

Semi-Annual Progress Report

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CONTRACT TITLE AND NUMBER
Petrology of Cretaceous Coals from Northwestern Alaska
DE-FG22-80PC30237

CONTRACTOR NAME: University of Alaska
Fairbanks, Alaska 99701

MASTER

CONTRACT PERIOD: September 1, 1980 - August 31, 1981

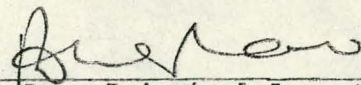
The current status of the project is as follows:

Samples of coal were obtained from Northwestern Alaska, in the northern Alaska coal field. These coals are of Cretaceous age and form Alaska's largest coal resource. A total of 300 samples were obtained. One hundred and fifty of these are being studied under this grant and the remaining 150 samples are planned to be studied under renewal now being applied for. The attached table shows sample numbers and locations. The samples were obtained from seismic shot holes, auger hole samples, channel samples, or test well samples. The samples were collected by the U.S. Geological Survey, Anchorage, and are made available to the author for petrographic studies.

The samples were crushed to minus 20 mesh and made into 1" pellets using epoxy binder. The pellets are polished using 30 micron diamond lap followed by 1 micron and 0.05 micron alumina slurries.

Of the 150 samples to be studied under this grant, 92 samples have been made into 1" diameter pellets. Reflectance measurements have been completed for 21 samples. The attached table shows reflectance data. Mean maximum reflectance of the samples studied so far ranged from 0.58% to 0.85%.

After completion of reflectance measurements, petrographic work will be undertaken.


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TABLE 1 Location of Coal Samples Selected for Petrology

UA Sample Number	USGS Sample Number	Area	Type	Location	Line	Shot Point	Depth	Thickness	Formation	Age
UA-78-1	1	NPRA, AK	SSH	Umiat Meridian, T4S, R39W, Sec. 27	R-5	601	75			
UA-78-3	3	NPRA, AK	SSH	Umiat Meridian, T4S, R39W, Sec. 34	R-5	605				
UA-78-8	8	NPRA, AK	SSH	Umiat Meridian, T4S, R40W, Sec. 16	133-X	431	75-95			
UA-78-9	9	NPRA, AK	SSH	Umiat Meridian, T4S, R40W, Sec. 16	133-X	432	60-90			
UA-78-13	1	NPRA, AK	SSH	Umiat Meridian,	137-X	24	80-85			
UA-78-15	3	NPRA, AK	SSH	Umiat Meridian,	137-X	656	bottom			
UA-78-16	4	NPRA, AK	SSH	Umiat Meridian, T1S, R34W, Sec. 28	137-X	737	40-45			
UA-78-17	5	NPRA, AK	SSH	Umiat Meridian, T1S, R34W, Sec. 15	137-X	749	80-90			
UA-78-18	6	NPRA, AK	SSH	Umiat Meridian, T2N, R34W, Sec. 29	137-X	808	72-80			
UA-78-19	7	NPRA, AK	SSH	Umiat Meridian, T1N, R34W, Sec. 6	137-X	802	30-33			
UA-78-20	8	NPRA, AK	SSH	Umiat Meridian,	137-X	148	85-100			
UA-78-21	9	NPRA, AK	SSH	Umiat Meridian, T1S, R36W, Sec. 11	137-X	755	60-77			
UA-78-22	10	NPRA, AK	SSH	Umiat Meridian, T1S, R36W, Sec. 22	137-X	745	73-90			
UA-78-23	11	NPRA, AK	SSH	Umiat Meridian, T1S, R36W, Sec. 1	137-X	765	55-69			
UA-78-24	12	NPRA, AK	SSH	Umiat Meridian, T1S, R36W, Sec. 28	137-X	736	0-30			
UA-78-25	13	NPRA, AK	SSH	Umiat Meridian, T1S, R36W, Sec. 15	137-X	753				
UA-78-26	14	NPRA, AK	SSH	Umiat Meridian, T1S, R36W, Sec. 11	137-X	757	22-30			
UA-78-27	15	NPRA, AK	SSH	Umiat Meridian, T1S, R36W, Sec. 22	137-X	744	25-30			
UA-78-28	16	NPRA, AK	SSH	Umiat Meridian, T1N, R35W, Sec. 34	137-X	771	70-75			
UA-78-29	17	NPRA, AK	SSH	Umiat Meridian, T1S, R35W, Sec. 1	137-X	764	60-80			
UA-78-32	20	NPRA, AK	SSH	Umiat Meridian, T1N, R35W, Sec. 27	137-X	777	30-37			
UA-78-33	21	NPRA, AK	SSH	Umiat Meridian, T1N, R35W, Sec. 27	137-X	775	83-90			
UA-78-34	22	NPRA, AK	SSH	Umiat Meridian, T1N, R35W, Sec. 27	137-X	773	41-50			
UA-78-35	23	NPRA, AK	SSH	Umiat Meridian, T1N, R35W, Sec. 33	137-X	767	30-40			
UA-78-36	24	NPRA, AK	SSH	Umiat Meridian, T2N, R34W, Sec. 31	137-X	804	14-26			
UA-78-37	25	NPRA, AK	SSH	Umiat Meridian, T1N, R35W, Sec. 33	137-X	768	40-45			
UA-78-38	26	NPRA, AK	SSH	Umiat Meridian, T1S, R36W, Sec. 11	137-X	758	97-102			
UA-78-39	27	NPRA, AK	SSH	Umiat Meridian, T3S, R37W, Sec. 36	137-X	666	60-62			
UA-78-40	28	NPRA, AK	SSH	Umiat Meridian, T1S, R33W,	R-4	21	12-17			

Sample Type Code

SSH Seismic Shot Hole Sample
 TW Test Well Sample
 AH Auger Hole Sample
 CS Channel Sample

UA Sample Number	USGS Sample Number	Area	Type	Location	Line	Shot Point	Depth	Thickness	Formation	Age
UA-78-41	29	NPRA,AK	SSH	Umiat Meridian,T1N,R32W,Sec.29	R-4	2	12-22			
UA-78-42	G-78-37	NPRA,AK	CS	Umiat Meridian,T4S,R39W,Sec.7				1.0	Corwin FM	Cretaceous
UA-78-43	G-78-40	NPRA,AK	CS	Umiat Meridian,T4S,R39W,Sec.7				0.8	Corwin FM	Cretaceous
UA-78-44	G-78-41	NPRA,AK	CS	Umiat Meridian,T4S,R39W,Sec.7				2.2	Corwin FM	Cretaceous
UA-78-45	G-78-43	NPRA,AK	CS	Umiat Meridian,T4S,R40W,Sec.12				3.4	Corwin FM	Cretaceous
UA-78-46	G-78-55	NPRA,AK	CS	Umiat Meridian,T4S,R39W,Sec.6				0.6	Corwin FM	Cretaceous
UA-78-47	G-78-58	NPRA,AK	CS	Umiat Meridian,T3S,R39W,Sec.31				0.5	Corwin FM	Cretaceous
UA-78-48	G-78-80	NPRA,AK	CS	Umiat Meridian,T4S,R40W,Sec.10				2.7	Corwin FM	Cretaceous
UA-78-49	G-78-84	NPRA,AK	CS	Umiat Meridian,T4S,R40W,Sec.14				3.5	Corwin FM	Cretaceous
UA-78-50	G-78-89	NPRA,AK	CS	Umiat Meridian,T4S,R39W,Sec.17				0.6	Corwin FM	Cretaceous
UA-78-51	G-78-93	NPRA,AK	CS	Umiat Meridian,T4S,R39W,Sec.16				2.3	Corwin FM	Cretaceous
UA-78-52	G-78-94	NPRA,AK	CS	Umiat Meridian,T4S,R40W,Sec.11				2.1	Corwin FM	Cretaceous
UA-78-53	G-78-97	NPRA,AK	CS	Umiat Meridian,T4S,R40W,Sec.25				0.3	Corwin FM	Cretaceous
UA-78-54	G-78-99	NPRA,AK	CS	Umiat Meridian,T4S,R40W,Sec.25				1.1	Corwin FM	Cretaceous
UA-78-55	A-78-14	NPRA,AK	CS	Umiat Meridian,T1N,R38W,Sec.27				2.5	Corwin FM	Cretaceous
UA-78-56	A-78-15	NPRA,AK	CS	Umiat Meridian,T1N,R38W,Sec.25				1.5	Corwin FM	Cretaceous
UA-78-57	78-35	NPRA,AK	CS	Umiat Meridian,T1N,R34W,Sec.22				0.8	Corwin FM	Cretaceous
UA-78-58	AH-3-78	NPRA,AK	AH	Umiat Meridian,T1S,R39W,Sec.18				3.6	Corwin FM	Cretaceous
UA-78-59	AH-4-78	NPRA,AK	AH	Umiat Meridian,T1S,R39W,Sec.8				1.3	Corwin FM	Cretaceous
UA-78-60	AH-12-78	NPRA,AK	AH	Umiat Meridian,T1N,R38W,Sec.32				2.3	Corwin FM	Cretaceous
UA-78-61	AH-16-78	NPRA,AK	AH	Umiat Meridian,T1S,R39W,Sec.2				2.7	Corwin FM	Cretaceous
UA-78-62	AH-18-78	NPRA,AK	AH	Umiat Meridian,T1S,R39W,Sec.11				3.4	Corwin FM	Cretaceous
UA-78-63	AH-19-78	NPRA,AK	AH	Umiat Meridian,T1S,R39W,Sec.14				1.7	Corwin FM	Cretaceous
UA-78-64	AH-21-78	NPRA,AK	AH	Umiat Meridian,T1S,R38W,Sec.3				2.3	Corwin FM	Cretaceous
UA-78-65	AH-22-78	NPRA,AK	AH	Umiat Meridian,T1S,R38W,Sec.9				2.1	Corwin FM	Cretaceous
UA-78-66	AH-23-78	NPRA,AK	AH	Umiat Meridian,T1S,R38W,Sec.4				2.8	Corwin FM	Cretaceous
UA-78-67	AH-25-78	NPRA,AK	AH	Umiat Meridian,T1N,R37W,Sec.32				2.2	Corwin FM	Cretaceous
UA-78-68	AH-34-78	NPRA,AK	AH	Umiat Meridian,T1S,R36W,Sec.22				2.3	Corwin FM	Cretaceous
UA-78-69(u-69A)	AH-37-78	NPRA,AK	AH	Umiat Meridian,T1S,R36W,Sec.24				3.4	Corwin FM	Cretaceous

UA Sample Number	USGS Sample Number	Area	Type	Location	Line	Shot Point	Depth	Thickness	Formation	Age
UA-78-69(lower)	AH-37-78	NPRA,AK	AH	Umiat Meridian,T1S,R36W,Sec.24				3.4	Corwin FM	Cretaceous
UA-78-70	AH-43-78	NPRA,AK	AH	Umiat Meridian,T1S,R36W,Sec.24				3.9	Corwin FM	Cretaceous
UA-78-71	AH-48-78	NPRA,AK	AH	Umiat Meridian,T1S,R35W,Sec.17				2.2	Corwin FM	Cretaceous
UA-78-73	AH-60-78	NPRA,AK	AH	Umiat Meridian,T1N,R36W,Sec.10				1.7	Corwin FM	Cretaceous
UA-78-74(u-74A)	AH-61-78	NPRA,AK	AH	Umiat Meridian,T1N,R35W,Sec.16				2.0	Corwin FM	Cretaceous
UA-78-74(lower)	AH-61-78	NPRA,AK	AH	Umiat Meridian,T1N,R35W,Sec.16				2.0	Corwin FM	Cretaceous
UA-78-75	AH-63-78	NPRA,AK	AH	Umiat Meridian,T1N,R35W,Sec.17				1.3	Corwin FM	Cretaceous
UA-78-76		NPRA,AK	SSH	Umiat Meridian	137-X	742				
UA-78-77		NPRA,AK	SSH	Umiat Meridian	U-2	65				
UA-78-78		NPRA,AK	SSH	Umiat Meridian	U-7	12				
UA-78-79	24-GB-78	NPRA,AK		Umiat Meridian						
UA-78-80	32-GB-78	NPRA,AK		Umiat Meridian						
UA-78-81	H-72-11	NPRA,AK		Umiat Meridian						

UA Sample Number	USGS Sample Number	Area	Type	Location	Line	Shot Point	Depth	Thickness	Formation	Age
UA-79-1			SSH				630			413
UA-79-2			SSH				630			441
UA-79-3			SSH				630			444
UA-79-4			SSH				630			471
UA-79-5			SSH				R3XN			390
UA-79-6			SSH				R3XN			397
UA-79-7			SSH				R3XN			443
UA-79-8			SSH				R3XN			449
UA-79-9			SSH				632			300
UA-79-10			SSH				632			307
UA-79-11			SSH				632			321
UA-79-12			SSH				632			322
UA-79-13			SSH				632			324
UA-79-14			SSH				632			340
UA-79-15			SSH				632			341
UA-79-16			SSH				632			342
UA-79-17			SSH				632			369
UA-79-18			SSH				632			370
UA-79-19			SSH				632			383
UA-79-20			SSH				632			386
UA-79-21			SSH				632			392
UA-79-22			SSH				632			400
UA-79-23			SSH				632			402
UA-79-24			SSH				632			422
UA-79-25			SSH				632			436
UA-79-26			SSH				632			440
UA-79-27			SSH				632			442
UA-79-28			SSH				632			447
UA-79-29			SSH				632			467
UA-79-30			SSH				632			480

Sample Type Code

SSH Seismic Shot Hole Sample
 TW Test Well Sample
 AH Auger Hole Sample
 CS Channel Sample

UA Sample Number	USGS Sample Number	Area	Type	Location	Line	Shot Point	Depth	Thickness	Formation	Age
UA-79-31			SSH		R5XN		340			
UA-79-32			SSH		R5XN		354			
UA-79-33			SSH		R5XN		359			
UA-79-34			SSH		R5XN		368			
UA-79-35			SSH		R5XN		384			
UA-79-36			SSH		R5XN		394			
UA-79-37			SSH		R5XN		450			
UA-79-38			SSH		R5XN		457			
UA-79-39			SSH		R5XN		458			
UA-79-40			SSH		R5XN		462			
UA-79-41			SSH		605		307			
UA-79-42			SSH		605		327			
UA-79-43			SSH		605		328			
UA-79-44			SSH		605		329			
UA-79-45			SSH		605		330			
UA-79-46			SSH		605		331			
UA-79-47			SSH		605		332			
UA-79-48			SSH		605		336			
UA-79-49			SSH		605		337			
UA-79-50			SSH		605		338			
UA-79-51			SSH		605		339			
UA-79-52			SSH		605		340			
UA-79-53			SSH		605		342			
UA-79-54			SSH		605		347			
UA-79-55			SSH		605		393			
UA-79-56			SSH		605		402			
UA-79-57			SSH		605		428			
UA-79-58			SSH		605		431			
UA-79-59			SSH		605		434			
UA-79-60			SSH		605		435			

UA Sample Number	USGS Sample Number	Area	Type	Location	Line	Shot Point	Depth	Thickness	Formation	Age
UA-79-61			SSH			605	439			
UA-79-62			SSH			605	442			
UA-79-63			SSH			605	447			
UA-79-64			SSH			605	448			
UA-79-65			SSH			605	454			
UA-79-66			SSH			605	455			
UA-79-67			SSH			605	457			
UA-79-68			SSH			605	461			
UA-79-69			SSH			605	465			
UA-79-70			SSH			605	467			
UA-79-71			SSH			605	471			
UA-79-72			SSH			605	472			
UA-79-73			SSH			605	474			
UA-79-74			SSH			R7XN	413			
UA-79-75			SSH			R7XN	428			
UA-79-76			SSH			R7XN	445			
UA-79-77			SSH			R7XN	482			
UA-79-78			SSH			R7XN	486			
UA-79-79			SSH			R7XN	488			
UA-79-80			SSH			R7XN	494			
UA-79-81			SSH			R7XN	520			
UA-79-82			SSH			R7XN	531			
UA-79-83			SSH			R7XN	582			
UA-79-84			SSH			602	152			
UA-79-85			TW			Tunalik	225-735			
UA-79-86			SSH			603	211			
UA-79-87			SSH			603	232			
UA-79-88			SSH			603	267			
UA-79-89			TW			Peard Bay	135-145			
UA-79-90			TW			Peard Bay	190-200			

UA Sample Number	USGS Sample Number	Area	Type	Location	Line	Shot Point	Depth	Thickness	Formation	Age
UA-79-91			TW		Peard Bay		250-260			
UA-79-92			TW		Peard Bay		300-310			
UA-79-93			TW		Peard Bay		345-350			
UA-79-94			TW		Peard Bay		350-360			
UA-79-95			TW		Peard Bay		360-365			
UA-79-96			TW		Peard Bay		400-410			
UA-79-97			TW		Peard Bay		690-700			
UA-79-98			TW		Peard Bay		750-780			
UA-79-99			TW		Peard Bay		790-800			
UA-79-100			TW		Ingok #1		18592			
UA-79-101			TW		Ingok #1		18598			
UA-79-102			TW		Ingok #1		18964			
UA-79-103			TW		Ingok #1		18965-66			
UA-79-104			TW		Ingok #1		18970			
UA-79-105			TW		Ingok #1		19191			
UA-79-106			TW		Ingok #1		19124			
UA-79-107			TW	Umiat Merd, T10N, R36W, SE $\frac{1}{4}$, Sec. 20	Tunalik #1		220-360			
UA-79-108			TW	Umiat Merd, T10N, R36W, SE $\frac{1}{4}$, Sec. 20	Tunalik #1		400-30			
UA-79-109			TW	Umiat Merd, T10N, R36W, SE $\frac{1}{4}$, Sec. 20	Tunalik #1		430-60			
UA-79-110			TW	Umiat Merd, T10N, R36W, SE $\frac{1}{4}$, Sec. 20	Tunalik #1		470-90			
UA-79-111			TW	Umiat Merd, T10N, R36W, SE $\frac{1}{4}$, Sec. 20	Tunalik #1		695-705			
UA-79-112			TW	Umiat Merd, T10N, R36W, SE $\frac{1}{4}$, Sec. 20	Tunalik #1		725-35			
UA-79-113			TW	Umiat Merd, T10N, R36W, SE $\frac{1}{4}$, Sec. 20	Tunalik #1		785-800			
UA-79-114			TW	Umiat Merd, T10N, R36W, SE $\frac{1}{4}$, Sec. 20	Tunalik #1		910-40			
UA-79-115			TW	Umiat Merd, T10N, R36W, SE $\frac{1}{4}$, Sec. 20	Tunalik #1		995-1005			
UA-79-116			TW	Umiat Merd, T10N, R36W, SE $\frac{1}{4}$, Sec. 20	Tunalik #1		1025-1140			
UA-79-117			TW	Umiat Merd, T10N, R36W, SE $\frac{1}{4}$, Sec. 20	Tunalik #1		1180-1203			
UA-79-118			TW	Umiat Merd, T10N, R36W, SE $\frac{1}{4}$, Sec. 20	Tunalik #1		1230-60			
UA-79-119			TW	Umiat Merd, T10N, R36W, SE $\frac{1}{4}$, Sec. 20	Tunalik #1		1305-1410			
UA-79-120			TW	Umiat Merd, T10N, R36W, SE $\frac{1}{4}$, Sec. 20	Tunalik #1		1400-1635			

UA Sample Number	USGS Sample Number	Area	Type	Location	Line	Shot Point	Depth	Thickness	Formation	Age
UA-79-151	AH-34-79									
UA-79-152	AH-35-79									
UA-79-153	AH-36-79									
UA-79-154	AH-37-79									
UA-79-155	AH-38-79									
UA-79-156					D4XW	26				
UA-79-157					D4XW	29				
UA-79-158					703	98				
UA-79-159					703	110				
UA-79-160					703	119				
UA-79-161					703	122				
UA-79-162					703	125				
UA-79-163					710	3				
UA-79-164					712	1				
UA-79-165					712	3				
UA-79-166					712	11				
UA-79-167					712	27				
UA-79-168					723	114				
UA-79-169					723	204				
UA-79-170					725	45				
UA-79-171					725	63				
UA-79-172					725	66				
UA-79-173					725	69				
UA-79-174					725	77				
UA-79-175					725	81				
UA-79-176					725	131				
UA-79-177					725	135				
UA-79-178					725	169				
UA-79-179					725	206				
UA-79-180					725	216				

UA Sample Number	USGS Sample Number	Area	Type	Location	Line	Shot Point	Depth	Thickness	Formation	Age
UA-79-181					725	219				
UA-79-182					725	222				
UA-79-183					725	230				
UA-79-184					725	271				
UA-79-185					725	342				
UA-79-186					734	216				

TABLE 2

VITRINITE REFLECTANCE

LINE	DEPTH	SAMPLE NO.	VITRINITE TYPES %					MEAN MAXIMUM REFLECTANCE \bar{R} om%
			V 5	V 6	V 7	V 8	V 9	
630	413	UA-79-1		14	86			.73
630	441	UA-79-2	4	72	24			.68
630	444	UA-79-3		24	72	4		.72
630	471	UA-79-4		6	34	50	10	.80
R3XN	390	UA-79-5	20	54	26			.65
R3XN	397	UA-79-6	66	34				.58
R3XN	443	UA-79-7			46	48	6	.81
R3XN	449	UA-79-8		26	58	16		.74
632	300	UA-79-9	4	24	48	24		.72
632	307	UA-79-10		8	68	24		.76
632	321	UA-79-11		30	54	16		.74
632	322	UA-79-12		34	54	12		.73
632	324	UA-79-13		14	46	40		.77
632	340	UA-79-14		2	36	60	2	.80
632	341	UA-79-15		10	44	40	6	.79
632	342	UA-79-16		2	58	40		.78
632	369	UA-79-17		18	68	14		.74
632	370	UA-79-18		8	62	30		.79
632	383	UA-79-19			4	84	12	.84
632	386	UA-79-20			16	64	20	.85
632	392	UA-79-21		76	24			.67