

**Division of Geological & Geophysical Surveys**

**RAW-DATA FILE 2003-1**

**COAL ANALYSES (PROXIMATE AND ULTIMATE) FROM THE DELTA  
JUNCTION AREA, ALASKA**

by

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Geochemical Testing

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STATE OF ALASKA  
DEPARTMENT OF NATURAL RESOURCES  
Division of Geological & Geophysical Surveys  
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## **Coal Analyses (Proximate and Ultimate) from the Delta Junction Area, Alaska**

Robert L. Stull and Paige Peapples

The Alaska Division of Geologic and Geophysical Surveys (ADGGS) and Evergreen Resources Alaska, Inc. entered into a research partnership in 2002 to investigate the shallow gas potential of the Jarvis Creek and Delta River area south of Delta Junction, Alaska. Evergreen Resources acquired more than 300,000 acres of shallow gas leases from the State of Alaska near Delta Junction and Fort Greely Army Post. During September, 2002, ADGGS and Evergreen personnel visited several coal outcrop localities in a reconnaissance effort to collect structural measurements and sample coal seams. Field locations included areas within and surrounding the Evergreen leases. Future studies may include exploration drilling, geophysics, and detailed field studies. Belowich (2003) describes the project objectives and reconnaissance studies.

Coal sampling methods included trenching each coal seam across the beds after first removing weathered material. Immediately after collection the samples were crushed to approximately <5 cm diameter and well mixed by hand. Two splits were then sealed in polyethylene sample bags. Geographic sample locations were determined and recorded using a handheld Garmin Etrex Vista Global Positioning System receiver without differential correction.

The following Proximate and Ultimate analyses were conducted on each sample split by Geochemical Testing, 2005 N Center Avenue, Somerset, PA. Analytical methods followed the American Society for Testing and Materials standards for coal analyses (ASTM, 2002). The individual ASTM standards are indicated by code for each sample. Detailed analytical methods reports, instrumental detection limit reports, and error reports were not available from Geochemical Testing.

ADGGS contact: Paige Peapples  
Evergreen Resources Alaska, Inc. contact: John Tanigawa

COAL ANALYSIS REPORT

Client: ALASKA DEPT OF NAT RESOURCES

Sampled by: Michael Belowich

Sampling Date: 03/14/2003

Analyzed on: 03/22/2003

Description: Sample JC - 1 Contract #ACA-106-0-699

Location: Jarvis Creek Lat: 63.61758 Long: -145.71201

LAB NO. 03-057242

Air Dry Loss..... 10.66 %

Residual Moisture..... 3.20 %

	As Received	Dry	Dry Ash-Free
ASTM*			
PROXIMATE ANALYSIS D3172			
Moisture.....	13.52		
Ash.....	41.19	47.62	
Volatile Matter.....	26.33	30.44	58.13
Fixed Carbon.....	18.96	21.94	41.87
	-----	-----	-----
	100.00	100.00	100.00
ULTIMATE ANALYSIS			
Hydrogen.....D5373..	4.53	3.49	6.67
Carbon.....D5373..	31.20	36.07	68.88
Nitrogen.....D5373..	0.35	0.40	0.77
Sulfur.....D4239..	0.65	0.75	1.44
Oxygen.....D3176..	22.08	11.67	22.24
Ash.....D3174..	41.19	47.62	
	-----	-----	-----
	100.00	100.00	100.00
Heating Value (BTU/Lb) D1989	5488	6346	12116
Free Swelling Index D720	0.0		

\*ASTM testing method code

Robert L. Stull  
Director of Coal Services

COAL ANALYSIS REPORT

Client: ALASKA DEPT OF NAT RESOURCES

Sampled by: Michael Belowich

Sampling Date: 03/14/2003

Analyzed on: 03/22/2003

Description: Sample JC - 2 Contract #ACA-106-0-699

Location: Jarvis Creek Lat: 63.61586 Long: -145.73262

LAB NO. 03-057243

Air Dry Loss..... 13.52 %

Residual Moisture..... 11.69 %

	As Received	Dry	Dry Ash-Free
ASTM*			
PROXIMATE ANALYSIS D3172			
Moisture.....	23.63		
Ash.....	11.03	14.45	
Volatile Matter.....	34.76	45.51	53.20
Fixed Carbon.....	30.58	40.04	46.80
	-----	-----	-----
	100.00	100.00	100.00
ULTIMATE ANALYSIS			
Hydrogen.....D5373..	6.05	4.46	5.22
Carbon.....D5373..	44.94	58.85	68.79
Nitrogen.....D5373..	0.57	0.75	0.87
Sulfur.....D4239..	0.29	0.37	0.44
Oxygen.....D3176..	37.12	21.12	24.68
Ash.....D3174..	11.03	14.45	
	-----	-----	-----
	100.00	100.00	100.00
Heating Value(BTU/Lb) D1989	7598	9949	11630
Free Swelling Index D720	0.0		

\*ASTM testing method code

Robert L. Stull  
Director of Coal Services

COAL ANALYSIS REPORT

Client: ALASKA DEPT OF NAT RESOURCES

Sampled by: Michael Belowich

Sampling Date: 03/14/2003

Analyzed on: 03/22/2003

Description: Sample JC - 3 Contract #ACA-106-0-699

Location: Jarvis Creek/Ober Creek Mine Lat: 63.65618 Long: -145.78676

LAB NO. 03-057244

Air Dry Loss..... 15.44 %

Residual Moisture..... 10.29 %

	As Received	Dry	Dry Ash-Free
ASTM*			
PROXIMATE ANALYSIS D3172			
Moisture.....	24.14		
Ash.....	7.04	9.29	
Volatile Matter.....	36.57	48.21	53.15
Fixed Carbon.....	32.25	42.50	46.85
	-----	-----	-----
	100.00	100.00	100.00
ULTIMATE ANALYSIS			
Hydrogen.....D5373..	6.31	4.76	5.25
Carbon.....D5373..	49.49	65.23	71.91
Nitrogen.....D5373..	0.79	1.04	1.14
Sulfur.....D4239..	0.82	1.08	1.19
Oxygen.....D3176..	35.55	18.60	20.51
Ash.....D3174..	7.04	9.29	
	-----	-----	-----
	100.00	100.00	100.00
Heating Value(BTU/Lb) D1989	8513	11222	12370
Free Swelling Index D720	0.0		

\*ASTM testing method code

Robert L. Stull  
Director of Coal Services

COAL ANALYSIS REPORT

Client: ALASKA DEPT OF NAT RESOURCES

Sampled by: Michael Belowich

Sampling Date: 03/14/2003

Analyzed on: 03/22/2003

Description: Sample CC - 1 Contract #ACA-106-0-699

Location: Coal Creek Lat: 63.99354 Long: -147.84431

LAB NO. 03-057245

Air Dry Loss..... 8.77 %

Residual Moisture..... 10.76 %

	As Received	Dry	Dry Ash-Free
ASTM*			
PROXIMATE ANALYSIS D3172			
Moisture.....	18.59		
Ash.....	15.94	19.58	
Volatile Matter.....	38.17	46.88	58.30
Fixed Carbon.....	27.30	33.54	41.70
	-----	-----	-----
	100.00	100.00	100.00
ULTIMATE ANALYSIS			
Hydrogen.....D5373..	5.72	4.47	5.55
Carbon.....D5373..	44.87	55.12	68.54
Nitrogen.....D5373..	0.72	0.89	1.10
Sulfur.....D4239..	0.47	0.57	0.71
Oxygen.....D3176..	32.28	19.37	24.10
Ash.....D3174..	15.94	19.58	
	-----	-----	-----
	100.00	100.00	100.00
Heating Value(BTU/Lb) D1989	7763	9536	11857
Free Swelling Index D720	0.0		

\*ASTM testing method code

Robert L. Stull  
Director of Coal Services

COAL ANALYSIS REPORT

Client: ALASKA DEPT OF NAT RESOURCES

Sampled by: Michael Belowich

Sampling Date: 03/14/2003

Analyzed on: 03/22/2003

Description: Sample CC - 2 Contract #ACA-106-0-699

Location: Coal Creek Lat: 63.99459 Long: -147.84622

LAB NO. 03-057246

Air Dry Loss..... 15.03 %

Residual Moisture..... 10.26 %

	As Received	Dry	Dry Ash-Free
ASTM*			
PROXIMATE ANALYSIS D3172			
Moisture.....	23.75		
Ash.....	8.94	11.72	
Volatile Matter.....	37.49	49.16	55.69
Fixed Carbon.....	29.82	39.12	44.31
	-----	-----	-----
	100.00	100.00	100.00
ULTIMATE ANALYSIS			
Hydrogen.....D5373..	6.24	4.69	5.32
Carbon.....D5373..	47.23	61.93	70.16
Nitrogen.....D5373..	0.68	0.89	1.01
Sulfur.....D4239..	0.20	0.27	0.30
Oxygen.....D3176..	36.71	20.50	23.21
Ash.....D3174..	8.94	11.72	
	-----	-----	-----
	100.00	100.00	100.00
Heating Value(BTU/Lb) D1989	7955	10433	11818
Free Swelling Index D720	0.0		

\*ASTM testing method code

Robert L. Stull  
Director of Coal Services

COAL ANALYSIS REPORT

Client: ALASKA DEPT OF NAT RESOURCES

Sampled by: Michael Belowich

Sampling Date: 03/14/2003

Analyzed on: 03/22/2003

Description: Sample LDR - 1 Contract #ACA-106-0-699

Location: Little Delta River Lat: 64.01915 Long: -146.78131

LAB NO. 03-057247

Air Dry Loss..... 24.84 %

Residual Moisture..... 10.34 %

	As Received	Dry	Dry Ash-Free
ASTM*			
PROXIMATE ANALYSIS D3172			
Moisture.....	32.61		
Ash.....	6.05	8.98	
Volatile Matter.....	32.76	48.62	53.41
Fixed Carbon.....	28.58	42.40	46.59
	-----	-----	-----
	100.00	100.00	100.00
ULTIMATE ANALYSIS			
Hydrogen.....D5373..	6.63	4.42	4.86
Carbon.....D5373..	42.29	62.76	68.95
Nitrogen.....D5373..	0.61	0.90	0.99
Sulfur.....D4239..	0.98	1.46	1.61
Oxygen.....D3176..	43.44	21.48	23.59
Ash.....D3174..	6.05	8.98	
	-----	-----	-----
	100.00	100.00	100.00
Heating Value(BTU/Lb) D1989	7076	10501	11537
Free Swelling Index D720	0.0		

\*ASTM testing method code

Robert L. Stull  
Director of Coal Services



COAL ANALYSIS REPORT

Client: ALASKA DEPT OF NAT RESOURCES

Sampled by: Michael Belowich

Sampling Date: 03/14/2003

Analyzed on: 03/22/2003

Description: Sample LDR - 2 Contract #ACA-106-0-699

Location: Little Delta River Lat: 64.0189 Long: -146.78087

LAB NO. 03-057248

Air Dry Loss..... 16.28 %

Residual Moisture..... 12.15 %

	As Received	Dry	Dry Ash-Free
ASTM*			
PROXIMATE ANALYSIS D3172			
Moisture.....	26.45		
Ash.....	6.71	9.12	
Volatile Matter.....	35.04	47.64	52.42
Fixed Carbon.....	31.80	43.24	47.58
	-----	-----	-----
	100.00	100.00	100.00
ULTIMATE ANALYSIS			
Hydrogen.....D5373..	6.29	4.53	4.99
Carbon.....D5373..	47.05	63.97	70.39
Nitrogen.....D5373..	0.75	1.01	1.11
Sulfur.....D4239..	1.03	1.40	1.54
Oxygen.....D3176..	38.17	19.97	21.97
Ash.....D3174..	6.71	9.12	
	-----	-----	-----
	100.00	100.00	100.00
Heating Value(BTU/Lb) D1989	7960	10823	11909
Free Swelling Index D720	0.0		

\*ASTM testing method code

Robert L. Stull  
Director of Coal Services

COAL ANALYSIS REPORT

Client: ALASKA DEPT OF NAT RESOURCES

Sampled by: Michael Belowich

Sampling Date: 03/14/2003

Analyzed on: 03/22/2003

Description: Sample LDR - 3 Contract #ACA-106-0-699

Location: Little Delta River Lat: 64.02509 Long: -146.75482

LAB NO. 03-057249

Air Dry Loss..... 17.97 %

Residual Moisture..... 8.22 %

	As Received	Dry	Dry Ash-Free
ASTM*			
PROXIMATE ANALYSIS D3172			
Moisture.....	24.71		
Ash.....	37.44	49.73	
Volatile Matter.....	22.45	29.82	59.32
Fixed Carbon.....	15.40	20.45	40.68
	-----	-----	-----
	100.00	100.00	100.00
ULTIMATE ANALYSIS			
Hydrogen.....D5373..	5.14	3.16	6.29
Carbon.....D5373..	25.04	33.25	66.15
Nitrogen.....D5373..	0.36	0.48	0.95
Sulfur.....D4239..	0.31	0.41	0.82
Oxygen.....D3176..	31.71	12.97	25.79
Ash.....D3174..	37.44	49.73	
	-----	-----	-----
	100.00	100.00	100.00
Heating Value(BTU/Lb) D1989	4299	5710	11359
Free Swelling Index D720	0.0		

\*ASTM testing method code

Robert L. Stull  
Director of Coal Services

COAL ANALYSIS REPORT

Client: ALASKA DEPT OF NAT RESOURCES

Sampled by: Michael Belowich

Sampling Date: 03/14/2003

Analyzed on: 03/22/2003

Description: Sample DC - 1 Contract #ACA-106-0-699

Location: Delta Creek Lat: 63.96872 Long: -147.25807

LAB NO. 03-057250

Air Dry Loss..... 14.98 %

Residual Moisture..... 12.33 %

	As Received	Dry	Dry Ash-Free
ASTM*			
PROXIMATE ANALYSIS D3172			
Moisture.....	25.46		
Ash.....	8.59	11.52	
Volatile Matter.....	38.63	51.83	58.58
Fixed Carbon.....	27.32	36.65	41.42
	-----	-----	-----
	100.00	100.00	100.00
ULTIMATE ANALYSIS			
Hydrogen.....D5373..	6.77	5.26	5.94
Carbon.....D5373..	47.58	63.83	72.14
Nitrogen.....D5373..	0.65	0.87	0.98
Sulfur.....D4239..	0.53	0.71	0.80
Oxygen.....D3176..	35.88	17.81	20.14
Ash.....D3174..	8.59	11.52	
	-----	-----	-----
	100.00	100.00	100.00
Heating Value(BTU/Lb) D1989	8276	11102	12548
Free Swelling Index D720	0.0		

\*ASTM testing method code

Robert L. Stull  
Director of Coal Services

COAL ANALYSIS REPORT

Client: ALASKA DEPT OF NAT RESOURCES

Sampled by: Michael Belowich

Sampling Date: 03/14/2003

Analyzed on: 03/22/2003

Description: Sample DC - 2 Contract #ACA-106-0-699

Location: Delta Creek Lat: 63.97657 Long: -147.28613

LAB NO. 03-057251

Air Dry Loss..... 16.33 %

Residual Moisture..... 13.20 %

	As Received	Dry	Dry Ash-Free
ASTM*			
PROXIMATE ANALYSIS D3172			
Moisture.....	27.37		
Ash.....	6.92	9.53	
Volatile Matter.....	36.85	50.74	56.08
Fixed Carbon.....	28.86	39.73	43.92
	-----	-----	-----
	100.00	100.00	100.00
ULTIMATE ANALYSIS			
Hydrogen.....D5373..	6.32	4.48	4.96
Carbon.....D5373..	46.46	63.97	70.71
Nitrogen.....D5373..	0.60	0.83	0.92
Sulfur.....D4239..	0.67	0.92	1.02
Oxygen.....D3176..	39.03	20.27	22.39
Ash.....D3174..	6.92	9.53	
	-----	-----	-----
	100.00	100.00	100.00
Heating Value(BTU/Lb) D1989	7822	10770	11904
Free Swelling Index D720	0.0		

\*ASTM testing method code

Robert L. Stull  
Director of Coal Services

## **Works Cited**

American Society for Testing and Materials, 2002, Annual Book of ASTM Standards 2002, v. 05.06, 650 p.

Belowich, Michael, 2003, Delta Junction Exploration Project Geologic Summary, Evergreen Resources Alaska, Inc., End of Year Report, Wasilla, Alaska.