ABSTRAK

Proses pengolahan data magnetotellurik, inversi, pemodelan dan interpretasi bertujuan untuk menentukan jenis batuan bawah permukaan berdasarkan nilai resistivitas serta mengidentifikasi keberadaan endapan *source rock* Pra-tersier Daerah X Cekungan Bintuni, Papua Barat. Tahapan pengolahan data terdiri dari proses Transformasi Fourier, *Robust Processing,* Seleksi *Time Series, Remote Reference dan* Seleksi *Cross Power*. Seluruh proses pengolahan dilakukan untuk meningkatkan nilai koherensi dengan cara mereduksi *noise* pada data hasil pengukuran. Inversi yang dilakukan adalah inversi 1D dan inversi 2D dengan hasil berupa penampang resistivitas yang terdistribusi secara vertikal dan horizontal. Interpretasi jenis batuan bawah permukaan dilakukan dengan data pendukung integrasi hasil inversi 2D magnetotellurik dengan model 2D *gravity*. Pemodelan 3D dlakukan secara *cross section* karena lintasan tidak dapat membentuk kubik ideal. Batuan penyusun bawah permukaan Daerah X Cekungan Bintuni Papua Barat diinterpretasikan tersusun atas formasi Steenkool yang terdiri dari batupasir dan batulempung dengan nilai resistivitas 1-40 Ωm. Di bawah formasi Steenkol diduga merupakan batugamping dari *New Guenea Limestone Group* dengan nilai resistivitas 40-200 Ωm. Keberadaan endapan *source rock* Pra-tersier berada di bawah batugamping pada kedalaman 3000 m yang diduga sebagai serpih hitam formasi Ainim dengan nilai resistivitas rendah yakni 1-20 Ωm. Batuan paling bawah merupakan *basement* dengan nilai resistivitas >200 Ωm.

Kata Kunci : Koherensi, magnetotellurik, *source rock*.

ABSTRACT

Processing of magnetotelluric data, inversion, modeling and interpretation aims to determine subsurface rock types based on resistivity values and identify the presence of Pre-tertiary source rock sediment in Region X of the Bintuni Basin in West Papua. Data processing stages consist of Fourier Transformation, Robust Processing, Time Series Selection, Remote Reference and Cross Power Selection. All of that process carried out to increase the value of coherence by reducing noise in the measurement data. Inversions that has been done are 1D inversion and 2D inversion with the results in the form of a resistivity section distributed vertically and horizontally. Interpretation of subsurface rock types is carried out with data supporting integration of 2D magnetotelluric inversion results with 2D gravity models. 3D modeling has been done in cross section because the lines cannot establish an ideal cubic. Subterranean constituent rocks of Region X of the Bintuni Basin in West Papua are interpreted as composed of Steenkool formations consisting of sandstone and claystone with resistivity values of 1-40 Ωm. Under the Steenkol formation, suspected that it is a limestone from the New Guenea Limestone Group with a resistivity value of 40-200 Ωm. The presence of Pre-tertiary source rock sediment is under limestone at 3000 m what is suspected as black shale Ainim formation with a low resistivity value of 1-20 Ωm. The lowest rock is a basement with a resistivity value >200 Ωm.

***Keywords**: Coherence, magnetotellurics, source rock.*