDH 23-74		DDH 27-74		DDH 28-74		DDH 32-74		DDH 36-74	
	As Rec'd	Dry	As Rec'd	Dry	As Rec'd	Dry	As Rec'd	Dry	As Rec'd	Dry	As Rec'd	Dry
Proximate Analysis												
Moisture ..... %	1.09	0.00	0.99	0.00	1.04	0.00	1.07	0.00	1.08	0.00	1.00	0.00
Ash ..... %	9.76	9.87	14.27	14.41	12.70	12.83	16.44	16.62	19.15	19.36	14.24	14.38
Volatile Matter ... %	36.85	37.26	33.52	33.86	35.69	36.07	32.85	33.21	31.90	32.25	33.71	34.05
Fixed Carbon ..... %	52.30	52.87	51.22	51.73	50.57	51.10	49.64	50.17	47.87	48.39	51.05	51.57
Ultimate Analysis												
Carbon ..... %							67.61	68.34				
Hydrogen ..... %							4.52	4.57				
Sulphur ..... %	5.00	5.06	5.77	5.83	6.61	6.68	6.98	7.06	8.67	8.76	7.44	7.52
Nitrogen ..... %							0.86	0.87				
Ash ..... %							16.44	16.62				
Oxygen ..... %							2.52	2.54				
Calorific Value												
Btu/lb Gross							12420	12550				
Free Swelling Index	4-1/2		4-1/2		5		4-1/2		3		5-1/2	
Grindability Index							59					
Ash Fusibility												
Initial °F							1910					
Spherical °F							2030					
Hemispherical °F							2080					
Fluid °F							2250					

TABLE 2 (continued)

Drill Hole No.	74-45		74-47		74-48							
FRC No.	3107-74		3108-74		3109-74							
B-Mark	B-57-74		B-58-74		B-59-74							
Field Mark	DDH 42-74		DDH 47-74		DDH 48-74							
	As Rec'd	Dry	As Rec'd	Dry	As Rec'd	Dry	As Rec'd	Dry	As Rec'd	Dry	As Rec'd	Dry
Proximate Analysis												
Moisture ..... %	0.85	0.00	0.94	0.00	0.55	0.00						
Ash ..... %	16.96	17.11	19.52	19.71	11.00	11.06						
Volatile Matter ... %	33.21	33.49	33.26	33.58	34.91	35.10						
Fixed Carbon ..... %	48.98	49.40	46.28	46.71	53.54	53.84						
Ultimate Analysis												
Carbon ..... %					73.76	74.17						
Hydrogen ..... %					4.94	4.97						
Sulphur ..... %	7.16	7.22	9.18	9.27	5.91	5.94						
Nitrogen ..... %					0.90	0.90						
Ash ..... %					11.00	11.06						
Oxygen ..... %					2.94	2.96						
Calorific Value												
Btu/lb Gross					13480	13560						
Free Swelling Index	4		4-1/2		5							
Grindability Index					63							
Ash Fusibility												
Initial °F					1960							
Spherical °F					2050							
Hemispherical °F					2200							
Fluid °F					2250							

TABLE 3

Analyses of Ash from New Brunswick Cooperative Coal Drilling Program

FRC No.	2651-74	3104-74	3109-74
Drill Hole No.	74-1	74-28	74-48
Field Mark	DDH M-1-74	DDH 28-74	DDH 48-74
Analysis of Ash			
SiO_2 ..... %	23.52	38.84	27.95
Al_2O_3 ..... %	10.04	13.61	12.01
Fe_2O_3 ..... %	58.11	43.10	52.23
TiO_2 ..... %	0.45	0.60	0.53
P_2O_5 ..... %	1.82	2.07	1.28
CaO ..... %	3.03	3.31	2.44
MgO ..... %	0.10	0.19	0.16
SO_3 ..... %	0.91	1.77	1.44
Na_2O ..... %	0.24	0.29	0.19
K_2O ..... %	0.49	0.96	1.03