

COAL SEAM ANALYSIS WEST BATURAJA SUB-DISRICT, SOUTH SUMATERA

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ABSTRACT

Sumatera island is located between 3° NH to 6° SH and 96° EL to 106° EL, along 1,700 km northern to the South, parallel to the subduction zone between the Sunda plate and Indian Oceanic plate on the western part of Sumatera Island. The western part of Sumatera Island is a fore deep basin. Parallel to it is the Bukit Barisan chain. Towards the eastern part, there is the foreland basin of Neogen. At the central zone of Bukit Barisan chain, there is the in-between basin. The South Sumatera Basin starts from the eastern part of Bukit Barisan stretching to the south-east of the ocean and adjoining to the basin at the boundary of Bukit Barisan in the south-west and tertiary Sunda Basin in the south-east. Coal at the basin or on this formation with low rank is generally lignite. It is only at the young andesite intrusion (at Bukit Asam) where this lignite is altered to be high rank coal. On this formation coal is divided into three groups, namely, upper part (6 – 7 seams), central part, and lower part (8 – 10 seam). The coal development is mainly autochthon, in the forest environment where there is no indication of the existence of swamp vegetation element. Based on the data, it can be concluded that coal resource at the survey location has quite good quality, with moderate calorific value and low sulphuric content. Thus, it can be classified into the 'brown coal'.

Keywords : Coal, Muara Enim, South Sumatera

INTRODUCTION

The objective and purpose of the study of coal at Baturaja Sub-District, OKU District, South Sumatera Province, is to analyze the technical aspect and quality in general. This research is a part of the exploration activities, due to methods in general this activities called due diligent exploration.

PREVIOUS WORKS

The South Sumatera Basin starts from the eastern part of Bukit Barisan stretching to the south-east of the ocean and adjoining to the basin at the boundary of Bukit Barisan in the south-west and tertiary Sunda Basin in the south-east.

The research area consist 9 units of sediments, they are; Alluvium, Volcanic Breccia, Kasai Formation, Muara Enim Formation, Air Benakat Formation, Gumai Formation, Baturaja Formation, Talang Akar Formation. (Ginger and Fielding, 2005). Coal at the basin or on this formation with low rank is generally lignite. It is only at the young andesite intrusion (at Bukit Asam) where this lignite is altered to be high rank coal. On this formation coal is divided into three groups, namely, upper part (6 – 7 seams), central part, and lower part (8 – 10 seam). The coal development is mainly autochthon, in the forest environment where there is no indication of the existence of swamp vegetation element (Musper, 1933)

METHODS

The exploration activities such as geological

mapping (comprises activities of geological data collecting on the closure of coal or non-coal, as well as, other geological parameters, such as, structure and geomorphology conducted along the selected path) is the method to gather data from research area. This due diligent exploration gathers geological data in general and focus on the appears of coal seam which develops in research area. General mapping using compass and traverse is a main technique which is used in the field.

RESULTS

The exploration activity provides a general conclusion that findings in the survey area, they are; claystone – sandstone sediment (Muara Enim Formation); In general, this unit is dominantly by fine to coarse quartz sandstone, yellowish white colour with cross bed structure, intercalated with bright grey and greenish white claystone, fragmented. Gravy sandstone, clay, and conglomerate were found in the bottom part, Coal seam is generally found as intercalated bed of claystone, Tuff unit (Kasai Formation); The dominant lithology are tuff with grey colour, soft – moderately soft, locally fragmented, filled with calcite. Sandstone with bright yellow – white colour, soft - moderate hard, well-fragmented, alternate with metal oxides with the thickness of 1.20 m, and some parts contain coal ribbons, and Alluvium; It is composed by loose materials, sand grain size – gravel, fragmented from sub-angular – sub-rounded, deposited in the flooded land of Ogan River. The identified coal seam is divided into five coal seam and appear at claystone –

sandstone unit of Muara Enim Formation, The coal thickness varies from 0.30 m – 4.35 m (with the strike and dip of N 175° – 295° / 6° – 30°) and the coal is disclosed on the monocline wings with low to steep dip, coal resources at the research location has quite good quality, with moderate calorific value and low sulphuric content. Thus, it can be classified into the 'brown coal'.

The geological structure developed in the research is strike-slip fault, namely, Ogan and Poding dextral strike-slip fault. The main trends of this fault is relatively south-east - north-west.

Table 1. Coal Quality

Quality	Lowest	Highest	Average
Total Moisture (%) are	38.40	50.00	45.75
Ash Content (%) adb	3.00	30.50	13.77
Volatile Matter (%) adb	29.50	78.00	34.16
Fixed Carbon (%) adb	8.10	27.90	21.86
Total Sulphure (%) adb	0.14	1.42	0.50
Calorific Value (cal/Kg)	3,639.00	4,719.00	4,021.36

CONCLUSION

The exploration activity provides a general conclusion that findings in the survey area, they are; claystone – sandstone sediment (Muara Enim Formation); Tuff unit (Kasai Formation) and Alluvium. The identified coal seam is divided into five coal seam and appear at claystone – sandstone unit of Muara Enim Formation, the coal thickness varies from 0.30 m – 4.35 m (with the strike and dip of N 175° – 295° / 6° – 30°) and the coal is disclosed on the monocline wings with low to steep dip, coal resources at the research location has quite good quality, with moderate calorific value and low sulphuric content. Thus, it can be classified into the 'brown coal'.

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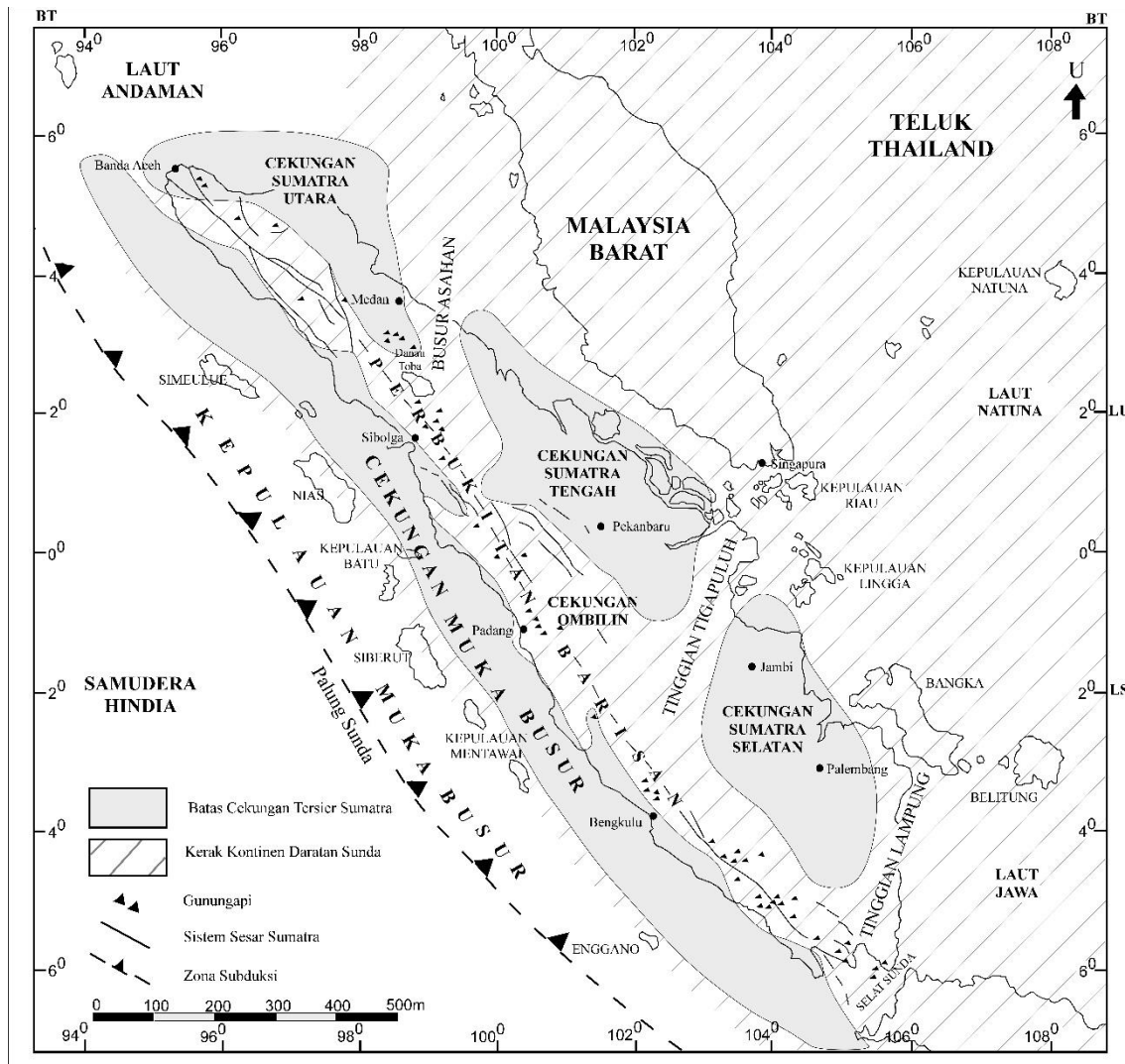


Figure 1. South Sumatra Basin (Barber, 2005)

Spruyt (1956)		De Coster (1974)	Shell Team (1978)	
Subdivisi Stratigrafi		FORMASI	FORMASI	UMUR
Sedimen Kuartar				KUARTER
KELOMPOK PALEMBANG (PAG)	FM. TUF KASAI (KAF)	PALEMBANG ATAS	FM. KASAI	PLIOSEN
	MUARA ENIM <i>Anggota Bluegreen (MEM b)</i>	PALEMBANG TENGAH	FORMASI MUARAENIM	MIOSEN AKHIR
	BATUPASIR FM. BATUBARA (MEF) <i>Anggota Brown (MEM a)</i>			
	FM. AIR BENAKAT BATUPASIR & BATULEMPUNG (ABF)	PALEMBANG BAWAH	FM. AIR BENAKAT	MIOSEN TENGAH
	FM. GUMAI SERPIH (GUF)	FM. TELISA	FM. GUMAI	
KELOMPOK TELISA (TEG)	FM. BATUGAMPING BATURAJA (BRF)		FM. BATURAJA	MIOSEN AWAL
	TALANG AKAR SERPIH <i>Anggota Transisi (TRM)</i>	FM. TALANG AKAR	FM. TALANG AKAR <i>Anggota Transisi</i>	
	FM. BATUPASIR (TAF) <i>Anggota Gritsand</i>		FM. LAHAT <i>Anggota Benakat</i>	OLIGOSEN DAN EOSEN-PALEOSEN
	FM. TUF BREKSI LAHAT (LAF)	FM. LEMAT <i>"grnt wash"</i>	FM. LAHAT	
BASEMENT PRETERSIER	BASEMENT PRETERSIER	BASEMENT	PRETERSIER	

A. Pulunggono. 1982, 1986

Figure 2. Regional Stratigraphy South Sumatera Basin (Pulunggono, 1986)