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MATURATION STUDIES OF ARCTIC AND MCKENZIE DELTA OILS
IN SUPPORT OF EXPLORATION

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by

H. Sawatzky*, A.E. George** and D.S. Montgomery***

ABSTRACT

This report is a compilation of the data and analyses that have been obtained at this time by the Research on Bituminous Substances Section of the Energy Research Laboratories. A detailed report with a discussion and assessments of the degree of maturation of the oils will be prepared later. The methods that were used were the same as described in the CANMET Report 77-42, entitled "Maturation Studies of Canadian East Coast Oils" by Sawatzky et al.

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TABLE 1

	Well	Depth ft	Formation	Location
<u>Panarctic Oils</u>				
Thor	P 38	3870-3890	T	78.13092° N, 103.25385° W
Romulus	C 42	9323-9400	T	79.85132° N, 84.37831° W
Bent Horn	N 72	10508-10539	Devonian- Silurian	76.36408° N, 103.96997° W
<u>Mackenzie Delta Oils</u>				
Mayogiak	P 17	3790-3879	Tertiary	69.44638° N, 132.79916° W
Shell Kumak (1)	J 6	4439-4473	Creta- ceous	69.153498° N, 135° 00' 37.812° W
Adgo	F 28	5625-5640	Tertiary	69° 27' 16.626" N, 135° 51' 15.776° W
Atkinson	H 25	5700-5760	Lower Creta- ceous	69.73889° N, 131.82500° W
Shell Kumak (2)	J 6	8145-8180	as above in Shell Kumak (1)	

TABLE 2

Gross Composition (wt %) of the
Panarctic and Mackenzie Delta Oils

	Light Fraction (Below 200°C)	Heavy Fraction (Above 200°C)	Asphaltenes
<u>Panarctic Oils</u>			
Thor	7.6	90.3	2.0
Romulus	40.9	58.0	1.0
Bent Horn	21.6	78.3	-
<u>Mackenzie Delta Oils</u>			
Mayogiak	14.0	85.0	0.9
Shell Kumak (1)	1.6	97.9	0.5
Adgo	2.8	96.5	0.6
Atkinson	10.3	86.7	3.0
Shell Kumak (2)	83.0	16.9	-

TABLE 3

Hydrocarbon-Type Distribution*
in the Fraction Boiling Below 200°C

	Saturates	Aromatics
<u>Panarctic Oils</u>		
Thor	95.4	4.6
Romulus	87.0	13.0
Bent Horn	97.4	2.6
<u>Mackenzie Delta Oils</u>		
Mayogiak	92.1	7.9
Shell Kumak (1)	-	-
Adgo	90.5	9.5
Atkinson	96.0	4.0
Shell Kumak (2)	71.7	28.3

* vol %, determined by FIA method

Olefins are absent in all samples

TABLE 4

Compound-Type Distribution (% by Wt) of the
Deasphalted Fraction Boiling Above 200°C

	Saturates	Mononuclear Aromatics	Dinuclear Aromatics	Polynuclear Aromatics	Polar Compounds	Basic Compounds
<u>Panarctic Oils</u>						
Thor	68.52	13.23	5.04	5.01	7.22	0.97
Romulus	75.75	12.36	4.29	2.13	4.62	0.86
Bent Horn	84.02	6.31	2.38	3.97	2.99	0.33
<u>Mackenzie Delta Oils</u>						
Mayogiak	59.16	17.73	8.12	6.95	6.64	1.40
Shell Kumak (1)	54.57	24.99	9.08	5.49	4.97	0.90
Adgo	51.89	23.40	9.79	8.70	4.73	1.49
Atkinson	45.95	17.49	10.09	9.73	12.42	4.31
Shell Kumak (2)	70.78	18.25	9.24	0.74	0.92	0.06

TABLE 5

Aromatic-Types Distribution of the
Deasphalted Fraction Boiling Above 200°C

	% of Total Aromatics			Sat. Aromatics/ Polar
	Mono-Aromatics	Diaromatics	Poly-Aromatics	
<u>Panarctic Oils</u>				
Thor	42.04	16.02	41.94	2.18
Romulus	50.95	17.68	31.37	3.12
Bent Horn	39.49	14.89	45.62	5.26
<u>Mackenzie Delta Oils</u>				
Mayogiak	43.41	19.88	36.71	1.45
Shell Kumak (1)	55.01	19.99	25.00	1.20
Adgo	48.64	20.35	31.01	1.08
Atkinson	32.36	18.67	48.96	0.85
Shell Kumak (2)	62.48	31.63	5.89	2.42

TABLE 6

Optical Activities of
Saturated Hydrocarbons of Arctic Oils

Shell Kumak (2)	+ 0.0114
Romulus	- 0.0178
Thor	0.0464
Mayogiak	0.1146
Bent Horn	- 0.0052
Shell Kumak (1)	0.1576
Atkinson	0.2384
Adgo	0.1570