INTISARI

PENGOLAHAN DATA SEISMIK REFLEKSI *POST-STACK TIME MIGRATION* MENGGUNAKAN METODE MIGRASI *KIRCHOFF* UNTUK MENGIDENTIFIKASI KEBERADAAN *COAL BED METHANE* DI DAERAH MANGUNJAYA, MUSI BANYUASIN, SUMATERA SELATAN

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Musi Banyuasin termasuk dalam Formasi Muara Enim merupakan salah satu penghasil *coal bed methane* terbesar di Indonesia. *Coal bed methane* (CBM) merupakan *unconventional gas reservoir* yang terdapat pada batubara. *Unconventional gas* merupakan gas yang diperoleh dari alam yang terproduksi pada lokasi tertentu dan dianggap baru. Gas tersebut awal teradsorpsi pada permukaan batubara yang terdapat di dalam mikropori. Hal ini terjadi karena pengaruh temperatur, tekanan, dan waktu. CBM terbentuk melalui aktivitas *biogenic* atau *thermogenic* selama proses pembentukan batubara. Adanya kontras fisis seperti kecepatan gelombang pada setiap lapisan batuan pada bawah permukaan, memungkinkan dilakukannya survei geofisika seperti metode seismik refleksi.

Penelitian ini terletak di Daerah Mangunjaya, Kabupaten Musi Banyuasin, Provinsi Sumatera Selatan. Penelitian ini memanfaatkan *post-stack time migration* menggunakan migrasi *kirchoff*. *Post-stack time migration* untuk struktur geologi yang *smooth* dan kecepatan yang tidak terlalu kompleks, sedangkan migrasi *kirchoff* digunakan karena pencitraan bawah permukaan kenampakan reflektor lebih jelas dan kontinyu. Akuisisi data dilakukan dengan lintasan yang memanjang dari arah selatan-utara, berjumlah 48 *channel*, *spasi geophone* 15 meter, *spasi shot point* 15 meter dengan konfigurasi penembakan berupa *end-off spread* dan *split spread*. *Near offset* yaitu 15 meter dan *far offset* 720 meter.

Analisis penampang 2D hasil proses *post-stack time migration* menggunakan migrasi *kirchoff* memiliki respon fisis CBM yang terukur berupa amplitudo tinggi yaitu mencapai 10 (*trough*) dan -10 (*peak*). Lokasi persebaran CBM terlihat memanjang pada lintasan penelitian dengan ketebalan kurang lebih 200 meter dan keberadaan posisi target CBM pada area penelitian berada pada kedalaman 200 meter dan terdapat lapisan yang tidak menerus.

Kata Kunci: *coal bed methane*, migrasi *kirchoff*, *post-stack time migration*, seismik refleksi

ABSTRACT

PROCESSING OF SEISMIC REFLECTION DATA POST STACK TIME MIGRATION USING KIRCHOFF MIGRATION METHOD TO IDENTIFY COAL BED METHANE AT MANGUNJAYA AREA, MUSI BANYUASIN, SOUTH SUMATERA

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Musi Banyuasin included in Muara Enim Formation, is one of the largest coal bed methane producers in Indonesia. Coal bed methane (CBM) is an unconventional gas reservoir found in coal. Unconventional gass is obtained from nature which is produced in a certain location and considered new. The gas is initially adsorbed on the coal surface in the micropores. This happens due to influence of temperature, pressure and time. CBM formation is formed through biogenic or thermogenic activity during the coal formation process. The existence of physical contrasts such as wave velocity in each rock layer below the surface, allows geophysical surveys to be carried out through methods such as seismic reflection.

This research is located in the Mangunjaya area, Musi Banyuasin Regency, South Sumatra Province. This research makes use of post-stack time migration using kirchoff migration method. Post-stack time migration is used for smooth geological structures and less complex velocities, while Kirchoff migration is used because subsurface imaging of the reflector appearance is clearer and more continuous. Data acquisition is carried out with a line that extends from the south-north direction, with 48 channels, 15 meters of geophone spacing, 15 meters of shot point spacing with shooting configurations in the form of end-off spread and split spread. Near offset is 15 meters and far offset is 720 meters.

2D cross-sectional analysis of the results of the post-stack time migration process using kirchoff migration has a measured CBM physical response in the form of high amplitude, reaching 10 (trough) and -10 (peak). The location of the CBM distribution is seen extending on the research path with a thickness of approximately 200 meters and the presence of the CBM target postion in the research area is at a depth of 200 meters and there is a layer of rock that is not continuous.

Kata Kunci: *coal bed methane, kirchoff migration, post-stack time migration, seismic reflection*