IDENTIFICATION OF THE SEISMIC FACIES AND EFFECT OF THE SEISMIC DATA QUALITY ON THE HYDROCARBON DISTRIBUTION IN THE PICT FIELD, CENTRAL NORTH SEA, OFFSHORE, UNITED KINGDOM

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The detailed 3D seismic interpretation study was carried out from the Pict field located in block 21/23b in the Central North Sea offshore UK to identify different types of seismic facies and to assess the hydrocarbons distribution within the Tay Sandstone, which is an Eocene reservoir unit. The effect of seismic data quality on the hydrocarbon distribution was also analyzed. The results were then confirmed from the detailed well log information.

Three types of seismic facies were marked on the maximum seismic amplitude maps. From seismic amplitudes, we were able to relate sandstone facies to maximum seismic amplitude and mudstone facies to minimum seismic amplitude. The intermediate amplitudes were interpreted as the mixed (sand and mud) facies. The presence of these facies in the specified areas was also confirmed by the well log data. The Pict field has a distinct amplitude anomaly at the base of the anticlinal feature, initially thought to represent the possible oil water contact (OWC).

However, detailed analysis suggested that the amplitudes extent is tilted and extends beyond the structural closure of the field, as found in 2D Two Way Travel time maps. Since the hydrocarbons presence was confirmed within the sand mound in the discovery well, and as this sand thins at the limbs of the mound it may display higher amplitudes due to seismic interference. Hence, the higher amplitudes were interpreted not due to the response of hydrocarbons, but also the lithology effect enhanced by seismic tuning as the sand unit thins to the margins of the channel.