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Offshore Algarve, Portugal: a prospective extension of the Spanish Gulf of Cadiz Miocene Play

Following their discovery in the 1980s, offshore Spanish Gulf of Cádiz basin fields Poseidón Norte & Sur have produced biogenic gas from Messinian turbidite sands. This proven Tortonian-Messinian sedimentary model has been extrapolated to the west into the Algarve basin in Portuguese waters by RepsolYpf and partner RWE-Dea, where these companies have applied for blocks 13 & 14 in Portuguese waters.

Three objectives have been identified: (1) Messinian turbidites, which are productive in the Gulf of Cádiz. (2) A thick Tortonian sedimentary column which may include a Lowstand System Tract (LST) section which is likely to contain sandy turbiditic units. (3) Lower Pliocene basal contourite sands.

These latter two new plays have been developed following seismic reprocessing, interpretation and AVO studies. The thick Tortonian LST section, unknown in the Gulf of Cádiz, is suggested by the deep position of the Betic Olistostrome tectonic melange, which is dated as lower Tortonian. The lower Pliocene basal contourite sands are associated with seabed currents which continue today. Both the Tortonian and Pliocene plays exhibit strong seismic amplitude and AVO anomalies. This thicker sedimentary column also raises the possibility of a viable wet gas source rock from the Betic Olistostrome, to add to the expected biogenic gas potential of the Algarve basin.