Evaluation of Apex Spectral Technology's ADF analysis to help define

gas prospects onshore Romania

The onshore areas covered by this study were relatively close to existing gas discoveries and fields. Production is from thin sandstone reservoirs in Miocene fluvio-deltaic sequences and nearby marine turbidite sand bodies. Existing fields produce from interbedded, mainly fine grained, sandstone units. Traps commonly have a significant element of stratigraphic closure.

Exploration for these prospects was based on structure maps at a regional seismic marker below the producing section, combined with 'bright spots' that were found to be generally associated with gas bearing sands. Using these two factors had resulted in some success but a number of dry holes were found to be associated with tight calcite cemented sandstones. Existing successful wells showed that impedance contrast should result in a Class III AVO response if gas saturated. My Client therefore added AVO analysis to reduce risk. This resulted in several successful wells but a prospect based on the three factors and considered a low risk, resulted in a dry hole. This failiure proved to be due to tuning effects that had produced a significant bright spot. Modelling also revealed that an AVO response was theoretically probable from the water saturated sand.

It was decided to evaluate Apex's Spectral Analysis to see if this could provide a reliable further prospect evaluation tool. Apex were provided, over a period of time, with 2D seismic lines through 11 wells with no information on well location or results. No spectral anomalies were present at the target level of the 6 dry holes or elsewhere in the penetrated section. Spectral anomalies were noted at gas reservoirs in 3 wells The remaining 2 wells tested gas in small quantities from thin zones (1-3m), probably too thin to generate an anomaly. One of these had no spectral anomaly and in the other case a spectral anomaly had been associated with a high amplitude event and an AVO anomaly, but proved to be an overpressured water bearing sand. Gas was present in thin stringers above the target and also deeper where a weak spectral anomaly formed a secondary objective.

It was concluded that the technique could provide very useful additional evidence of the presence of gas reservoirs in conjunction with AVO and amplitude analysis.

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