

## ABSTRAK

### PERHITUNGAN SUMBERDAYA DAN ANALISIS PARAMETER GEOFISIKA *WELL LOGGING* TERHADAP DATA KUALITAS BATUBARA PADA PIT 1 TAMBANG AIR LAYA TIMUR, TANJUNG ENIM, SUMATERA SELATAN

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Batubara merupakan salah satu sumber energi yang dibutuhkan untuk memenuhi kebutuhan energi nasional, maka perlu dilakukannya eksplorasi batubara. dalam kegiatan eksplorasi batubara dapat dilakukan menggunakan metode geofisika. Salah satu metode geofisika yang dapat digunakan adalah metode Geofisika *well logging*. Metode *Well logging* yang dapat digunakan dalam eksplorasi batubara terdiri dari *gamma ray* dan *density log*. Penggunaan 2 metode *Well Logging* ini dikarenakan sensor perekamannya yang paling sensitif terhadap keberadaan lapisan batubara.

Pengukuran menggunakan metode log gamma ray dan log densitas dengan melakukan perekaman pada lubang bor. Kemudian didapatkan hasil berupa kurva log yang selanjutnya diinterpretasi untuk mengetahui letak atau posisi dari batubara. Hasil interpretasi menunjukkan nilai tebal batubara, kedalaman batubara dan nilai log gamma ray dan log densitas dalam satuan cps (*counts per second*). Kemudian berdasarkan hasil interpretasi tersebut dilakukan pemodelan 2 dimensi dan 3 dimensi untuk mengetahui persebaran dan jumlah sumberdaya batubaranya.

Berdasarkan hasil pengukuran, didapatkan lima jenis lapisan batubara yaitu *seam A1*, *seam A2*, *seam B1*, *seam B2*, dan *seam C* dengan sudut kemiringan lapisan sebesar 15 derajat. Diketahui pula jumlah sumberdaya total pada daerah penelitian adalah 22.889,93 ton dengan rincian total sumberdaya *seam A1* sebesar 2.814,08 ton, *seam A2* sebesar 4.563,62 ton, *seam B1* sebesar 4.924,57 ton, *seam B2* sebesar 1.796,05 ton dan *seam C* sebesar 8.792,61 ton. Hasil analisis parameter Geofisika *Well Logging* terhadap data kualitas batubara dengan menggunakan metode *Scatterplot Trendline Bivariant* adalah berbanding lurus untuk variabel *Volume Shale* terhadap *Ash Contain*, kemudian variabel *True Density* terhadap *Calorific Value*, *Fixed Carbon*, dan *Total Sulfur*. Sedangkan hasilnya berbanding terbalik untuk variabel *True Density* terhadap *Inherent Moisture* dan *Volatile Matter*.

**Kata kunci :** *Well logging*, log gamma ray, log densitas, *seam*, sumberdaya, *true density*, *volatile matter*, *calorific value*, *total sulfur*, *moisture*

## **ABSTRACT**

### **RESOURCES CALCULATION AND ANALYSIS GEOPHYSICAL WELL LOGGING PARAMETERS TOWARDS COAL QUALITY DATA AT PIT 1 EAST AIR LAYA SITE, TANJUNG ENIM, SOUTH SUMATERA**

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*Coal is one of the most needed energy sources to fulfill national needs, so it's necessary to do coal exploration, and it can be done by using geophysical methods. One of the geophysical methods that can be used is the Geophysical Well Logging. The well logging method that can be used for coal exploration consists of gamma ray log dan density log. The use of these 2 Well Logging methods due to high sensitiveness of its sensor towards the presence of coal layers.*

*Measurement using gamma ray log method and density log by performing the recording on drill holes. Then the result of the log curve is further interpretation to know the location or position of the coal. The interpretation shows the thickness value of coal, the depth of coal and the log value of gamma ray and the density log in CPS (counts per second). Then based on the results of the interpretation conducted 2-dimensional and 3-dimensional modeling to determine the distribution dan resources of its coal.*

*Based on the results of the research, there are five types of coal seam, A1 seam, A2 seam, B1 seam, B2 seam and C seam. Moreover, there is also one thin layer of coal but does not have economic value which is suban marker. There are also another lithology found which is claystone, sandstone and siltstone. It is known that the total amount of coal resources in the research area is 22,889.93 tonnes, with A1 seam has 2,814.08 tonnes, A2 seam has 4,563.62 tonnes, B1 seam has 4,924.57 tonnes, B2 seam has 1,796.05 tonnes and C seam has 8,792.61 tonnes. Analysis results of Geophysical Well Logging parameters towards coal quality data using the Trendline Bivariant Scatterplot method is directly proportional for Volume Shale variable towards Ash Contain, then the True Density variable towards Calorific Value, Fixed Carbon, and Total Sulfur. While the result is inversely proportional for True Density variable towards Inherent Moisture and Volatile Matter.*

**Keywords:** *Well logging, gamma ray log, density log, seam, resources, tonnes, true density, volatile matter, calorific value, total sulfur, inherent moisture*