

ABSTRAK

ANALISIS PERSEBARAN INTRUSI BERDASARKAN DATA GRAVITASI SATELIT DAN PENGARUH INTRUSI TERHADAP KUALITAS BATUBARA BERDASARKAN DATA GEOFISIKA *WELL LOGGING* DAN KUALITAS BATUBARA PADA LAPANGAN TAMBANG AIR LAYA PT. BUKIT ASAM TBK

Oleh
Andi Gunawan
115210003

Program Studi Sarjana Teknik Geofisika

Penelitian ini dilakukan di lapangan Tambang Air Laya, yang terletak di Cekungan Sumatera Selatan, wilayah yang dikenal memiliki cadangan batubara yang melimpah. Fokus penelitian berada pada Formasi Muara Enim, yang memiliki potensi sumber daya batubara yang signifikan. Keberadaan intrusi batuan beku di daerah penelitian diduga mempengaruhi kualitas batubara. Oleh karena itu, penelitian ini bertujuan untuk menganalisis perubahan kualitas batubara akibat pengaruh intrusi tersebut.

Penelitian bertujuan untuk mengetahui persebaran intrusi pada lapangan Tambang Air Laya dan pengaruh intrusi terhadap kualitas batubara pada daerah penelitian. persebaran intrusi di dasarkan pada respon gravitasi satelit GGMPlus yang memiliki jumlah titik pengukuran 4800 titik dengan spasi ± 222 m antar titik. Pengaruh intrusi terhadap kualitas batubara di interpretasikan berdasarkan data jarak log geofisika dari zona intrusi dengan data proksimat, total sulfur dan *Calorific Value* untuk melihat pengaruh intrusi terhadap kualitas batubara pada lapangan Tambang Air Laya menggunakan koefisien determinasi untuk melihat keterkaitan atau hubungan antar kedua nilai tersebut.

Hasil penelitian menunjukkan adanya intrusi batuan beku di selatan Tambang Air Laya berdasarkan peta gravitasi satelit. Terdapat 4 tubuh intrusi yang di identifikasi berdasarkan respon gravitasi dimana 1 tubuh intrusi yang muncul hingga permukaan dan menerobos *Seam* Batubara, sedangkan 3 tubuh intrusi lainnya tidak muncul ke permukaan, yang dimana diperikaraka terdapat dibawah *Seam* Batubara C. Data geofisika *Well Logging* mengidentifikasi keberadaan beberapa *Seam* batubara, dengan 5 *Seam* ekonomis yaitu A1, A2, B1, B2, dan C, nilai *Vshale Seam* batubara relatif beragam yaitu 0,39 – 3,97 %, dan nilai density *Seam* batubara relatif beragam yaitu 1,57 – 2,13 g/cc. Korelasi antara jarak intrusi dan kualitas batubara menunjukkan bahwa intrusi mempengaruhi parameter kualitas batubara, seperti *Total Moisture*, *Inherent Moisture*, *Fixed Carbon*, dan *Calorific Value*. Semakin dekat ke zona intrusi, kualitas batubara meningkat dari *subbituminous coal* (11.469,28 Btu/lb) hingga mencapai antrasit (14.863,50 Btu/lb).

Kata Kunci: Metode Gravitasi, Metode *Well Logging*, Kualitas Batubara

ABSTRACT

ANALYSIS OF INTRUSION DISTRIBUTION BASED ON SATELLITE GRAVITY DATA AND THE EFFECT OF INTRUSION ON COAL QUALITY BASED ON GEOPHYSICAL WELL LOGGING DATA AND COAL QUALITY AT THE AIR LAYA MINE FIELD PT. BUKIT ASAM TBK.

By

Andi Gunawan

115210003

Geophysical Engineering Undergraduate Study Program

This research was conducted in the Air Laya Mine field, which is located in the South Sumatra Basin, an area known to have abundant coal reserves. The focus of the research is on the Muara Enim Formation, which has significant coal resource potential. The presence of igneous rock intrusions in the research area is thought to affect coal quality. Therefore, this study aims to analyze changes in coal quality due to the influence of these intrusions.

The research aims to determine the distribution of intrusions in the Air Laya Mine field and the effect of intrusions on coal quality in the research area. The distribution of intrusions is based on the gravity response of the GGMPlus satellite, which has a total of 4800 measurement points with a spacing of ± 222 m between points. The effect of intrusion on coal quality is interpreted based on geophysical log distance data from the intrusion zone with proximate data, total sulfur and Calorific Value to see the effect of intrusion on coal quality in the Air Laya Mine field using a coefficient of determination to see the relationship between the two values.

The results showed the presence of igneous intrusion in the south of the Air Laya Mine based on the satellite gravity map. There are 4 intrusion bodies identified based on the gravity response, where 1 intrusion body appears to the surface and breaks through the Coal Seam, while the other 3 intrusion bodies do not appear to the surface, which is believed to be below Coal Seam C. The geophysical data from Well Logging identifies the presence of several coal Seams, with 5 economic Seams, namely A1, A2, B1, B2, and C. The Vshale value of the coal Seams is relatively diverse, namely 0.39–3.97%, and the density value of the coal Seams is relatively diverse, namely 1.57–2.13 g/cc. The correlation between intrusion distance and coal quality shows that intrusion affects coal quality parameters, such as Total Moisture, Inherent Moisture, Fixed Carbon, and Calorific Value. The closer to the intrusion zone, the quality of coal increases from subbituminous coal (11,469.28 Btu/lb) to anthracite (14,863.50 Btu/lb).

Keywords: Gravity Method, Well Logging Method, Coal Quality