DEVELOPMENT OF A PHENOMENOLOGICAL MODEL FOR COAL SLURRY ATOMIZATION

QUARTERLY TECHNICAL REPORT

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PROGRESS SUMMARY

Task 1 - Extensional Viscometer

A contracting flow extensional viscometer was re-designed after serious problems were encountered with the extensional measurements of viscoelastic samples with extensive testing.

Task 2 - Testing

Testing using the improved design of the extensional viscometer was performed using simulated fluids, i.e. corn syrup/water, corn syrup/water + 0.5% xanthan gum, and corn syrup/water + 1% xanthan gum. Testing has begun using Upper Freeport coal. Analysis of the Upper Freeport coal is provided in Table 1. Testing should be completed over the next month.

Table 1
Freeport Coal Analysis

Ultimate Analysis (wt% dry basis)		Proximate Analysis (wt% dry basis)	
Carbon	72.34	Ash	17.00
Hydrogen	4.47	Volatile Matter	27.50
Nitrogen	1.00	Fixed Carbon	55.50
Sulfur	2.00		
Ash	17.00		
Oxygen	3.19		

Hardgrove Grindability Index 84

Particle Size Distribution Upper Freeport Coal

Sieve Size (microns)	Wt% Retained
300	0.3
150	12.4
106	17.7
53.5	14.5
37.6	8.4
28.1	7.5
21.5	6.0
16.7	5.1
13.0	4.6
10.1	4.7
7.9	3.9
6.2	3.1
4.8	3.3
3.8	3.7
2.4	1.4
1.9	0.6

$\phi_m = 80.7$ vol %

ACTIVITIES SCHEDULED FOR THE NEXT QUARTER

Re-testing of the extensional behavior will be completed over the next quarter.

Modelling will continue with the completion of testing.