

Identifikasi lapisan batubara di daerah Riau berdasarkan studi inversi impedansi akustik, dekomposisi spektral dan atribut seismik = identification of coal beds in Riau based on study of inversion acoustic impedance, spectral decomposition and seismic attribute

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Abstrak

Konsumsi minyak dan gas bumi sebagai sumber energi utama semakin meningkat seiring berjalannya waktu. Hal ini berpotensi berkurangnya ketersediaan energi bagi kebutuhan masyarakat dunia. Maka dari itu, diperlukan suatu sumber energi alternatif seperti batubara dan gas methane. Telah dilakukan pengolahan data seismik untuk memetakan lapisan batubara yang mengandung gas methane pada suatu zona cekungan Sumatera Tengah, daerah Riau. Data seismik tersebut dikontrol oleh data sumur, yang terdiri dari log gamma ray, log densitas, log resistivitas dan log sonik. Hasil pengolahan data menunjukkan bahwa pada formasi Korinci/Binio terdapat batubara pada kedalaman 1560 feet. Hal ini ditentukan dari proses korelasi/well tie antara data seismik dan data sumur sehingga diperoleh nilai gamma ray sebesar 52-55 API, densitas sebesar 1.5-1.55 g/cc, resistivitas sebesar 0.68-0.76 ohmmeter, kecepatan gelombang sonik sebesar 5988.3-6330.2 feet/second, impedansi akustik sebesar 8000-9600 ((ft/s)*(g/cc)) dan frekuensi tuning sebesar 30 Hz. Hasil pengolahan data lainnya menunjukkan bahwa batubara juga terdapat pada formasi Telisa pada kedalaman 1526 feet. Dengan proses yang sama diperoleh nilai gamma ray sebesar 28 API, densitas sebesar 1.28-1.49 g/cc, resistivitas sebesar 1.33-1.44 ohmmeter, impedansi akustik sebesar 8000-10200 ((ft/s)*(g/cc)) dan frekuensi tuning sebesar 19 Hz.

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Consumption of oil and gas as a primer sources has been increased in years. It will potentially decrease the supply of world energy needed. Because of that, we need alternative sources like coal and methane gas to substitute the primer sources. The seismic data processing has been done for mapping the coal-bed which consist of methane gas in a basin zone of Central Sumatera, Riau. The seismic data was controlled by well-logs data such as gamma ray log, density log, resistivity log, and sonic log. The result of data processing indicates that the Korinci/Binio Formation has coal-bed at depth 1560 feet. The information of depth is based on the correlation between well-logs and seismic data (well-tie), then obtained the gamma ray was 52-55 API, the density was 1.5-1.55 g/cc, the resistivity was 0.68-0.76 ohmmeter, the velocity of sonic wave was 5988.3-6330.2 feet/second and the acoustic impedance was 8000-9600 ((ft/s)*(g/cc)) and the frequency of tuning was 30 Hz. The other of data processing result shows that the Telisa Formation has coal-bed at depth 1526 feet. Using the same well-tie process, the information of depth was obtained from the gamma ray was 28 API, the density was 1.28-1.49 g/cc, the resistivity was 1.33-1.44 ohmmeter, the acoustic impedance was 8000-10200 ((ft/s)*(g/cc)) and the frequency of tuning was 19 Hz.