

# Interpretasi Kualitatif Atribut Seismik sebagai Direct Hydrocarbon Indicator pada Lapangan F3 North Sea, Belanda = Qualitative Interpretation of Seismic Attribute as a Direct Hydrocarbon Indicator in F3 Field North Sea, Netherlands

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## Abstrak

Lapangan di sektor F3 Northsea Netherlands memiliki potensi hidrokarbon khususnya gas. Berdasarkan data seismik 3D, lapangan F3 menunjukkan adanya struktur gas chimney dan fenomena brightspot. Pada studi ini, kami telah menganalisis dan menginterpretasi atribut seismik sebagai Direct Hydrocarbon Indicator (DHI) di lapangan ini. Kami menggunakan lima atribut yaitu Instantaneous Amplitude, Instantaneous Frequency, Energy, Spectral Area beyond dominant Frequency dan Frequency Slope Fall sebagai identifikasi amplitudo brightspot sehingga kita mendapatkan penampang atribut tersebut. Lalu kami mengkorelasikan atribut seismik dengan data sumur (Impedansi Akustik) dan menginterpretasikan hubungan keduanya untuk mengidentifikasi target reservoir yang berupa batupasir.

Kami menemukan hal menarik yaitu hubungan antara atribut dan Impedansi Akustik menunjukkan korelasi yang bagus. Atributnya adalah Energi, Instantaneous Amplitude dan Instantaneous Frequency. Zona reservoir terisi oleh gas dari kedalaman 780 ms sampai 812 ms. Hasil akhir menunjukkan bahwa Energi, Instantaneous Amplitude dan Instantaneous Frequency sangat berguna untuk mengidentifikasi reservoir sebagai DHI pada lapangan F3. Kami percaya studi ini mungkin berguna sebagai quicklook bahwa atribut seismik dapat melokalisir area prospektif dari eksplorasi hidrokarbon.

.....F3 field is located in Northsea one, Netherland showed the potential hydrocarbon especially gas type. According to 3D seismic data, the F3 field revealed gas chimney structure and highly brightspot phenomena. In this study, we have analyzed and interpreted the seismic attributes for recognizing Direct Hydrocarbon Indicator (DHI) in F3 field. We have used five attributes, Instantaneous Amplitude, Instantaneous Frequency, Energy, Spectral Area beyond dominant Frequency and Frequency Slope Fall to identify coherency of brightspot amplitude so we obtained seismic attributes section. Then we correlated the seismic attributes with the log data (Acoustic Impedance) and interpreted the relation between them to identify the sandstone reservoir target.

Interestly it was found that the attributes showed good correlation to Acoustic Impedance data. The attributes were Energy, Instantaneous Amplitude and Instantaneous Frequency. It was also found that the reservoir zone which was filled gas from 780 ms until 812 ms. The all result showed that Energy, Instantaneous Amplitude and Instantaneous Frequency were useful to identify the reservoir as DHI in F3 Field. We believe that our study may be useful to describe that seismic attributes can be used as quicklook to the prospective area of hydrocarbon exploration.