

ABSTRAK

IDENTIFIKASI SISTEM HIDROGEOLOGI KARST MENGGUNAKAN
INTEGRASI METODE GEOLISTRIK KONFIGURASI *WENNER ALPHA*,
SCHLUMBERGER, DAN DATA PEMBORAN EKSPLORASI PADA DAERAH
“X”

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Integrasi metode geofisika geolistrik konfigurasi *Wenner Alpha*, *Schlumberger* dengan data pemboran eksplorasi digunakan mengidentifikasi sistem hidrogeologi karst untuk mengetahui indikasi fluida, rongga maupun goa dan sungai bawah tanah berdasarkan nilai anomali resistivitas litologi dan data pemboran. *Pseudosection Wenner Alpha*, *profiling Schlumberger* dan data pemboran dikorelasi menjadi model 3 dimensi yang terintegrasi. Lokasi penelitian di daerah eksplorasi PT. Semen Indonesia (Persero) Tbk.

Pengolahan data sekunder dilakukan secara bertahap mulai kerja praktek tanggal 1 Januari 2016 -2 Februari 2016 hingga penelitian skripsi tanggal 22 Januari 2018-5 Februari 2018. Data geolistrik *Wenner Alpha* sebanyak 87 lintasan setiap lintasan 475 meter spasi antar elektroda 10 meter. *Pseudosection Wenner Alpha* diperoleh dari hasil inversi resistivitas semu terukur dan resistivitas semu terhitung dengan *Software Res2Dinv*. Data geolistrik *Schlumberger* sebanyak 23 titik *sounding*, panjang bentangan 600 meter. Grafik 1 Dimensi didapatkan dari hasil pengolahan *Software IP2Win*. Pemodelan 3 dimensi integrasi dari data *Wenner Alpha*, *Schlumberger*, data pemboran menggunakan *Software Leapfrog Geo 4.0*, *Corel Draw X7*, *Surfer 11*, *Map Info Profesional*, *Global Mapper*, *Ms. Excel 2013*.

Interpretasi sistem hidrogeologi karst secara kualitatif dan kuantitatif berdasarkan nilai resistivitas litologi dan analisa data pemboran. Batugamping masif memiliki nilai resistivitas (1000 -5000 Ohm.m), batugamping pasir (100-1000 Ohm.m), *clay* (1-100 Ohm.m), intrusi air laut (1-15 Ohm.m). Berdasarkan pengolahan data geolistrik dan geologi, kondisi karst pada lokasi penelitian bagian barat sudah berkembang dengan karakteristik adanya goa dan aliran konduit. Pada bagian tengah dan timur pada lokasi penelitian diprediksikan terbentuk sistem aliran difusi pada daerah kontak litologi dan sesar pada daerah penelitian.

Kata kunci : Integrasi, geolistrik, *Wenner Alpha*, *Schlumberger*, resistivitas semu, inversi, *pseudosection*, *sounding*, konduit, difusi

ABSTRACT
IDENTIFICATION OF KARST HYDROGEOLOGY SYSTEM USING
INTEGRATED METHOD OF GEOELECTRICAL WENNER ALPHA,
SCHLUMBERGER CONFIGURATION, AND DRILLING EXPLORATION DATA
AT “X” AREA
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Integrated of geophysical method geoelectrical Wenner Alpha, Schlumberger, and drilling exploration data used to identify karst hydrogeology system to get the response of fluid, cave or cavity and underground river based on value of resistivity anomaly and the drilling data. Pseudosection Wenner Alpha, Schlumberger Profiling, and drilling data to be correlate 3 dimension that has integrated. The location of this research on exploration area of PT. Semen Indonesia (Persero) Tbk.

Processing data processed step by step from industrial training on 1 January 2016-2 February 2016 then thesis research from 22 January 2018 till 5 February 2018. Geoelectrical data Wenner Alpha as many as 87 line and every line has 475 meters and electrode spacing 10 meters. Pseudosection Wenner Alpha obtained from inversion of field apparent resistivity and calculated apparent resistivity used Software Res2Dinv. Schlumberger data as many as 23 point sounding, has 600 meters. 1 dimension curve obtained from Software IP2Win processing. Three dimension integrated models from Wenner Alpha, Schlumberger, drilling data processed by Software Leapfrog Geo 4.0, Corel Draw X7, Surfer 11, Map Info Profesional, Global Mapper, Ms. Excel 2013.

Karst hydrogeology system interpretate by qualitative and quantitative based on resistivity of lithology and drilling analysis. Massive Limestone has resistivity (1000-5000 Ohm.m), Sandy Limestone (100-1000 Ohm.m), clay (1-100 Ohm.m). Based on processing geoelectrical and geology, the karst condition on west block has been mature with the characteristic such as cave, and conduit flow. In the center block and east block of research area indicated diffusion system in the lithology contact area.

Keywords : Integrate, Geoelectrical, Wenner Alpha, Schlumberger, resistivity, apparent, inversion, pseudosection, sounding, conduit, diffusion